

REMINGTON ARMS COMPANY, INC. Firearms Research Division May 15, 1981

TO: C. B. WORKMAN

FROM: J. W. BROOKS

SUBJECT: BOLT ACTION CARBINE

This report covers work done on this project from August 1977 to May 1981.

JWB:T Attach. AI-81-9

BOLT ACTION CARBINE

August 1977 to May 1981

Project No. <u>C 1850</u>

Data in Report:

- 1. Pictures and information on 1977 models for Marketing
- 2. Pictures and information on 1978 models for Focus Panel
- 3. Focus Panel Report 1979
- 4. Pictures and information on 1980 models for Marketing
- 5. Field test reports of 1980 models
- 6. Picture of redefined model 1981

No previous reports have been written on this project.

This report prepared by:

John W. Brooks and Douglas E. Bullis Firearms Research Division May 1981

Distribution List:

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*Omitted in abridged version.

INTRODUCTION

The goal of the Bolt Action Carbine project is to improve Remington's marketing position and increase sales by restyling the Mohawk 600 Rifle. This rifle has not had a change in the styling of the stock since it was originally introduced as the Model 600 in 1964. The barreled action had minor changes in 1968. The rifle is well liked as a brush gun because of its handling ability, short overall length, accuracy, and selection of calibers. It will be introduced to compete against carbine length rifles presently in the field.

OBJECTIVE

The work to be accomplished consists of redesigning the stock and barreled action for improved function, aesthetics, and weight reduction.

The work has covered three phases to date, and is presently in the fourth phase.

- o Models for Marketing evaluation completed in 1978.
- o Models for evaluation by a Marketing panel completed in 1979.
- o Models for field testing completed in 1980.
- o Redesigned models for field testing to be completed in 1981.

The first phase consisted of building models with all the features suggested by Marketing, the field force, and Research. These models were shown to Marketing to evaluate and decide what features should be included in the group of rifles to be shown to a Marketing Focus Panel.

The second phase consisted of building rifles with the features requested by Marketing for the Focus Panel exposure. Panels were held and results were tabulated and evaluated.

The third phase consisted of building models to test in-house and in the field. These models had the features requested by Marketing after their evaluation of the Focus Panel report.

The fourth phase consists of building models to test in-house and in the field. These models will have the added features that were requested after evaluation of the first field test. With satisfactory completion of this phase the model will be presented to the Operations Committee for addition to the Remington Centerfire Bolt Action line.

SUMMARY AND CONCLUSIONS

The project has been completed thru the third phase, which included field testing of the Bolt Action Carbine.

The reports were enthusiastic and complimentary. However, a large percentage of the reports indicated the rifle was too heavy.

In the fourth phase requirements were redefined which resulted in a smaller stock and smaller diameter barrel, reducing the overall weight by approximately one pound. Barreled actions with the smaller diameter barrel and the largest caliber to be introduced have been satisfactorily tested for strength. The rifles must still be tested for accuracy and the stock must be tested for strength.

PATENT SITUATION

The Patent Division has not discovered any unexpired competitively-owned patents that are relevant to the design being considered in this project. Initial investigation of a preliminary design of a new floor plate latching system suggests that patent protection may be obtainable for this design.

FUTURE PROGRAM

Completion of the Fourth Phase

Barreled actions of the latest design have been built in five of the proposed calibers. Five stocks of the latest design are being built and will be ready by the end of May. Accuracy and function testing of the rifles will be completed in 1981. Pending satisfactory completion of these tests, the Bolt Action Carbine is scheduled to be presented to the Operations Committee in June for approval to add this model to the Remington Centerfire Rifle line.

Twenty barreled actions of 7mm-08 Rem. caliber are being assembled for a new field test. They will be completed in May. Stocks have been ordered and will be completed in July. Rifles will be assembled and ready for a Marketing field test by September, 1981.

ACKNOWLEDGEMENTS

John Linde

Design

Leon Johnson

Stock models

(Retired)

Kurt Blumer St

(Resigned)

Stock models and floor plate

design and models

Fred Martin

Design

Douglas_Bullis

Design

Adam Hugick

Measurements & Test

James Hennings

Measurements & Test

Richard Nightingale

Measurements & Test

Christopher Miller

Measurements & Test

EXPERIMENTAL HISTORY

Phase I In 1977 Marketing and Research agreed on a plan to restyle the Mohawk 600 rifle (Exhibits 1,2 & 3). Research began by building several models with various shaped stock stylings and barreled actions, with various additions and deletions, retaining the basic Mohawk 600 receiver and barrel. These models are shown in Exhibits 4 thru 8, with a list of changes that are different from the basic Mohawk 600 model. A meeting was held with Marketing and the above exhibit models were discussed to decide what features were to be shown to a focus panel. (Exhibit 9)

Phase II Six rifles were made up with the features discussed. (Exhibits 10 thru 15). These rifles were delivered to Marketing for use in the Focus Panel held January 1979. The group sessions were set up in three different marketing areas (Exhibit 16). A discussion guide and questionnaire (Exhibits 17 - 18) were used to obtain answers to the probability of acceptance of this Bolt Action Carbine concept. A final report (Exhibit 19) was written evaluating the concept. It stated that it is a "distinctive and promising new product prospect".

Phase III A subsequent meeting was held with Marketing to discuss the report. A decision was made on the design requirements of a final model using the panel report recommendations. (Exhibit 20)

Research proceeded to make final models for approval by Marketing. In order to add a hinged floor plate assembly the receiver had to be made a half inch longer and the rear receiver mounting hole moved back. The longer receiver can be made using existing Mohawk 600 tools and fixtures.

Two sample rifles were made using birch and walnut wood. (Exhibits 21 - 22). Marketing accepted the samples.

A meeting was then held with Process Engineering so they could discuss the new features of this model and changes could be made if possible to simplify processing and manufacture.

(Exhibit 23). At the same time models were started for accuracy, function, and field testing. Five hand made stocks were to be used for in-plant testing. The stocks were proofed four times each with each succeeding caliber. The stocks stood up well. The accuracy from the bench was well within the present plant specifications for these calibers in this and other centerfire rifles. (Exhibit 24)

Twenty stocks were ordered from Fajan from our handmade pattern, to be used for field testing. They were finished and fitted to actions by Remington personnel. The field test actions were all made up in 7mm-08. They were ready for field test in June 1980, and were sent to people designated by Marketing.

(Exhibits 25 - 26)

Costs were requested from Industrial Engineering.

Several updates were completed to cover possible changes in stock wood and finish and checkering. (Exhibits 27 thru 30) A separate cost was also requested for a proposed bolt lock mechanism. This mechanism has now been dropped from the latest model. (Exhibit 31)

A letter was received from the Patent Department (Exhibit 32) covering work to date on the new stamped floor plate design.

The field test models were returned to Ilion starting the first week of July. Marketing field test reports (Exhibit 33) indicated the rifle was too heavy and the stock was too fat. They requested that Research look at ways to reduce the overall weight by at least 3/4 of a pound. Research responded with several suggestions to meet this new criteria. (Exhibits 34 - 35) Subsequent testing indicated the required weight could be obtained by reducing the barrel diameter (Exhibit 36) and using walnut for the stock.

Phase IV New barreled actions were made with the smaller diameter barrels. A thinner stock was made up and a model was shown to Marketing. (Exhibit 37) They approved of the barreled action but requested further work be done on the stock. (Exhibits 38 - 39)

A sample was made with the grip and fore end slimmed down as requested by Marketing. Samples with a Schnabel fore end were also made to show them. (Exhibits 40, 41, 42)

The sample with the Schnabel fore end was accepted by Marketing. (Exhibit 40)

Five hand made samples are being built for accuracy and function testing of the 308, 7mm-08, 6mm, 243 and 222 calibers, and twenty stocks are being made by Fajan from a handmade pattern for field testing.

The test schedule becomes extremely important at this point because of the lighter barrel and stock. The first concern is what effect the heaviest caliber will have on the strength of the lighter stock. The second concern is what effect the smaller diameter barrel will have on accuracy and overall rifle function. These questions will be answered in June 1981.

APPENDIX

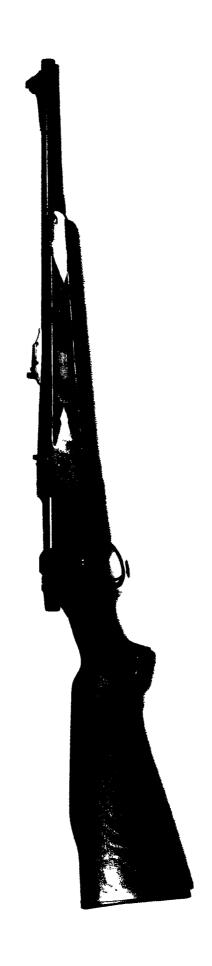


EXHIBIT NO. 1
MOHAWK 600 Production
Model

Serial No. A6390910

EXHIBIT 2

MODEL 600 CARBINE

Aug. 29, 1977

All models will have:

Metal trigger guard
M700 barrel bracket
Standard short action cartridges
All have sling studs
Small sights
New tang design
Satin finish
Least expensive

- 1. Birch stock
 Black butt plate
 No checkering
 Straight pull stock
 - Plastic trigger guard
- 4. Birch stock Pistol grip Recoil pad - 700 Classic No checkering
- 2. Birch stock Black butt plate No checkering Straight pull stock Metal trigger guard
- 5. Same as above with 870 l" pad

- 3. Birch stock
 Pistol grip no cap
 Black butt plate
 No checkering
- 6. Walnut stock with pistol grip
 Cut checkered
 700 Classic recoil pad
 Sling, swivels and stud
 New bolt handle design

Typed 5-26-81 T

Xc: C. B. Workman

RD-49-6

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE





"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"____

Ilion, New York September 12, 1977

To:

W. J. Weeks - Bridgeport

J. H. Chambers -

H. D. Albaugh -

From:

J. P. Linde

Subject:

Research Inputs for the Model 600 Carbine Focus Panels

The consumer reactions to the following rifle characteristics would aid us in developing the M/600 Carbine. If you could combine these items into the upcoming focus panels, it would be appreciated.

- 1. Stock Styling General Type of Carbine Stock desired:
 - A. Straight pull Stock vs pistol grip Stock
 - B. Mannlicher Carbine Stock vs Classic Stock
 - C. Pistol grip thickness, grip shape, grip cap or no grip cap preference
 - D. Length of trigger pull
 - E. Preference of Stock fore-end shape
 - F. Preference of various styles of Recoil Pads and/or Butt Plates
 - G. Stock color light vs dark
 - H. Stock finish satin vs high gloss
 - I. Type of Wood vs sales price Walnut vs stained Birch
 - J. Cut Checkered more expensive rifle vs no checkering at less cost
- 2. Some idea of price versus anticipated product value of bolt action rifles compared to lever action rifles.
- 3. Would the customer plan on mounting a scope on the proposed carbine?

To:

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W. J. Weeks

J. H. Chambers

H. D. Albaugh

From:

J. P. Linde

Subject: Research Inputs for the Model 600 Carbine Focus Panels

September 12, 1977

Page 2

4. Iron Sight preference:

- A. Buck Horn, such as lever action models
- B. M/700 current sight, front and rear
- C. Shortened M/700 sight and front sight ramp
- D. Short fold-down sight such as Lyman blade sight
- E. Receiver Sight
- 5. Barrel length preference 16, 18 or 20 inches.
- 6. Importance of modern cartridge selection bolt action vs lever action cartridges.

 308 Win., 6mm Rem. vs 30-30 Win. & 35 Rem.
- 7. Preferred Carbine Rifle weight comparison of selected models.
- 8. Preferred rifle length comparison of selected models.
- 9. Trigger Guard styling
- 10. Bolt Handle styling comparison of selected models.
- 11. Bolt Release with two position Safety general reaction to new design concept.
- 12. Would the customer like the sling included with the rifle?
- 13. Would the customer like the swivel study installed on the rifle at the factory? Would the customer find a swivel mounted on the barrel objectionable?
- 14. Type of Magazine Follower preferred cast, formed, machined.
- 15. Importance of metal finish and type preferred bright high luster vs dull satin finish.

J. P. Linde, Manager Manual Firearms Design Ilion Research Division

IPL/nl

EXHIBIT NC. 4 GUN SERIAL NUMBER A6550076

STOCK

Walnut wood Vinyl finish Model 700 Classic recoil pad Classic styling Inlet for trigger guard Front and rear swivel studs

BARRELED ACTION

18% INCH BARREL LENGTH

Model 700 ADL short barreled action Model 700 trigger housing assembly Model 700 BDL front sight hood Model 700 BDL floor plate assembly



EXHIBIT NO. 5 GUN SERIAL MUMBER A6786854

STOCK

BIRCH AND MAPLE LAMINATED WOOD GLOSS FINISH - RKW
CUT CHECKERING
CARBINE TYPE STRAIGHT GRIP
MODEL 870 RECOIL PAD
INLET FOR TRIGGER GUARD
REAR SWIVEL STUD

BARRELED ACTION

16½ INCH BARREL LENGTH
MODEL 700 BARREL BRACKET
NEW FRONT SIGHT BASE
FRONT SIGHT BY MARBLE
REAR SIGHT BY WILLIAMS
UNCLE MIKE'S FRONT SWIVEL RING
GOLD PLATED TRIGGER



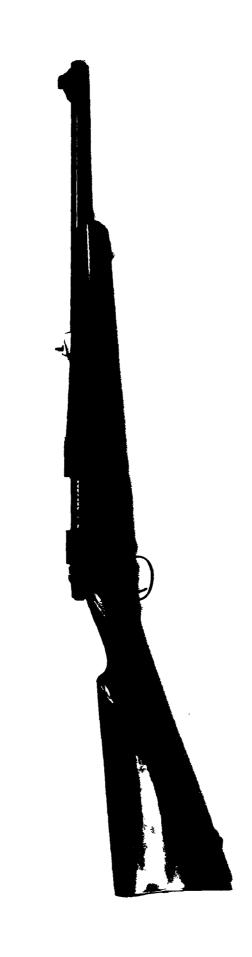
EXHIBIT NO. 6 GUN SERIAL NUMBER 6841170

STOCK

BIRCH WOOD
GLOSS FINISH - RKW
CHEEKPIECE
CUT CHECKERING
CARBINE STYLE STRAIGHT GRIP
MODEL 700 BUTT PLATE
INLET FOR TRIGGER GUARD
FRONT AND REAR SWIVEL STUDS

BARRELED ACTION

18 INCH BARREL LENGTH
MODEL 700 ADL SHORT BARRELED ACTION
MODEL 700 TRIGGER HOUSING ASSEMBLY
MODEL 700 FLOOR PLATE ASSEMBLY
NEW FRONT SIGHT BASE
NEW FRONT SIGHT WITH WHITE PLASTIC BEAD
REAR SIGHT BY WILLIAMS



-

EXHIBIT NO. 7 GUN SERIAL NUMBER 6787144

STOCK

BIRCH WOOD
VINYL FINISH
CARBINE STYLE STRAIGHT GRIP
INLET FOR TRIGGER GUARD

BARRELED ACTION

16½ INCH BARREL LENGTH
MODEL 700 BARREL BRACKET
NEW FRONT SIGHT BASE
MODEL 700 FRONT SIGHT
REAR SIGHT BY WILLIAMS
GOLD PLATED TRIGGER



EXHIBIT NO. 8 GUN SERIAL NUMBER 6787241

STOCK

BIRCH WOOD

VINYL FINISH

CUT CHECKERING

MODEL 700 CLASSIC BUTT PAD

SCHNABEL DESIGN FORE END

INLET FOR TRIGGER GUARD

REAR SWIVEL STUD

BARRELED ACTION

16½ INCH BARREL LENGTH
MODEL 700 BARREL BRACKET
ALUMINUM TRIGGER GUARD - INVESTMENT CAST
NEW FRONT SIGHT BASE
MODEL 700 FRONT SIGHT
REAR SIGHT ASSEMBLY BY WILLIAMS
GOLD PLATED TRIGGER

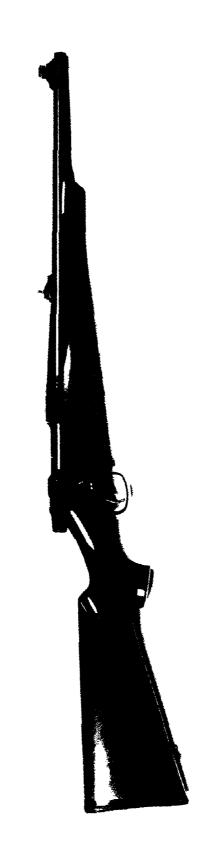


EXHIBIT 9

RO-69 REV. 5-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington,

CC: J. E. Preiser
C. B. Workman
W. J. Weeks
W. H. Forson, Jr.
J. H. Chambers

August 31, 1978

TO: J. W. BROOKS

FROM: H. D. ALBAUGH

BOLT ACTION CARBINE RIFLE

This is to confirm our meeting last week at which we reviewed various characteristics of the above gun. Each was placed into one of three categories as follows:

- We decided at meeting
- We will decide later
- Will submit to consumer panel

We Decided

- Pistol grip stock
- Open sights on barrel not "clean"
- Hooded front sight
- Aluminum trigger guard and floorplate
- Exterior bolt release
- Conventional rather than laminated

We Will Decide Later

- Butt plate or pad
- Grip contour
- Type of rear sight (ramp, folding leaf)
- Size of safety lever
- Type of action Model 600 or Model 700
- Barrel bracket contour
- Type of receiver tang Model 600 or Model 700
- Magazine style fixed or hinged floor plate

Submit to Panel

- Sling strap and swivels (barrel band or fore-end fit)
- Grip; plain or with cap
- Fore-end contour; regular or schnabel

Submit to Panel (cont.)

- Checkering what is it worth?
- Spacers with or without
- Wood color and/or gloss level
- Type of wood perceived value of walnut versus other species
- Color preference of front bead
- Safety
 - Importance of locking bolt handle when on safe a)
 - If locked handle is selected, which type of safety is preferred
 - Current
 - Three position safety; release at rear position
 - Release on bolt shroud
 - Location
- Caliber preference which are favorites, desired, etc.
- Bolt handle contour and styling
- Bolt body jewelled, polished, or bluedTrigger bow styling
- Barrel length

By copy of this letter, I am also advising Bud Weeks and Jim Chambers of our meeting and ask them to begin planning consumer tests.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

E X H I B I T N O. 13 GUM SERIAL NUMBER A6495821

STOCK

BIRCH WOOD
VINYL FINISH
MODEL 870 RECOIL PAD
CLASSIC STYLING
INLET FOR TRIGGER GUARD
FRONT AND REAR SWIVEL STUDS

BARRELED ACTION

18 INCH BARREL LENGTH
MODEL 700 BARREL BRACKET
ROUNDED RECEIVER TANG SIMILAR TO MODEL 700
FORWARD SWEPT BOLT HANDLE WITH .625 BALL
MODEL 700 TYPE BOLT RELEASE
NEW BOLT LOCK DESIGN ON BOLT PLUG
ALUMINUM TRIGGER GUARD - INVESTMENT CAST
NEW FRONT SIGHT BASE
MODEL 700 BDL FRONT SIGHT HOOD
NEW TWO PIECE REAR SIGHT



EXHIBIT NO. 12 GUN SERIAL NUMBER A6495819

STOCK

BIRCH WOOD
VINYL FINISH
MODEL 700 CLASSIC BUTT PAD
INLET FOR TRIGGER GUARD
CUT CHECKERING
CLASSIC STYLING
FRONT AND REAR SWIVEL STUDS

BARRELED ACTION

18 INCH BARREL LENGTH
MODEL 700 BARREL BRACKET
ROUNDED RECEIVER TANG SIMILAR TO MODEL 700
FLAT SPOON HANDLE TYPE BOLT HANDLE
MODEL 700 TYPE BOLT RELEASE
ALUMINUM TRIGGER GUARD - INVESTMENT CAST
NEW FRONT SIGHT BASE
MODEL 700 FRONT SIGHT
MODEL 700 BDL FRONT SIGHT HOOD
REAR FOLD DOWN SIGHT BY MARBLE



EXHIBIT NO. 11 GUN SERIAL MUMBER A6495820

STOCK

BIRCH WOOD
VINYL FINISH
SCHNABEL DESIGN FORE END
INLET FOR TRIGGER GUARD
REAR SWIVEL STUD

BARRELED ACTION

18 INCH BARREL LENGTH

MODEL 700 BARREL BRACKET

ROUNDED RECEIVER TANG SIMILAR TO MODEL 700

FORWARD SWEPT BOLT HANDLE WITH .795 BALL

MODEL 700 TYPE SAFETY BUTTON

NEW BOLT UNLOCK BUTTON NEXT TO SAFETY

MODEL 700 TYPE BOLT RELEASE

ALUMINUM TRIGGER GUARD - INVESTMENT CAST

NEW FRONT SIGHT BASE

MODEL 700 FRONT SIGHT

MODEL 700 BDL FRONT SIGHT HOOD

UNCLE MIKE'S FRONT SWIVEL STUD CLAMP

NEW REAR ADJUSTABLE SIGHT

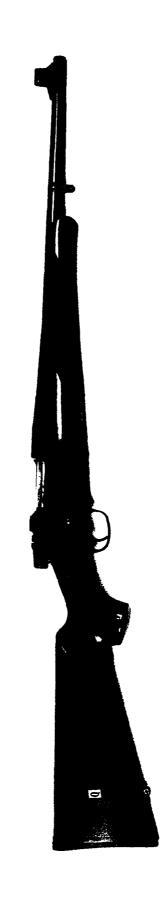


EXHIBIT NO. 10 GUN SERIAL NUMBER A6495823

STOCK

BIRCH WOOD
VINYL FINISH
CUT CHECKERING
MODEL 700 CLASSIC BUTT PAD
SCHNABEL DESIGN FOR FORE END
INLET FOR TRIGGER GUARD
REAR SWIVEL STUD

BARRELED ACTION

18 INCH BARREL LENGTH
MODEL 700 BARREL BRACKET
ROUNDED RECEIVER TANG SIMILAR TO MODEL 700
FORWARD SWEPT BOLT HANDLE WITH .725 BALL
MODEL 700 TYPE SAFETY BUTTON
MODEL 700 TYPE BOLT RELEASE
ALUMINUM TRIGGER GUARD - INVESTMENT CAST
NEW FRONT SIGHT BASE
MODEL 700 BDL FRONT SIGHT HOOD
UNCLE MIKE'S FRONT SWIVEL STUD CLAMP
BARREL MACHINED FOR REAR DOVETAIL SIGHT



EXHIBIT NO. 14 GUN SERIAL NUMBER A6273737

STOCK

Walnut wood Vinyl finish Model 700 Classic Butt PAD Classic styling Inlet for trigger guard

BARRELED ACTION

18½ INCH BARREL LENGTH
MODEL 700 BOLT HANDLE
MODEL 700 COMPLETE TRIGGER HOUSING ASSEMBLY
NEW ALUMINUM TRIGGER GUARD
NEW FRONT SIGHT BASE
MODEL 700 FRONT SIGHT
MODEL 700 BDL FRONT SIGHT HOOD
MODEL 600 REAR SIGHT BASE (STEEL)
OLD MODEL 600 BOLT PLUG





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EXHIBIT NO. 15 GUN SERIAL NUMBER A6273739

STOCK

BIRCH WOOD
GLOSS FINISH - RKW
MODEL 700 MAGNUM RECOIL PAD
CLASSIC STYLING
INLET FOR TRIGGER GUARD
FRONT AND REAR SWIVEL STUDS

BARRELED ACTION

18½ INCH BARREL LENGTH
MODEL 700 SAFETY BUTTON
ALUMINUM TRIGGER GUARD - INVESTMENT CAST
MODEL 700 FRONT SIGHT BASE
MODEL 700 FRONT SIGHT
MODEL 700 BDL FRONT SIGHT HOOD
MODEL 700 REAR SIGHT ASSEMBLY





John Brooks

EXHIBIT 16

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tion Carbine Style Rifle Research

Schodule of Group Sessions

Tourses, - Jamesty 30 - 6:00 P.H. ord 8:30 P.M. (Lover action water)

Bolt and lever action weers

Quality Controlled Services 1507 Sulf Freezey, Sulfe 212 Houston, Texas 77087

(Mr. Additation horganon /13-641-3321)

الأملية على المنظمة ا

Marketing information Service 9 Comporate Square Assess, GA 30329

(Bill williers 454-325-5221)

The taken - February 1 - 5:00 P.M. and P:00 P.M. (Love: action users) #2017 and Lever original energi

D trait Parketing Sections Southfield Ad. Southfield, Wichigan (4807)

(*) 1 (15, (*) ≤ me/s = 3/3-45 2-7395)

EXHIBIT 17

NEW BOLT ACTION CARBINE STYLE CENTER FIRE RIFLE RESEARCH

Group Discussion Guide

Section 1 - General Positioning of Carbines

What we are going to be talking about today is <u>center fire rifles</u>; and we will be focusing most of the discussion on the lever action and bolt action types....

- First of all, let me ask each of you what kind of center fire gun do you mainly use and why? (WARM-UP)
- 2. What types do you use for different types of game?
- 3. How do the different type of actions (lever vs. bolt) affect your hunting attitudes and practices -- for example, in terms of type of game, range, accuracy, other considerations?
- 4. How do the different sizes and weights of a gun affect your hunting habits in terms of type of game, range, accuracy, other considerations?
- 5. Any relationship between type of action and size/weight of gun? Implications of this in terms of type of game, range, accuracy, other considerations? Ammunition?
- (IF, AND ONLY IF, "CARBINE" IS MENTIONED) 6. What <u>is</u> a carbine? What makes a carbine rifle a carbine?
 - How does a carbine compare to a regular rifle in terms of:
 - ...range
 - ...accuracy
 - ...ammunition
 - ...comfort
 - ...convenience
 - ...durability
 - ...overall

- Who are the main users of carbine style rifles?
- What types situations are they for?
- What advantages are there to using a carbine style rifle?
- What disadvantages are there to using one?
- What differences do you find as a result of the shorter barrel length? (PROBE FOR COMPARISONS BETWEEN A "CHOPPED OFF" BARREL AS OPPOSED TO ONE THAT IS PROPORTIONED OR SCALED DOWN TO SIZE.)

Section 2 - Concept Reactions

(PASS OUT CONCEPT STATEMENT AND READ IT ALOUD WHILE RESPONDENTS FOLLOW ALONG. GIVE THEM AS MUCH TIME AS THEY NEED TO "ABSORB" THE IDEA, AND LET THEM KEEP THE SHEETS TO REFER TO DURING THE FOLLOWING DISCUSSION.)

- Well, what are your first thoughts about the information on this sheet? (SPONTANEOUS AT FIRST; THEN PROBE) What else? Tell me more. Anything else?
- 2. How well does what is on the sheet fit in with your own attitudes and thoughts about guns? With your hunting habits?
- What do you especially like about what's said...or find of special interest? Explain.
- 4. What do you dislike or doubt about what's said? Or disagree with? Explain.
- 5. For what situations and purposes would a product like this be used? What makes you say that?
- 6. a. Who do you think would be most likely to use such a product? What type of hunters?
 - b. Does this describe you?
- 7. What would you expect a gun like the one described on the sheet to cost? How did you arrive at that price?
 - Would you be interested in buying it at that price?

(PASS OUT QUESTIONNAIRE BOCKLETS AND ASK RESPONDENTS TO FILL IN THE INFORMATION REQUESTED ABOVE THE BROKEN LINE, AND THEN TO RATE THEIR OVERALL REACTION TO THE CONCEPT ON THE SCALE BELOW THE BROKEN LINE... ASK THEM NOT TO TURN THE PAGE.)

Section 3 - Detailed Model Reactions

(HAVE THE RESPONDENTS COMPARE THE MODELS ON EACH OF THE FOLLOWING ASPECTS AND DISCUSS THEIR COMPARISONS. REMIND THEM TO REFER TO THE MODEL LETTERS AND NUMBERS THROUGHOUT.... PROBE FOR INCREMENTAL PRICE EXPECTATIONS WHERE APPROPRIATE.)

- (SLING STRAP AND SWIVELS) Which do you prefer, the barrel bands or studs? How important are either or both of these to you? What are they worth? (COMPARE MODELS V, R AND Q)
- (GRIP) Which of the different type grips do you prefer and why? (V IS THE MOST SWEPT BACK OF ALL)... Do you prefer the plain or with the grip cap? (W70 GRIP CAP)
- 3. (FORE-END CONTOUR) Do you prefer the regular fore-end contour or the schnable? (Q AND S HAS SCHNABEL). Are there any advantages or disadvantages to the schnabel? Any limitations? (POINT OUT THAT SCHNABEL NECESSARILY IMPLIES BARREL BAND --(cf. #1, ABOVE.)
- 4. (BUTT PAD) There are several types of butt pads the standard plastic plate (S), the recoil pad (M) and the rubber butt pad (R). Which do you prefer and why? Do you consider any one or two of the three types to be preferable? (PROBE FOR REASONS LOOKS, FUNCTION, PRICE)
- (CHECKERING) How important is checkering to you? How much is pressed or cut checkering worth to you? (USE MODELS T AND Q FOR CUT CHECKERING AND THE 700 FOR PRESSED CHECKERING)
- 6. (WOOD COLOR) Which wood <u>color</u> do you prefer? (MODELS S AND V ARE WALNUT; Q, T, M, AND R ARE BIRCH)
 - How much is the specific type of wood worth to you? (PROBE FOR INCREMENTAL VALUE OF WALNUT VERSUS OTHER TYPES)
- 7. Which <u>finish or gloss</u> level do you prefer? How important is this to you? (HIGH GLOSS IS MODEL R -- ALL THE REST ARE SATIN FINISH (VINYL))
- (FRONT BEAD) Do you have any color preference for the front bead?
 (LOCATED IN THE FRONT SIGHT; ALL THE MODELS ARE GOLD)

- 9. (BOLT HANDLE CONTOUR AND STYLING) Which type of bolt handle contour do you prefer -- both functionally and for looks or "fee!"? Why? (MODELS M, Q, R, S ARE DOG LEGGED, MODELS T AND V STRAIGHT)
- 10. (BOLT BODY) Do you prefer a blued or non-blued bolt body? Why? How important is it to you? What is it worth to you to have it or not have it?)
 - (JEWELING) What is a jeweled body worth to you? Do you prefer one?
- Ii. a. (SAFETY) Overal!, what are your feelings about safety with respect to center fire rifles? What are the main concerns here? What are the trade-offs between safety and operating convenience?

Now, regarding particular aspects of safety design....

- b. How important is it to you to be able to lock the bolt handle when the safety is on? Why?
- c. What are your opinions of, and preferences among, these different types of safetys...

- MODEL 70: three-position; bolt can be opened in middle position

- MODEL R: three-position; bolt can be opened in rear position

- MODELS M/S: three-position (in effect); press button to release bolt in safety lock position; release in on bolt shroud or on side near safety

(BE ALERT FOR PERCEPTIONS OF GOOD/BAD "FEEL" OF COMFORT/DISCOMFORT AS THE RESPONDENTS HANDLE THE MODELS AND WORK THE ACTION AND SAFETYS. ALSO, ARE THERE LEARNING PROBLEMS, NUISANCE, FRUSTRATION, ETC. WITH WORKING THESE SAFETYS.)

- d. How important, really, is it to have the bolt locked down when the safety is on? Why?
- e. Which of the various safety <u>locations</u> do you prefer -- tang, cross-bolt, standard Remington location (700, 788) or Winchester 70 location?

- f. Do you find you have any trouble with your hand rotating while operating the safety (possible accidental firing)?
- 12. (AMMUNITION/CALIBER)

(IF NOT FULLY COVERED IN EARLY PART OF DISCUSSION....)

- a. Bolt action guns (as opposed to lever action) will accept newer, high velocity calibers. Does this affect your reactions to this new gun concept and these models?
- b. What calibers should this gun accommodate? Why?
- 13. (ACCURACY/SCOPE) Do you think that these shorter bolt action rifles are any less accurate than regular-length models?

(IF SO) b. Do you think a scope would offset the difference? (IN FACT, IT WOULD)

Now, let's turn to the Questionnaire Booklets.

CONCEPT STATEMENT

As you know, for many years hunters have had a choice among several different types of operating actions where rifles are concerned — two of the most popular being lever action and bolt action. However, there are few, if any, guns on the market that can offer a combination of the advantages of both these types of guns — that is, a smaller, lighter weight gun that offers the better performance characteristics of a bolt action gun.

Now, a leading gun manufacturer has developed a new concept in the center fire rifle category — a bolt action gun scaled down to a smaller size, but one that can still accommodate the newer, high velocity cartridges. This new gun offers the "knockabout" convenience and portability that comes with smaller size and lighter weight — qualities that have long been available in lever action — but it offers them in a bolt action gun.

You get the "best of both worlds" in this new, high quality center fire rifle — the convenience of smaller size and lighter weight (not just a "sawed-off" barrel, but carefully designed and proportioned overall), plus the opportunity to use the newer, high velocity cartridges as well as the other performance advantages of bolt action.

GRG #108

QUESTIONNAIRE BOOKLET

Group Number_______
Location______
Date_____

Concept Reaction

Which of the ratings below most closely describes your overall reaction to the new product idea described on the sheet?

- () Like it a lot
- () Like it somewhat
- () Indifferent
- () Dislike it somewhat
- () Dislike it a lot

(DO NOT TURN PAGE)

QUESTIONNAIRE BOOKLET

Α.	1.	Now that you've seen it and regardless or your preferences for the different feature variations we've discussed what do you think of the general idea of this new smaller size, lighter weight bolt action rifle? (PLEASE CHECK ONE:)
		() Like it a lot
		() Like it somewhat
		() Indifferent
		() Dislike it somewnat
		() Dislike it a lot

2. Why do you say that?

Now, for each specific feature listed below, please place the appropriate model letter (Q, S, T, M, R, or V) in the proper column, according to which model you like best with respect to that feature; second best; and <u>least</u>.

	8es†	Second Best	Leas†
Sling strap and swivel mounts (barrel band/studs)			
2. Grip design			
3. Fore-end contour design			
4. Butt pad			
5. Checkering (T and O only)			
6. Wood <u>color</u>			
7. Wood gloss level			
8. Boit handle contour and styling			
9. Safety - which type			
O. Safety - which <u>location</u>			
 Overall - which gun do you prefer 			

(DO NOT TURN PAGE)

C .	Novt plane indicate
٠.	Next, please indicate your preferences on each of the items below:
	() prefer grip cap() Prefer no grip cap
	C / Freder No grip cap
	2. () Prefer checkering
	() Prefer no checkering
	3. () Prefer regular fore-end contour
	() Prafer schnabel fore—and contour
	4. () Prefer blued boit body
	() Prefer non-blued boit body
	5. () Prefer jeweled boit body
	() Prefer non-jeweled bolt body
•	
D.	for comparison purposes in answering this next question, you might want to know that the suggested retail (list) prices of three of the currently markered guns you've seen are as follows:
	- Remington Model 788 - about \$175.00
	- Remington Model 700 ADL - about \$245.00
	- Winchester Model 94 - about \$140.00
1	. Now, taking into account the wav you have "designed" this gun by your choices in the B and C question series you've just completed, write in here what you would expect the suggested retail (list) price of that gun to be.
	s
_	
2.	Briefly explain your answer.
	-
3.	Men. also the second
٠.	Now, please indicate below how interested you would be in buying that gun if that were the suggested retail (list) price.
	() Definitely would buy
	() Probably would buy
	() Might or might not buy
	() Probably would not buy
	() Definitely would not buy
4.	Briefly explain your answer.

(GO ON TO NEXT PAGE)

0.	Finally, we need a litanalysis purposes	tle information ab	out you for statistical	
1.	What is your marital s	tatus?		
	() single			
	() married			
	() divorced/widow	wad/separated		
2.	What is the approximat	ta agalof-you and y	rour wife (if you have on	e)?
		Participant	Wife	
	Under 30	()	()	
	31 - 40	()	()	
	41 - 50	$\dot{\circ}$	()	
	51 - 60	$\dot{}$	()	
	Over 60	()	()	
4. !	What is the last grade o () High school grade () Some college () College graduate () Technical/trade	duate or less	ded?	
5. W	/hat is your occupation?			
6. W	hich category below repr () Under \$10,000 () \$10,000 - \$14,99 () \$15,000 - \$19,99 () \$20,000 - \$24,99 () \$25,000 - \$29,99 () Over \$30,000	9 9 9	family income?	

(GO ON TO NEXT PAGE)

 Please write in next to the type(s) of hunting you have done in the cast year about how often you have done it, and the make and model/action of the gun mainly used.

Activity	Frequency	Make and Model/Action
Water fow (i.a., ducks/geese)		·
Dove		
Small game (i.e., pheasant/rabbit/ quait/grouse/squirrel)		
Big game (i.e., deer)		
Target shooting (i.e., trap/skeet/ hand or portable trap)		
Target shooting - rifle		
Other: (specify)		

_	_						
8.	Overall.	how	MARY	guns	do	VOU	own?

Thanks very much for your cooperation.

the Gediman Research Group, Inc.

26 Sixth Street Stamford, Connecticut 06905 203-348-0009

MARKET EVALUATION, POSITIONING,
AND FEATURIZATION

OF A

NEW BOLT ACTION CARBINE STYLE
CENTER FIRE RIFLE

RECEIVED

MAR 2 7 1979

ILION RESEARCH DIVISION

For: Remington Arms Company, Inc.
March, 1979

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MANAGEMENT SUMMARY

This section summarizes the key results of the consumer research on Remington Arms' proposed new bolt action carbine style center fire rifle....

The findings quite clearly indicate that the new idea is a distinctive and promising new product prospect, with good appeal to center fire rifle users across the board and especially strong appeal to the bolt action segment. The following two tables show the level of consumer interest, first at the concept and then at the product stage.

Concept Reaction*	Total Sample
•	. (50)
Like it a lot	30% BO%
Like it somewhat	50
Indifferent	20
Dislike it somewhat	, -
Dislike it a lot	•

^{*}The concept statement shown to respondents is reprinted on Page 14.

Product Reaction*	Total Sample
	(50)
Like it a lot	42% 54 } 96%
Like it somewhat	54
Indifferent	•
Dislike it somewhat	4
Dislike it a lot	•

*All prototypes, collectively.

Price expectations for the new gun are at about the \$180 level (median). Purchase interest (definitely or probably would buy) approaches two-thirds of the sample. Both anticipated price and definite purchase interest are stronger among the bolt action segment.

If the new entry can be kept at or near the anticipated price of \$180 -- or in any event, under \$200 -- there wouldn't appear to be too much risk of cannibalizing the comparatively higher quality, higher priced Model 700. Rather it is the Model 788 that might present consumers with a closer choice. But the research results strongly suggest that, on balance, whatever sales might come at the expense of the 788, these would be more than offset by "additional gun" purchases (i.e., as a "walking gun," a "starter" gun for a child, a gun for a woman, etc.) versus "instead of" type purchases...as well as by an appreciable amount of entirely new business coming from the lever action segment.

It is our opinion, based on this research, that the new product need not, and probably should not, be presented specifically as a "carbine," because of the connotations of that among hunters: While it is true a carbine is perceived as being a smaller and lighter weight rifle, it is also thought of as having shorter range capabilities and less accuracy. We feel this gun should be presented as being "the best of both worlds" -- that is, a smaller, lighter weight gun (as in many lever action offerings) that offers the better performance characteristics of a bolt action gun, (via higher velocity cartridges).

What the new offering should be called is properly a matter for advertising and other creative development. However, in keeping with the general idea of communicating "the best of both worlds," one possible direction (given here for illustrative purposes only) might be, say, "bolt action brush gun."

Because of the mixed reactions greeting various different combinations of functional and aesthetic features of the prototypes, we feel that a "composite" gun, combining different features of several of the guns, would be best.

This composite gun would have a rounded fore-end contour design similar to Model V, rather than a schnabel fore-end, and would accommodate studs, for which there is an over-whelming preference (vs. barrel bands). It would have the grip design of Model T; and because of an only slight consumer preference for a grip cap, probably should be offered without

that feature (and thus without whatever price increment the grip cap would entail).

The recoil pad of Model M is favored, and could be adopted with reasonable confidence, though Models V, S, and R would likely also be acceptable.

Checkering is overwhelmingly preferred, with some slight favor for Model Q which has the checkering all around the fore-end. It appears that checkering (unlike such features as grip cap, bolt jeweling, or front bead color) is important enough to consumers to support a price increment. Pressed checkering is preferable to no checkering, but would not support as high a price increment as cut checkering.

Walnut is the preferred wood with Model V being the highly favored color and (non-)gloss level. A straight, not dog-legged, bolt handle contour with a knurled knob (Model V) is significantly more popular, as is a non-blued, jeweled bolt body.

After much discussion, the safety type of Model S (2-position safety with a separate push button bolt release mechanism), located on the side, seems to win on the basis that it has the advantages of all or any of the other safety types, without the disadvantages.

INTRODUCTION

This research was undertaken to provide an initial (qualitative) assessment of the market appeal for a new bolt action carbine style center fire rifle, as well as guidelines for its optimal positioning; that is, its "reason for being," in relation to consumers' hunting lifestyles and gun orientations, on the one hand, and to pertinent existing products, on the other.

The positioning issue both affects and is itself affected by the aesthetic and functional featurization elements that have been variously incorporated into six prototypes. And it is a major objective of this research to address and interrelate both sides of the "equation" -- that is:

- evaluate the market appeal and establish the best possible positioning for the new gun;
- determine what combination of test features best supports and reinforces that optimal positioning.

Research Method

The findings and interpretations in this report are derived from five consumer group discussions, in the course of which participants discussed the new gun idea from many different perspectives. Discussion within the groups first explored participants' general orientations to hunting, and in particular with lever and bolt action center fire rifles. Respondents were then presented with, and discussed, the new gun concept. Subsequent discussion focused in on the six prototypes, with their different combinations of functional and aesthetic elements, in order to assess consumers' perceived benefits, specific likes, dislikes, and expectations regarding use, users, price, and purchase intent. Following discussion and "hands on" examination of the prototypes (and four as-marketed guns included for purposes of comparison -- Remington Models 700 and 788, and Winchester Models 94 and 70), respondents rated and ranked the test designs on all key issues according to their preferences.

Sample and Fieldwork

The total sample consisted of 50 participants in five groups, and was about equally divided between men whose center fire rifle hunting is only or mainly with bolt action (48%) versus only or mainly with lever action (52%),* and collectively representing a wide range of socio-economic characteristics.

The sample representation for the three cities in the study is:

^{*}Two "pure" groups of lever action users, and three mixed groups were conducted.

- 24 consumers in two groups in Houston, Texas
- 11 consumers in one group in Atlanta, Georgia
- 15 consumers in two groups in Detroit, Michigan

* * *

The usual cautions for small-scale, group session research should be noted here, especially when comparing sub-segments. In this connection, note also that, both here and in the tabulations, raw numbers have been converted to percentages and rating scores only for purposes of analytic and editorial convenience; that is, in order to indicate more easily the direction, not the projectability, of the results. Nevertheless, as it turns out in this case, the results on most issues are fairly clear-cut.

* * *

A more detailed demographic breakdown of the sample, as well as all the statistical tabular data drawn from respondents' ratings of the test models, will be found in the Appendix section of this report.

GENERAL ATTITUDES AND PRACTICES

Beyond the few who have built-in, unchangeable, perceived preferences for one type gun or the other, respondents in all three regions, regardless of being bolt action or lever action users, are pretty much in agreement as far as their general attitudes and orientations to lever and bolt action center fire rifles are concerned.

Lever action center fire rifles are perceived by consumers to be lighter weight, therefore easier to handle, with greater portability and maneuverability:

"I have a Winchester 94 (lever) and it is lighter than my Murray Hill bolt action by at least 2 lbs. I find it easier to handle and use."
"In briars I'd use a lever for

portability."

They are considered walking and stalking guns, best suited for brush hunting and woods because they won't get tangled in the brush as easily. In addition, they are seen as having shorter range capabilities, the result of operating under lower pressure, producing a slower bullet; and as having less latitude for cartridge capacities:

"The biggest advantages of a lever are its lightness and maneuverability and it won't get tangled in the brush and briars."

The majority of the respondents feel that they can operate a lever action rifle faster, thereby being able to get the second shot off faster:

"I prefer a lever because it fires quicker and holds the aim better."

"I use a lever because it fires more rapidly without losing its target."

"A bolt action takes more time to get the second shot off."

"Bolts are notoriously slow."

There is a definite John Wayne/"Rifleman" type mystique about a lever action rifle which many attribute its popularity to:

"When you were a kid you'd always see John Wayne using a lever action rifle."

"Cowboy movies when you were young definitely stick with you."

Consumers find bolt action center fire rifles to be more accurate and to have longer range capabilities, due to the higher-velocity, higher energy cartridges they can handle, the greater range and accuracy of its cartridges. Because it is a heavier and more cumbersome gun than the lever action, it is predominantly considered best suited for wide, open country and greater (shooting, not walking) distances in contrast to the brush:

"I enjoyed my 30-30 lever action rifle but the range capacities made me change."

"You'll never find a really high caliber like a 7mm or a 388 Winchester in a lever action gun - only a bolt."

"If they could make a lever action as accurate as a bolt it would sell."

"Bolt action is stronger, more rigid because the breech and barrel is manufactured in one piece."

In a minority of the cases, opinion differs, usually on specific issues concerning one type action as compared to the other, most likely based on a respondent's particular built-in bias in favor of the type he uses. The following quotes illustrate some of these:

"My 243 lever will shoot just as far and just as accurate as a bolt."

"My lever is accurate. Accuracy really depends on who's operating it - whether it be a lever or bolt."

"I think a lever is just as reliable as a bolt and more so than an automatic."

"I don't think a bolt can shoot longer ranges with better accuracy."

"With a given caliber and barrel length, the range of a bolt and lever would be the same." Respondents also mention that their gun choice sometimes depends on a particular personal preference which may be based on a physical impairment such as sight...

> "I'm blind on the right side and to me a bolt is very clumsy on the left side a lever is better for me."

...or a special concern such as safety and misfiring...

"I have a Savage 99 I bought in 1950-51 and I've shot 5 boxes of shells a year and it's never misfired. You can't do better than that."

...or a particular feel or style of hunting...

"I shoot a lever action for a totally different reason. I like the hammer and I can tell right away it is off. It's a personal preference with me."

"A model 88 has a 2½ inch spread which takes the gun off the game every time you crank it whereas a good hunter who shoots with a bolt won't take it off the game."

"A lever action lends itself to hunting on a horse whereas with a bolt it's harder to do."

"It depends which type you are more familiar with."

"To me its all subjective personal preference. I just
like using a bolt action better."

. Carbine/"Carbine-ness"

The term carbine is found to denote principally one idea shortness in barrel length. Carbines are generally, but not always, thought of as being about 2 inches shorter than a regulation sized rifle, thereby making them lighter in weight. The consensus of opinion perceives carbines as mainly or strictly lever action rifles and, with their shortness of length, contributing to the lever action's advantages of lightweight, portable, and easier to handle and maneuver, making it an excellent gun for brush and woods hunting. However, as with most lever action rifles, it also has the disadvantages of shorter range capabilities and less accuracy. A majority of the sample feel that even more range and accuracy are sacrificed when compared to a regular lever action because of these lost 2 inches. Range expectations of a carbine produce a mixed reaction from 50 yards to over 100 yards. The following summarize the general attitudes toward carbines:

"Carbines are easier to use in brush, which is a very real issue here (Atlanta)."

"It's a great walking gun especially through briar brush."

"A carbine is a short gun designed to be carried on horseback."

"A carbine is a great short barrel brush gun. It won't get tangled as easily." "The shorter barrel length affects its range and accuracy. A carbine is accurate up to a certain range."

"Accuracy is a function of range."

"Because of its shorter barrel length there is a loss of velocity because it's not holding in pressure. This lower velocity means less range and less accuracy."

Several men mention that, because of its smaller size and lightweight, a carbine makes a perfect "starter" gun for their sons and/or wife:

"I have 3 sons and I have to buy each of their first shotgun and rifle. I bought all carbines to start with. Psychologically it is easier for them."

"I bought my wife a carbine because it is lighter and easier for her to handle."

CONCEPT REACTIONS

The following concept was presented to the sample:

As you know, for many years hunters have had a choice among several different types of operating actions where rifles are concerned -- two of the most popular being lever action and bolt action. However, there are few, if any, guns on the market that can offer a combination of the advantages of both these types of guns -- that is, a smaller, lighter weight gun that offers the better performance characteristics of a bolt action gun.

Now, a leading gun manufacturer has developed a new concept in the center fire rifle category -- a bolt action gun scaled down to a smaller size, but one that can still accommodate the newer, high velocity cartridges. This new gun offers the "knockabout" convenience and portability that comes with smaller size and lighter weight -- qualities that have long been available in lever action -- but it offers them in a bolt action gun.

You get the "best of both worlds" in this new, high quality center fire rifle -- the convenience of smaller size and lighter weight (not just a "sawed-off" barrel, but carefully designed and proportioned overall), plus the opportunity to use the newer, high velocity cartridges as well as the other performance advantages of bolt action.

Initial reactions to the concept, prior to seeing any prototypes, are very favorable: 80% of the sample state they like it a lot or somewhat -- based directly on the intended conceptual merits of bolt action performance in a smaller, lighter gun. The degree and quality of concept acceptance seems to be somewhat higher in Detroit and Atlanta, and among bolt action users. The remaining 20% of the sample are indifferent to the concept as opposed to overtly negative.

Respondents readily accept the idea because this new product offers them "the best of both worlds." The majority of men (including lever action users) would like a light weight gun but do not want to sacrifice the range and accuracy of a bolt. This finally offers them an alternative:

"I'd like to see this - lightweight and a bolt with high velocity. I don't care how light a gun is, it gets heavy carrying it all day."

"I love the idea. You never know in the beginning of the day what you'll need by the end. A lever is a disadvantage in this aspect."

"If my accuracy wouldn't decrease with the light weight it would be great. I only switched due to the range before."

"If you are in the market for a more maneuverable gun, this is it."

"Weight really matters to me."

"This gun would be ideal for the brush here in Michigan."

7

"To me a bolt action is safer than a lever for my son. This would be perfect."

Only a few respondents in the sample make a contrast between this new gun concept and Remington's previous Model 600, which they speak favorably of:

"This is a remarketing of a Remington 600. I've shot one and I'd like to have one."

"This is similar to the Remington 600 which was great. I'm looking for something like that."

"There's one on the market already - a Remington 600. Well actually it's discontinued now. It was recalled because of an accident with a 15 year old boy who violated nine basic gun handling rules."

Another advantage that hunters perceive in this gun is its ability to accommodate a scope, which a Model 94 cannot do without a side mount. This seems to be a very important issue with a good percentage of the sample:

"In this area (Atlanta) you need a scope to see through the brush and thicket, trying to get a piece of the deer. This is a definite advantage of this new gun."

"Just about anyone going in the woods today will use a scope."

"When you get old enough where you can't see the front sight or the range you are shooting, you will learn to love a scope. It becomes a necessity."

The small percentage who do not accept the concept initially raise doubts about the ability to make such a gun that would have the advantages of both lever and bolt action. Several men seem worried or doubt the ability of a shorter barrel length to be able to handle high velocity cartridges efficiently and accurately:

"How can you get as high a velocity out of a shorter barrel as with a long barrel?"

"I don't believe a high velocity will come out of this gun and be accurate."

"High velocity cartridges depend on barrel length for efficiency."

Other negative reactions are a result of strong personal preferences - either for a particular type gun that they use and don't want to change or for a particular type of hunting:

"I'm sold on my lever. I'm not a very good hunter but my gun has killed anything (deer) it has hit. I'd never change to a bolt."

"I don't like too lightweight a gun. I like something there to swing."

"Not for me. I'm strictly a long bolt action user and I hunt accordingly. I'm used to the inconvenience of weight."

"Good idea for someone who hunts long ranges. Not me - I hunt under 50 yards." Some men seem concerned about the added recoil and muzzle blast:

"I think with lighter guns you feel the recoil more. I prefer heavier guns."

"You wouldn't be able to hear for 3 days."

"I don't like the muzzle blast of short barrel guns."

When respondents are asked which type action users would find this gun more appealing, about two-thirds of the sample agree that bolt action users would. The remainder either feel it would be more appealing to lever action users or to both equally.

In the discussions, price expectations vary, ranging from a low of \$160 to a high of \$300. This concept is perceived to be more expensive in Detroit, falling in the \$200 - \$225 range, whereas Atlanta and Houston are somewhat lower, around \$185.

PROTOTYPE REACTIONS

Respondents' first exposure to the six prototypes produces a mixture of spontaneous reactions. Three of the five groups find the models shorter than they expected. A large percentage recognize them right away to be Remington because of the bolt design and the checkering on two of the models. Many find them to be pretty much what they had expected. Others are surprised about the small stock and feel it would be more advantageous for smaller people (small men, women, children), while many state it would be perfect for themselves. Several respondents consider it not in line with the quality of the Remington 700, but rather closer to that of a lever or a lever carbine.

Yet, with all those initial pros and cons, consumers' rated reactions to the product -- that is, to the six prototypes collectively, before discussion of particular feature differences -- is even more favorable than at the concept level. Acceptance, in fact, is virtually unanimous with 96% liking it a lot or somewhat, and with top box approval ("like it a lot") appreciably higher now than at the concept level for the total sample, and nearly double for bolt action users (up from 33% to 63%).

Group discussions then centered on the six prototypes, with their different combinations of functional and aesthetic elements. Statistics for these issues -- compiled on the basis of respondents' ratings and rankings at the end of the group session -- can be found in the Appendix.

Studs Versus Barrel Bands and Fore-end Contour Design
These two issues are interrelated because of the fact that
a schnabel design, due to its shape, can only accept barrel
bands versus a regular fore-end contour design which can
accomodate studs. This fact clearly affects the preference
of the fore-end design. More than half of the sample in
discussion find the schnabel design (Models Q and S) appealing both aesthetically and functionally. However, because
of the overwhelming strong preference for studs (Models T
and R) versus barrel bands (Models Q and S) and hunters'
refusal to give up studs for the schnabel, they change their

preference to the regular fore-end contour design (72%) with

"I'm a little man and I have little hands. I like the feel of the schnabel but I sure wouldn't want barrel bands."

"If I couldn't have studs, I'd rather not have any-thing."

studs:

Model V fares extremely well, and because there is little or no difference in contour between T and V, we have to assume that the people who favor V don't want barrel bands or studs.

Grip Design and Grip Cap

- -

There is a clear preference for Model T grip design. The most extreme swept back design (Model V) does almost as well on "best" and "second best" mentions; however, a high "liked least" score nets it out as a not very close second. Many respondents perceive Model V as being harder to grip:

"Model V is more swept back and this makes it harder to squeeze with the open handed method of shooting."

"V is too short for my big hands, especially for gripping and carrying."

There is a marginal preference overall for a grip cap (60% vs. 40%). Atlanta has a strong preference for it (91%) whereas Detroit prefers no grip cap (80%). Most respondents feel this feature is strictly aesthetic, with no real bearing on performance:

"I like a grip cap - it adds a touch of class."

"It's nice but not really worth paying for."

"I don't really like it. It's not important to me. It has no bearing on the gun or its performance."

. Butt Pad

The recoil pad of Model M scores best, but with considerable bi-polarity (quite a few "liked least," mainly in Atlanta, but more "liked best," mainly in Houston):

"I like a recoil pad - you get more cushion and less recoil, kick."

"I like a recoil pad. I don't take fast shots at running deer."

"I wouldn't want a recoil pad or rubber pad it if would catch on my jacket."

The rubber butt pad on Model R, fairly popular in Houston, and the classic pad of Model V are tied for second, with the standard plastic plate of S, most popular in Atlanta, not far behind.

Checkering

Checkering is overwhelmingly preferred (84%) over no checkering. Not only do respondents consider it aesthetically more pleasing but they also consider it functionally more accommodating: it allows a better grip with no sticking, especially in wet weather:

"With checkering I can move my hand without sticking it gives a better grip."

"Checkering is good in wet or hot weather - you can get a better grip. It looks nicer too."

"I've never seen a high quality center fire rifle without checkering."

Although cut checkering (or "hand checkering," as some consumers call it) is preferred over pressed checkering, most would rather have the latter than no checkering at all:

"Pressed checkering doesn't have as sharp edges as cut, but it's better than nothing."

The majority of respondents acknowledge that they are willing to pay extra for checkering, with responses falling between the \$15.00 - \$20.00 range, or 10% of the price of the gun. They do feel, however, that machine or pressed checkering should be cheaper than cut checkering.

Of the two prototypes with checkering, Models T and Q, there is a preference, though not an overwhelming one, for Model Q -- the one whose checkering runs underneath the fore-end:

"This is the first one I've seen with checkering all the way around - I like it."

Wood Color

Model V, which is walnut, is clearly the conclusive favorite. The majority of the sample perceive walnut as the only good wood for a gun, especially any high quality gun:

"If it's not black walnut, to a real enthusiast, it's a low quality gun."

Others feel it's not so much the goodness of walnut but the badness of birch (Models Q, T, M and R). However, the tone and "flavor" of some of the responses on this issue suggest that consumers would pay less attention to it in the "real world."

.Wood Gloss

Model V, again, is overwhelmingly preferred, perhaps due in part to a "spillover" effect of its admired color. However, there is a strong case among consumers to support the preference for a non-gloss finish, as the following verbatims illustrate:

"A polyurethane finish gets scratched in the brush and it always needs to be polished."

"A high gloss looks nice but it's just not practical. It scratches too easily."

"A high gloss finish is made for target shooting. Nongloss is made for hunting."

The one high gloss model in the test (R) is widely liked, especially in Houston and among lever action users, but just as widely disliked, specifically in Atlanta and among bolt action users. There are few in the middle.

Front Bead

This issue does not seem to be too important to the respondends; many are indifferent to the question of color preference for the bead. However, there are a few isolated verbatims showing some minority preference for a gold or brass bead and some for a ball instead of a bead:

"I like a gold or brass bead that can be shined up. It's easier to clean and see."

"My preference is for a ball versus a bead. To me its easier to see."

"Most people with a bolt action gun put a scope on it anyway, so it really doesn't matter."

Bolt Handle Contour and Styling

Model V, which is straight, not dog-legged, with a knurled knob is the clear favorite among all areas and both lever and bolt action users. Respondents prefer the large, completely rounded, knurled ball because of its feel:

"I like V. It is swept back just a little bit and it has a nice big round knob on it and it is also checkered - which gives you a little bit of a grip."

Model T, which is straight like V but has a flat bolt handle is highly disliked across the board:

"Terrible - you can't get a hold of it."

Bolt Body Blueing

This feature is almost unanimously rejected (96%), for the reason that it will not last:

"It doesn't matter. It won't stay blue."

"I prefer a polished bolt body because the blueing will rub off."

Bolt Body Jeweling

Jeweling is preferred by a three to one margin, but probably would not support much of a price increment, if any. Cost reactions are mixed, with some men stating it should be standard on the gun, but a few others perhaps willing to

pay between \$5.00 and \$10.00 for it:

"If it's a good manufacturer it should be standard with the gun."

"I think it looks nice but wouldn't pay more than \$10.00 for it. \$5.00 is more reasonable."

"I prefer jeweling but I wouldn't pay extra for it."

Type of Safety

The 2-position safety with a separate bolt release mechanism is clearly approved (in the S version, though, not the M). In effect, it offers the advantages of any or all of the others, without the disadvantages:

"I don't like the 3-position safety -- there's more to go wrong."

"I prefer a separate release on the other side of the bolt away from the safety location. This would never foul up."

"I like the bolt release completely separate from the safety -- less complications."

Between these two 2-position safetys with separate bolt release mechanisms, Model S with the button type bolt release is preferred much more strongly than M. The "rocking lever" treatment of M is actually the least preferred safety (of any and all types) in the entire test:

"It's a brush catcher. and it takes (too) little pressure to release it."

Between the two types of conventional 2-position safetys, opinion is divided, with just a slight edge for the type in which the bolt is locked down on safe. Each type has its supporters, though.

Model V (bolt locked down on safe):

"I have three teenage boys and i don't want them to have any choices."

Model Q (bolt can be opened on safe):

"I don't think most people find it that important for the bolt to lock down -- as long as the safety is still on and it won't fire. That's the main thing. With Q you are able to load and unload with the safety on."

In addition to the personal safety aspects of the above viewpoints, there is some preference for the lock-down treatment
on grounds that it prevents accidental snagging and lifting
of the bolt on a twig, unbeknownst to the hunter, thus
possibly resulting in a missed opportunity.

There is some favor, as well, for the 3-position safety, but others feel it is too complicated -- just another thing to go wrong:

"I don't like the 3-position safety. There's more to go wrong. The simpler the better."

After a demonstration, however, several decided they like it:

"Maybe with a 3-position safety there is less of a possibility that the gun would go off when loading it." "When I'm hunting with lots of people getting in and out of a car, I don't want it to go off. The 3-position safety would avoid this."

However, with all the different choices, there is a clear consumer preference in this research for a safety that has a separate bolt release mechanism that lets you "have it your way," whatever that way may be.

Location of Safety

The shroud location, as on the Winchester Model 70 fares poorly. The side locations on the test products are much preferred, especially Model V. A few respondents mention preference for the Remington Model 700 location.

Overall Preference

Respondents clearly prefer Model V by far when asked about overall preference; and this is supported by their strong preferences for Model V's fore-end contour design, bolt handle contour and styling, wood color, wood gloss, and location of safety. However, not too much importance should be attached to this particular finding, since the more detailed results on features, as discussed herein, suggest that some sort of "composite" model is called for, drawn from favored aspects of the various prototypes.

Calibers

There is a wide range of opinion on what calibers respondents feel would be most appropriate for this new gun. About 50% of the sample feel either a .243 or .308 caliber is best suitable, while almost a quarter of the sample agree that a 30-30. 6mm or a 270 would be best.

Price Expectations

Anticipated prices* for the versions of the gun that respondents themselves have "designed," via their reactions and preferences regarding the various features at test, range from a low of \$125 to a high of \$265. There are two modal levels -- one at \$175 and another, smaller one at \$200. The median expectation is about \$180, with bolt action users a bit higher than lever action users, and the Detroit area higher than the other areas.

Purchase Intent

Overall, about two-thirds of the total sample express positive purchase intention ("definitely" or "probably" would buy) at their anticipated prices, with little difference (except in the top box) between those with higher versus lower anticipated prices. Overall, the "probablys" outnumber the "definitelys" by about two to one; but there is considerably more top box interest among bolt action users. Purchase intent is

^{*}Respondents were instructed to answer in terms of "suggested retail (list) price"; and, for purposes of comparison, were given the suggested retail (list) prices of the Remington Model 788 (\$175), Model 700 ADL (\$245) and Winchester Model 94 (\$140).

also higher in Atlanta (91%) and lowest in Houston (46%).

There is no total outright rejection ("definitely" would not buy) and moderate rejection ("probably" would not buy) is rare; most of the rest of the sample is in the "might or might not" category.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

APPENDIX

Table 1
Demographics of Sample

Area	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (25)	Bolt Action (24)
Houston Atlanta Detroit	48% 22 30	100%	100	-\$ - 100	58 \$ 27 60	423 73 40
Action						
Lever Bolt	52 % 48	58% 42	27 % 73	60% 40	100%	-% 100
Guns Owned	(49)	(23)	(11)	(15)	(25)	(24)
One Two Three Four Five Six Seven More than seven	18\$ 2 12 6 4 6 4 6 4	13% 4 13 9 4 4 13 40	-\$ 9 - 9 - 82	40% 13 7 13 27	243 4 16 4 8 4 8 32	133
Marital Status	(50)	(24)	(11)	(15)	(26)	(24)
Single Married Divorced/separa-	12 % 82	8 \$ 8 8	9 % 91	20\$ 67	19% 73	4 \$ 9 2
ted/widowed	б	4	-	13	8	4
Age of Respondent	(47)	(24)	(10)	(13)	(25)	(22)
Under 30 31 - 40 41 - 50 Over 50	30% 33 19 18	25% 41 21 13	40% 20 10 30	31 % 31 23 15	32 % 32 20 16	27% 37 18 18

(Cont'd.)

Table 1
Demograhics of Sample (Cont'd.)

Education	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (26)	Bolt Action (24)
High school or less Some college	14 % 40	8 % 38	18\$ 55	20 % 33	12% 46	17 % 33
College graduate or more	38	50	-	47	38	37
Technical/ trade school	8	4	27	-	4	13
Occupation	(50)	(24)	(11)	(15)	(26)	(24)
Professional/ managerial Sales/clerical Skilled worker Unskilled worker Retired/student	463 10 32 4 8	55* 4 29 8 4	36 % 9 36 - 19	40% 20 33 7	23% 15 42 8 12	71 \$ 4 21 4
Income	(50)	(24)	(11)	(15)	(26)	(24)
Under \$15,000 \$15,000 - \$19,999 \$20,000 - \$24,999 \$25,000 - \$29,999 Over \$30,000	14% 12 14 18 42	16 ⁸ 13 8 21 42	9% 18 9 27 37	13% 7 27 7 46	16% 15 19 19 31	13% 8 8 17 54
Family Members Who Hunt or Shoot	*(50)	(24)	(11)	(15)	(26)	(24)
Wife Son(s) Daughter(s) Brother(s) Father None	14% 30 6 10 8 48	17% 33 4 · 13 8 46	18% 36 18 9 9	7% 20 - 7 7 7	15% 38 4 19 15 35	13 [‡] 21 8 - 63

^{*}Multiple response

Table 2
Concept Acceptance

	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (25)	Bolt Action (24)
Like it a lot	30\$) {80\$	25 \$9	27¶ 91§	40 %) 87%	279	339
Like it somewhat	50	46 5"	64 5	47	46 }	54 5
Indifferent	20	29	9	13	27	13
Dislike it some- what	•	-	•	-	-	-
Dislike it a lot	•	-	-	•	-	-

Table 3
Model Acceptance

	Total Samble (50)	Houston (24)	Atlanta (II)	Detroit (15)	Lever Action (26)	Bolt Action (24)
Like it a lot	423) (968	38%) (92%	45%) {100%	473)	23%)	63\$) 96\$
Like it somewhat	S4 }	54 } 23	55)1003	100% 53	73 504	33 504
Indifferent	-	-	-	-	-	-
Dislike it some- what	4	8	•	-	4	4
Dislike it a lot	-	-	-	-	-	- •

Table 4 Specific Model Reactions*

	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (26)	Bolt Action (24)
Lightweight with bolt action/best of both worlds	44%	38\$	45%	\$3\$	31%	58%
Smaller in size/ shorter (posi- tive)	26	25	27	27	23	29
Easy to handle/ to carry/to use/ faster/better handling and maneuverability	16	13	9	27	15	17
Offers high calibers in a carbine style gun	12	8	9	20	8	17
Good for brush country/small gun	12	21	9	-	15	3
Good for women/ children/small people	12	25	•	-	12	13
Nice appearance/ design/eye appeal	. 10	4	18	13	12	8
New/different	8	8	18	-	12	4
Compact/all around rifle	L 6	4	9	7	4	8
A good marketable product	4	-	9	7	4	4
Kicking/recoil power stronger	4	8	-	-	8	-
Looks too short/ too small	4	8	-	-	-	8
Other**	12	25	18	7	12	13
No reason/answer	6	-	18	7	-	-

^{*}Multiple response

**Other includes: feels comfortable/good safety features/action seems simple and easy/good compromise buy/full accuracy for distance hunters/ likes all Remington guns,

Table 5
Appropriate Calibers for Model

Calibers	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (26)	Bolt Action (24)
. 243	56%	713	64%	278	46%	67\$
.308	46	42	73	33	42	50
30-30	24	25	18	27	31	17
6 mm	24	21	55	7	15	33
. 270	22	2.5	27	13	23	21
30-06	20	8	45	20	27	13
22-250	10	13	9	7	8	13
30 cal.	8	4	9	13	4	13
.222	6	8	-	7	4	8
7 mm	4	8	-	•	4	4
35	4	-	9	7	8	-
.306	4	-	•	13	4	4
.300	4	-	•	13	8	-
Other*	20	25	9	20	19	21

*Other includes: 22 Hornet/.223/250/.22 mag/.375 Win./.25/.223 to .30/Rem 700/44 mag/350 mag

Table 6

Overall Preference = Net Scores*

Model	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (25)	Bolt Action (24)
V	57	22	15	20	,29	28
Q	7	7	-	-	-	7
S	4	6	3	- 5	Z	2
R	2	-4	-	6	2	-
М	-1	4	-2	-3	-2	1
T	-12	-8	-3	-1	-3	-9
			•		1.	

^{*}On this and on the next nine tables, net scores are derived from assigning two points for each "best" response; one point for each "second best" response and deducting two points for each "least" response.

Table 7

Fore-End Contour Design = Net Scores

Model	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (26)	Bolt Action (24)	
V	37	5	17	15	16	21	
V	37	.	1/	7.3	10		
T	32	9	9	14	14	18	
R	9	4	3	2	5	4	
М .	4	2	1	1	4	-	
Q	•	12	-9	-3	5	- 5	
S	-29	- 5	-12	-12	-12	-17	

Table 8

Sling Straps and Swivel Mounts
(Studs/Barrel Bands) = Net Scores

Model	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (25)	Bolt Action (24)
R	45	2\$	8	12	25	20
T	44	16	12	22	22	23
М	4 ,	8	3	-7	-3	7
V	3	-4	2	5	2	1
S	-22	-4	-8	-10	-11	-11
-Q	-22	-9	-5	-7	-9	-13

Table 9

Bolt Handle - Contour and Styling = Net Scores

Model	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (25)	Bolt Action (24)
A	71	32	22	17	33	38
Q	20	11	1	8	12	8
s	16	5	2	9	1	6
R	•	-1	· · -1	2		3
М	-2	-2	-	-	-	-4
T	-52	-20	-12	-20	-27	-25

Table 10

Grip Design = Net Scores

Model	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (26)	Bolt Action (24)
T	30	13	12	5	13	17
Λ	12	10	3	-1	12	-
Q	8	2	6	-	-2	10
S	、3	3	-6	6	4	1
М	3	1	1	1	5	-2
R	1	-3	-1	5	1	•
		i			i	

Table 11

Butt Pad = Net Scores

Model Model	Total Sample (50)	Houston (24)	Atlanta (II)	Detroit (15)	Lever Action (26)	Bolt Action (24)
М	18	31	-14	1	16	2
V	13	-4	8	9	10	3
S	10	-22	20	12	-	10
R	9	21	-4	-8	5	4
T	4	4	2	- 2	-1	5
Q	-1	-5	-	4	-4	3

Table 12
Wood Color = Net Scores

Mode1	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (25)	Bolt Action (24)
V	47	20	8	19	31	16
S	6	5	6	- 5	-1	7
R	5	7	-4	2	-1	6
T	3	-4	2	5	-2	5
M	•	-	•	-	4	-4
Q	-9	-5	•	-4	-4	- S

Table 13
Wood Gloss Level = Net Scores

Model_	Total Sample (50)	Houston (24)	Atlanta (II)	Detroit (15)	Lever Action (25)	Bolt Action (24)
v	36	7	13	16	20	16
S	14	5	7	2	5	9
М	3	5	2	-4	2	1
R	3	18	-16	1	10	-7
T	2	-6	3	5	-4	6
Q	-6	-5	1	-2	-5	-1

Table 14

Type of Safety = Net Scores

Model_	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (26)	Bolt Action (24)
S	33	14	15	4	16	17
ν	17	9	2	6	5	12
Q	11	1	-	10	-	11
R	6	12	- 5	-1	6	-
Winchester	70 6	-	6	-	1	5
T	-1	1	-	-2	. 4	-5
М	-17	-12	-4	-1	-3	-14

Table 15

Location of Safety = Net Scores

Mode1	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (26)	Bolt Action (24)
Λ	34	16	7	11	14	20
R	15	10	1	4	1	14
S	10	10	8	-8	3	7
Q	16	9	- 2	9	11	5
М	-7	-5	•	-4	1	-8
T	-2	-5	-	3	2	-4
Winchester	70 -7	-10	2	1	-6	-1

Table 16
Checkering*

Model_	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (26)	Bolt Action (24)
Q	56%	58%	73%	40%	62\$	50%
T	42	38	27	60	38	46
No choice	2	4	•	-	-	4

^{*}In the case of this characteristic, only two models had a checkering feature, therefore, the net scores were not meaningful. Percentages in this table refer to the number of people who felt that model was the better of the two.

Table 17
Feature Preferences

	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (26)	Bolt Action (24)
Prefer grip cap Prefer no grip	58\$	67%	91%	20%	58%	58\$
cap No answer	40 2	33	9	80	38 4	42
Prefer checker- ing Prefer no	84%	87%	100%	673	85%	83%
checkering	16	13	•	33	15	17
Prefer regular fore-end con- tour Prefer schnabel	72\$	58 \$	100%	73%	62%	834
fore-end contour	28	42	-	27	38	17
Prefer blued bolt body Prefer non-blued	4 %	4 %	- \$	7\$	4 %	4 %
bolt body	96	96	100	93	96	96
Prefer jeweled bolt body Prefer non-	76%	75%	100%	60%	73%	79\$
jeweled bolt body	24	25	-	40	27	21

Table 18
Price Expectations

	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Lever Action (26)	Bolt Action (24)
Median	\$180.00	\$175.00	\$180.00	\$200.00	\$180.00	\$187.50
Mode	\$175.00	\$175.00	\$175.00	\$200.00	\$175.00	\$175.00
Range	\$125.00 to \$265.00	\$125.00 to \$245.50	\$160.00 to \$265.00	\$140.00 to \$250.00	\$125.00 to \$245.00	\$150.00 to \$265.00

Table 19
Purchase Intent

	Total Sample (50)	Houston (24)	Atlanta (11)	Detroit (15)	Action (26)	Bolt Action (24)
Definitely would buy	20%)	21%)	27%)	13%)	123	29\$
Probably would buy	44 }64%	25 }46	\$ \}919 64 \}	60	50 }6	29% 2% 37 66%
Might or might not buy	22	33	-	20	26	17
Probably would not buy	14	21	9	7	14	17
Definitely would not buy	-	-	•	-	-	•

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Table 20
Purchase Intent at Different Price Expectation Levels

	Total Sample (50)			Lever Action (26)			Bolt Action (24)		
	\$175 and Under (22)	\$180 to \$200 (19)	Over \$200 (9)	\$175 and <u>Under</u> (13)	\$180 to \$200 (10)	Over \$200 (3)	\$175 and Under (9)	\$180 to \$200 (9)	0ver \$200 (6)
Definitely would	1 23 %) 63:	26 \$) 63	5 5 -\$}	571 ⁸¹ 541	²⁰ \$} 70	· - i)	458) 788	331 50	5 1 - 9 671
Probably would buy	40	37	67	571 81 541 46	50	67	33	23	67
Might or might not buy	23	21	22	31	30	-	11	11	33
Probably would not buy	14	16	11	15	-	33	11	33	-
Definitely would not buy	l -	_	-	-	-	-	_	_	-

RD-49-8

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Xc: C.B. Workman W.Forson



PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

ILLon, New York

May 8,

1979

TO:

PAUL HOLMBERG - Bridgeport

FROM:

J. W. BROOKS

ion Zil

BOLT ACTION CARBINE

The following list contains the items discussed during our meeting last Thursday:

Stock

- Rounded tip like V
- 2. Grip like T or M
- 3. Butt plate like S
- 4. Birch wood
- 5. Pressed checkering like pattern on T
- 6. Color like M
- 7. RK-W gloss finish
- 8. Top profile like R not V

Other Items

- 9. Stamped hinged floor plate
- 10. M/700 front & rear sights (no hood). Check old M '700 sights.
- 11. Bolt handle M/700 on V
- 12. Bolt body bright
- 13. Barrel bracket like M or T
- 14. Swivel studs on stock
- 15. Metal finish like on present model
- 16. Stamped steel follower M/600
- 17. Calibers 222, 6mm, 243, 308, 7mm-08
- 18. Model 700 Fire Control without bolt lock
- 19. Boit Lock separate from fire control to be added

depending on Development Schedule

We are in the process of having a stock made for this model with the proposed shape. We will use the Model 700 Trigger Assembly and Bolt Handle on the short Carbine receiver. By using this Trigger Assembly we must move the receiver forward to get the preferred grip shape. As we mentioned at the time, this will leave an extra amount of open inletting behind the receiver. This may be improved by reshaping the receiver and blending of the stock at this point. We will contact you when we have a stock finished.

If you have any questions concerning the above list, please contact us.

TW 3:T Thion Research Division

EXHIBIT NO. 21 GUN SERIAL NUMBER A6890062

STOCK

BIRCH WOOD
VINYL FINISH
CUT CHECKERING
CLASSIC STYLING
INLET FOR TRIGGER GUARD
FRONT AND REAR SWIVEL STUDS

BARRELED ACTION

18½ INCH BARREL LENGTH
MODEL 700 BARREL BRACKET
ROUNDED RECEIVER TANG SIMILAR TO MODEL 700
MODEL 700 BOLT HANDLE
MODEL 700 TRIGGER HOUSING ASSEMBLY
MODEL 700 TYPE BOLT RELEASE
MODEL 700 TYPE SAFETY ASSEMBLY
NEW BOLT LOCK ON BOLT PLUG
NEW STAMPED FLOOR PLATE ASSEMBLY
MODEL 700 FRONT SIGHT BASE
MODEL 700 BDL FRONT SIGHT HOOD
MODEL 700 REAR SIGHT ASSEMBLY



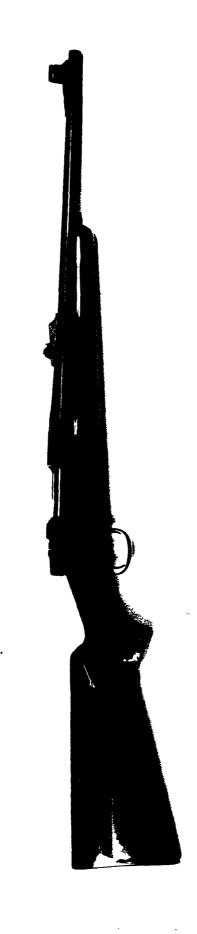
EXHIBIT NO 22 GUN SERIAL NUMBER 6226223

STOCK

BIRCH WOOD
GLOSSY FINISH - MODEL 3
CUT CHECKERING
CLASSIC STYLING
INLET FOR TRIGGER GUARD

BARRELED ACTION

18½ INCH BARREL LENGTH
MODEL 700 BARREL BRACKET
ROUNDED RECEIVER TANG SIMILAR TO MODEL 700
MODEL 700 BOLT HANDLE
MODEL 700 TYPE BOLT RELEASE
MODEL 700 TYPE SAFETY ASSEMBLY
NEW STAMPED FLOOR PLATE ASSEMBLY
MODEL 700 BDL FRONT SIGHT HOOD
MODEL 700 REAR SIGHT ASSEMBLY



REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE





Xc: C.B. Workman

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

MEMORANDUM OF MEETING

NEW BOLT ACTION RIFLE

November 15, 1979

PRESENT:

L. G. Wilke

D. E. Bullis

L. B. Bosquet

J.W. Brooks

D.D. Parker

P.G. Johnson

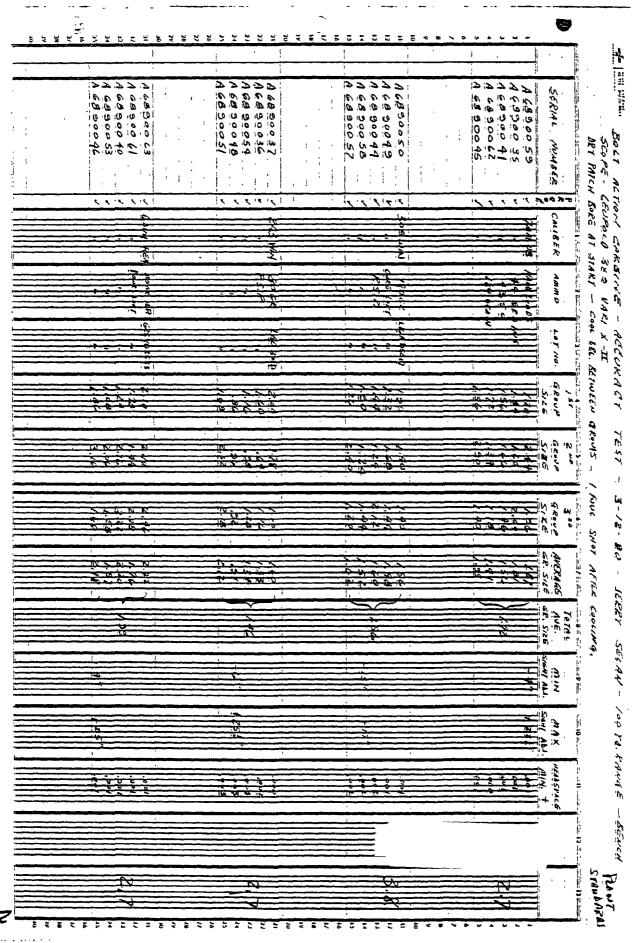
K. F. Blumer

This meeting was held so Process Engineering could look at the first proposed model and suggest problem areas of manufacture that should be reviewed before final prototype models are made.

- The checkering pattern is large and close to top of stock and bottom of grip. It may go over radius of grip and fore end too far for custom checkering.
- 2. The top edge of stock along barrel and receiver should be approx. .050 min. width to meet present manufacturing processes.
- 3. Define tang area with more detail to establish safety button clearance with stock, safety arm clearance to prevent breakthru during sanding, and possible machining operation to help improve blend sanding of tang area.
- 4. It would be nice to have rear grip end radius as close as possible to radius on bottom of stock at rear of grip for machining purposes.
- 5. Can bolt handle cut be described so that it can be put on at inletter rather than with Z-arm router.
- 6. Inletting of floor plate should have as many common radii as possible and as large as possible.
- 7. Screw holes in butt end of stock should be same as in M600 to use same fixtures if possible.
- 8. Pitch should be same as M600 to use same fixtures if possible.

TWB:T

Ilion Research Division



REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE





"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"____

Ilion, New York May 12, 1980

TO:

W. H. FORSON

FROM:

J. W. BROOKS

SUBJECT:

BOLT ACTION CARBINE IN 7mm-08 CALIBER - FIELD TEST

Per our telephone conversation last week, these models are still on schedule for field testing by June 1. We will need authorization for where and to whom these rifles should be sent. We can use an altered Model 700 shipping carton for shipping.

We will not be providing ammunition with the rifles.

We will notify you when the rifles are ready to ship.

If you have further questions, please let us hear from you. In the meantime we will keep you informed of our progress.

JWB:T

Firearms Research Division

						-
	SERIAL	CALIBER	STOCK	WEIGHT	RETURNED	WEIGHT
	NUMBER		FINISH			OF STOCK
						\$ 8077 PLATE
J. G. WILLIAMS	86226240	7MM-08	RK	7420	3-12-81	
		<u> </u>				
J.E. PREISER	B 622 6246	4 4 1	RK	74150	3-12-51	
			$\parallel \parallel $			
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xc: R.L. Hall
H.K. Boyle
J.P. Linda
C.B. Workman
J.W. Brooks
L.B. Bosquet

Est. File #4152

May 27, 1980

G.D. Campbell

Bolt Action Carbine Rifles

Estimated 1980 factory cost for the walnut stocked version of the Bolt Action Carbine rifle has been developed. The processing of this stock parallels that of the Model 700 Classic. Specifications will include machine cut checkering and M/III finish with no grip cap or fore-end tip.

Illustrated on the first attached sheet is the 1980 full book factory costs of both the birch and walnut versions of the Bolt Action Carbine rifle. For comparison, the cost of an M/700 ADL and Mohawk 600 are also presented.

The second attachment compares the cost differences between the component assemblies of the aforementioned guns on an incremental cost basis. The incremental analysis will provide Research and Process Engineering a more definitive structural review of the proposed products.

Please see the attachments.

J.C. Hutton, Superintendent Industrial Engineering Section

By: S.M. Morris

SMM/kc Attach. (2) POLT ACTION CARRINE - 1980 FULL BOOK

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xc: 3.L. Hall
H.X. Boyle
J.P. Linde
C.B. Workman
J.W. Brooks
L.B. Bosquet

Est. File #4152

June 3, 1980

G.D. Campbell

Bolt Action Carbine Rifles

Following our submission of the 1980 factory costs for the (2) versions of the Bolt Action Carbine Rifle, a request for suggested 1980 retail prices was forwarded. Accompanying this request was a Marketing directive to establish the retail prices using the current 1980 M/700 ADL and BDL factory margins. Respectively, these margins would be aligned to the birch and walnut versions of the B.A.C.

Please see the attached subdivision #3.

J.C. Hutton, Superintendent Industrial Engineering Section

1. C. Huitin

By: S.M. Morris

SM/kc Attached

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xc: R.L. Hall
H.K. Boyle
J.P. Linde
C.B. Workman
J.W. Brooks
L.B. Bosquet

Est. File #4152

June 16, 1980

G.D. Campbell

Bolt Action Carbine

A hi-spot cost analysis of a Bolt Action Carbine rifle with a birch stock and N/C cut checkering has been made. The processing of this stock was reviewed with Larry Wilke, and at that time it was decided to use M/III finish. The resulting 1980 factory cost for this version of gun would be \$112.51. Please see the attached comparison.

JC. Hutton, Superintendent Industrial Engineering Section

By: 3.M. Morris

SM/kc Attached

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BOLT STOP PLU & SPRING	24	241	24			
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xc: R.L. Hall
H.K. Boyle
J.P. Linde
C.B. Workman
J.W. Brooks
L.B. Bosquet

Est. #4152

July 9, 1980

G.D. Campbell

Bolt Action Carbine

The high spot cost analysis of the proposed Bolt Action Carbine rifle has been revised to include the following changes:

- *Substitute the M/600 Magazine Follower for the M/700 Magazine Follower (\$2.54 cost reduction).
- *Substitute the M/700 Package for the M/600 Package (\$.29 cost reduction).
- *Re-estimate the Walnut and Birch Stock with N/C cut checkering per processes supplied by PE&C (\$1.25 cost reduction for Walnut Stock; \$.62 cost increase for Birch Stock with N/C checkering).

Unit costs for the three options being considered are shown in the attached table. All costs are expressed in 1980 full book dollars. The proposed Bolt Latch mechanism is not included in these costs.

J.C. Hutton, Superintendent Industrial Engineering Section

By: T.R. Andrews

TRA/kc Attached

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xc: R.L. Hall
H.K. Boyle
J.P. Linde
C.B. Workman
J.W. Brooks
L.B. Bosquet
R.S. Swartz

Est. #4152

July 16, 1980

G.D. Campbell

Bolt Action Carbine - Bolt Lock Mechanism

An evaluation of the proposed bolt lock mechanism for the Bolt Action Carbine indicates it will result in \$3.99 in additional cost on a 1980 full book basis. The additional costs are summarized by component in the attached table.

£C. Hutton, Superintendent Industrial Engineering Section

By: T.R. Andrews

TRA/kc Attached RD-49 REV. 4-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



CC: C. B. WORKMAN (No Attach.)

J. S. MARTIN

J. W. BROOKS
D. E. BULLIS

EXHIBIT 32

BRIDGEPORT, CONN.

MAY 14, 1980

KURT BLUMER

SUBJECT: FLOOR PLATE LATCH FOR BOLT ACTION CARBINE WITH

STAMPED TRIGGER GUARD

I have made a patent search on the latch shown in Drawings C-91840, '841, '843, '850; B-91845, '848; and an unnumbered assembly drawing you signed on April 1. Nothing has been found that could raise any risk of patent infringement if Remington adopts this design.

There are any number of patents showing examples of magazine or floor plate latches of the type having a pivot pin mounted in the receiver, in the magazine, or in the trigger guard. None of these is any more similar to your design than the Model 700 floor plate latch you showed me. As one example generally illustrating the type of designs shown in prior patents, I am enclosing a copy of Patent 667,856 - Wagner.

On the basis of this search, it appears to me that we may be able to secure some patent protection on the new latch, and I will undertake to prepare an application.

W. L. Ericson
WILLIAM L. ERICSON
SENIOR PATENT COUNSEL

WLE/dt Attach.

D-240

RO-40 REV. 4-10 FXPIPIT 33

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

cc: J. E. Preiser P. H. Holmberg

W. J. Weeks

Bridgeport, CT October 14, 1980

TO:

W. H. FORSON

FROM:

J. H. CHAMBERS

SUBJECT:

BOLT ACTION CARBINE FIELD TEST

During the middle of June, field tests of a prototype bolt action carbine were held by Regional Managers and select A. O. Building personnel. All the test guns were chambered for the 7mm-08 caliber.

The testers were also sent a questionnaire which they were asked to fill out after they had a chance to fire the test gun.

While there were varied comments about the test gun, consensus centered around the following issues:

- The gun tested was "too heavy" for a carbine should be in the 6-1/2 lb. area.
- Stock was too "fat" not trim enough for saddle/scabbard gun.
- Barrel diameter should be reduced to improve aesthetics and reduce weight.
- Price should be at least \$20 below M/700ADL ideally equally between M/788 and M/700ADL.

Other comments mentioned frequently were:

- Bolt handle should be "turned in" more necessary for saddle gun.
- A walnut stock would be a big plus.
- This gun would fill void left by M/600.
- The floor plate is somewhat cheap looking resembles M/541.

Should you wish to read through the 15 completed questionnaires, just let me know.

JHC: hm ?

BOLT ACTION RIFLE QUESTIONNAIRE

7mm-08 Cal. Serial # 86226255

1.	What do you like about the new bolt action rifle?
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	Howar Free Pinne Sper Hen it like theo
	But I have a SHORT BIRECE POO PLANTING
2.	What do you dislike about this new gun?
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1/201	Reme To Exy To Mandary Received To
Willeking	Harry Overen - Successionary 6/2/23 DE Coss.
25 542743	How would you improve the consumer acceptance of this bolt
- Linear	action rifle?
	Botton Comme Wass (Warson Luntor Bittle
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4.	In terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line?
	Quine Promone Ever bloco (France)
	How I Sine a Course CHONOLON ANDREASE
5.	Given a \$210 suggested retail price for the M/788, a \$298 price for the M/700 ADL and a \$358 price for the M/700 BDL,
	where do you think the new gun would fit in our line from a price standpoint?
	BOTHER TON POR PER CONTENT 15 /MPROVEMENTS
	1.600.
	Continue

6.	Do you feel the gun's design is unique?
	Yes — - Answer Q7
	No Skip to Q8
7.	What do you think is unique about the gun you tested?
	· ,
8.	The gun you tested has an 18½" barrel. Would you prefer some other barrel length?
	Yes — - Answer Q9
	No Skip to Q10
9.	What barrel length would you prefer?
	Write barrel length here:
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy (
	Satin Dear Softwood To Tele
106.	If the gun were press checkered, would you prefer a glossy or satin finish?
	Glossy 💢
•	Satin
	Continued

				
How do you feel abou			•	
DESKU /s Fre	<u>6- Elicopp - 1</u>	FL HE) -7.	<u>=</u>
Director To 2	Longe Brek	(61670/	<u> </u>	4.47
Remoune Sellin	4 May Freeze	ex On	Fire	-
How would you rate characteristics and		ted on t	the fol	lowing
	Excellent	Good	Good	Fair
Contour of stock		X		
Weight				Y
Recoil	all inner the same			Y
Ease of Operation (SA) DATACOCTES Overall Quality	week more than	T.K. 15 S	20073. X	
Color of Stock				<u></u>
Metal Finish			X.	
Design of Checkering Pattern		X		وسنند البروب
Marsham da way bhin	k this rilfe wi			j nome lis ki

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

	Lung Weren East To Honor- Con Cin
	- Dir Love BUT STU MENEUTE: Beren A
5/	wrotes their Rover Town 20" RACKERS 1
1/2	Y RECOLUTE
_	does the word "carbine" mean to you?
5	YELF GALLER LIGHT WEIGHT EAST TO HE
<u> </u>	15, Ble Nor Tan Pelwitte
Assu	ming the new gun was introduced in 1980 in .222, .:
.243	, 6mm, .308 and 7mm-08 at a retail price \$20 below
	O ADL, what impact would it have on other Remington rifles?
,	Amornion AND PROMOTO TREPALL
	iour Hereling INPROT SHOULD Com
5	LE MAKET FOR "HOURAND CARAME"

BOLT ACTION RIFLE QUESTIONNAIRE

7mm-08 Cal. Serial # B6226259

1.	What do you like about the new bolt action rifle?
	I like the concept of a high quality bolt action carbine.
	Plus-factors of my sample include cut checkering, correct
	barrel length and high gloss finish.

What do you dislike about this new gun?

If our objective is to provide consumers with a lightweight carbine, I would recommend additional investigation to reduce weight by approx. 1 lb. This sample weighs slightly over 7 lbs. and feels no lighter than an average M/700. Other negative factors as follows (see other side #2.).

- 3. How would you improve the consumer acceptance of this bolt action rifle?
 - Reduce weight and bulk.

2) Improve stock material, finish and design.

- 3) Provide aluminum cast trigger guard and mag. cover to enhance quality, reduce weight.
- 4) Include a hard rubber rifle pad replacing current butt plate.

5) Reduce barrel diameter and weight.
(Continued on other side, #3.)

4. In terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line?

An upgraded version of our M/788; at best, equal in perceived value to the M/700 ADL. (Not near M/700 BDL standards.)

5. Given a \$210 suggested retail price for the M/788, a \$298 price for the M/700 ADL and a \$358 price for the M/700 BDL, where do you think the new gun would fit in our line from a price standpoint?

In its current form, I would not price any higher than the M/700 ADL. I visualize the end product to be a miniature M/700 BDL priced at approximately \$325.

....Continued

	· ·
6.	Do you feel the gun's design is unique?
	Yes
	No XX - Skip to Q8
7.	What do you think is unique about the gun you tested?
	· · ·
8.	The gun you tested has an 18½" barrel. Would you prefer some other barrel length?
	Yes — Answer Q9
	No XX - Skip to Q10
9.	What barrel length would you prefer?
	Write barrel length here:
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy AT My personal preference is satin, but I
	would recommend glossy finish in both instances for maximum consumer acceptance
106.	If the gun were press checkered, would you prefer a glossy or satin finish?
	Glossy 💆
	Satin
	Continued

	the new floo	r-plate?	?	
Floor plate operation	is excellent	:; other	. commer	ts in
				
	····	······································		
How would you rate the characteristics and fe	gun you tes	ted on	the fol	lowing
	Excellent	Very Good	Good	<u>Fair</u>
Contour of stock				<u></u>
Weight				
Recoil				•
Ease of Operation		/		
Overall Quality				
Color of Stock		-		
deret of ecock				
Metal Finish				

.....Continued

٠.	
A compac	t and easy to handle bolt action rifle with
excellen	t accuracy periormance.
	
What doe	es the word "carbine" mean to you?
My react	ion to "carbine" is a compact, lightweight
and quic	k pointing rifle.
	
Wasmirting	the new gun was introduced in 1980 in .222, .2
.243, 6m	m, .308 and 7mm-08 at a retail price \$20 below L, what impact would it have on other Remington
.243, 6m M/700 AD fire rif Since th	m, .308 and 7mm-08 at a retail price \$20 below DL, what impact would it have on other Remington iles?
.243, 6m M/700 AD fire rif Since th Substant "carbine	m, .308 and 7mm-08 at a retail price \$20 below DL, what impact would it have on other Remington iles? This rifle does not appear capable of generating that new interest which might provide an extense market. I feel that most sales would be at the same are the same would be at the same are the same would be at the same are the same would be at
.243, 6m M/700 AD fire rif Since th Substant "carbine	m, .308 and 7mm-08 at a retail price \$20 below DL, what impact would it have on other Remington iles? This rifle does not appear capable of generating that he interest which might provide an extension.
.243, 6m M/700 AD fire rif Since th Substant "carbine expense	mm, .308 and 7mm-08 at a retail price \$20 below DL, what impact would it have on other Remington iles? This rifle does not appear capable of generating ital new interest which might provide an extense market, I feel that most sales would be at to of our present M/88 and M/700 ADL offerings.
.243, 6m M/700 AD fire rif Since th Substant "carbine expense RANGE TI	im, .308 and 7mm-08 at a retail price \$20 below DL, what impact would it have on other Remington iles? This rifle does not appear capable of generating ital new interest which might provide an extense market, I feel that most sales would be at to of our present M/88 and M/700 ADL offerings. ESTED ON: 7/2/fo
.243, 6m M/700 AD fire rif Since th Substant "carbine expense RANGE TI RETURNE	nis rifle does not appear capable of generating rial new interest which might provide an extense" market, I feel that most sales would be at to of our present M/88 and M/700 ADL offerings.
.243, 6m M/700 AD fire rif Since th Substant "carbina expense RANGE TI RETURNE P.C.T.	mm, .308 and 7mm-08 at a retail price \$20 below DL, what impact would it have on other Remington Ries? This rifle does not appear capable of generating that new interest which might provide an extense market, I feel that most sales would be at the of our present M/788 and M/700 ADL offerings. ESTED ON: To John Brooks, ILION: 7/3/80

7mm-08 Cal. Serial #86226220

ı.	What do you like about the new bolt action rifle?
	Stock dinensions + fit - Accuracy - General
•	appearance as a carbine, may releve is good , don
•	the the resemblance of a 700 Jr.
2.	What do you dislike about this new gun?
	Dull Linish Letraits from The gun particularly worth
	The birch. It adult fraish is donied a much darker store than Who wisch
Kieles lik	schell but I realize the senet about while . Floor plate release is
TOO BEEL	and two easy to open. with gloves on The recall willallow trusce
3.	And two erry to open. With gloves on the recoil willallow Tringer the would you improve the consumer acceptance of this bolt
	action rifle?
	The wood finish and smooth up safety and betterts
	in the stock also see = - objections
ist con	Il consider 2 grades - 1 Block other welnut with porce differential 353
hote of	owners may be more interested in a cheaper tool with brock.
4.	In terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line?
	As noted - a short 700 700 Jr.
	——————————————————————————————————————
	13 much more closure design Thanks cower.
5.	Given a \$210 suggested retail price for the M/788, a \$298
	price for the M/700 ADL and a \$358 price for the M/700 BDL,
	where do you think the new gun would fit in our line from a price standpoint?
	A
	250 Birch 280 walnut - It has some features the Adl
	does not have (May veclesse) yet I don't believe we should
	Lampete w. 74 700 price wice
	Continued

6.	Do you feel the gun's design is unique?
	Yes
	No Skip to Q8
7-	What do you think is unique about the gun you tested?
	Its resultance to 700 what shall have custome appeal
8.	The gun you tested has an 18½" barrel. Would you prefer some other barrel length?
	Yes
	a corbine. The requests for return of the 600 in the southwest a been strong some 600 was obsoleted. What parrel length would you prefer?
9.	What barrel length would you prefer? - If weight 132 3 roblem we come Write barrel length here: 19 vest got a lighter barrel , f
	Write barrel length here:
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy Dulese a doubler stain can be used and the cutenachesing durkened and fusenes removed
,	Satin
106.	If the gun were press checkered, would you prefer a glossy or satin finish?
	Glossy D before replying.
	Satin
	Continued

_	t the new floo	r-brace	?		
great idea b	it reduce	5170 0	5 refe	co to	prive
unexpected.	,	,			-
			··· · ···		-
How would you rate the	ie gun you tes features?	ted on	the fol:	lowing	
:1.·	Excellent	Very Good	Good	Fair	Poor
Contour of stock					
Ne ight	<u>see 11</u>				
Recoil					<i>^</i> ـــ
Ease of Operation	<u>X</u>				
Overall Quality		<u>x</u> -	- <u>x</u>		
Color of Stock	***************************************				X
Metal Finish			<u> </u>		
Design of Chackering Pattern			¥		

.....Continued

What :	does the word "carbine" mean to you?
	A light weight easy to covery fact opening Tifle
	ing the new gun was introduced in 1980 in .222, .22-250,
M/700 fire	rifles?
M/700 fire	ADL, what impact would it have on other Remington cente

BOLT ACTION RIFLE QUESTIONNAIRE

7mm-08 Cal. Serial # 66326232

a) Although the floorplace release is earce to use, it is burnersony when removered the stock. (i) Con't other both with safety "ON." + Us NISEN, (C) Finish makes the suffe apparent "Chap." ow would you improve the consumer acceptance of this bolt ction rifle? (a) but a force present checkering pattern on it, securion to 7400. (i) Turn the burner bound to the some water (highter UT) (C) Use KK-U a structure water. Checker the bottom of text in terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line? For above the 784 but cally lifty line them the 760 "Marsor," Moral grain water filled in (97 Here).	if it littlersome when renorms the stack. (1) Cont other both with safety "CN." + it's Noisey. (2) Finish makes the lift copyrum "Chiap." ow would you improve the consumer acceptance of this bolt ction rifle? (2) Pot a forcing pressed checkering pattern on it, similar to 7400. (1) Turn the burre down some some makes (highter lit) (C) Use KK-W a truncal water. Checker the bottom of text in terms of overall quality, how does this new gun compare of other center fire rifles in Remington's line? For others the 784 fact sallfilly him. There the 784 fact sallfilly him.	If the Ministersony when removing the Stock. In Court other both with safety "ON." + Us Notsey, C) Firstsh inches the Met's applican "Chappe" ow would you improve the consumer acceptance of this bolt ction rifle? That a forcise pressed checkering pattern on it, similar to 7400. (b) Turn the burrel bours some muse (hightn UY) (c) Use KK-U a three some make (hightn UY) (c) Use KK-U a three of overall quality, how does this new gun compare of other center fire rifles in Remington's line? For others the 784 fruit altifully him them the 700 Massic," Mora grain wat
(a) Count often both with safety "ON." + it's Notsey. (C) Finish inches the refer copywhen "Cheap." ow would you improve the consumer acceptance of this bolt ction rifle? (C) Put a forecase present checkering pattern on it, securion to 7400. (b) Turn the burred board some sugges (highty (it) (c) Use KK-U a threaten wathout. Whether the bottom of term in terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line? For others the 784 four tallfallife him. There the 784 four tallfallife him.	Depty ofen both with safety "ON." + It's Notsey, and Finish makes the reflection "Creap." On would you improve the consumer acceptance of this bolt ation rifle? That a forecise present checkering pattern on it, securion to 7400. (1) Turn the burrents form some makes (highter lity) (c) Use KK-W a structure water. Whether the bottom of term on terms of overall quality, how does this new gun compare of other center fire rifles in Remington's line? For others the 784 but allowers line?	C) First makes the 12th sakety "ON." + Us Notsey. C) First makes the 12th approximation "Chap." On would you improve the consumer acceptance of this bolt ation rifle? That a forecise present analysis the bursel for a facility property (I) There the bursel forces for make (Lightne (14) (C) Use KK-U a structure water. Whether the bottom of force in terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line? For above the 784 fort sally lift forces. There the 784 fort sally lift forces.
ow would you improve the consumer acceptance of this bolt ction rifle? That a forecise present checkering pattern on it, securion to 7400. (b) Turn the bursel boursel form some nume (highter (it) (c) Use KK-U a transcan water. Checker the bottom of term-in n terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line? For whose the 788 fruit Alfallify him them the 700 Marson. Most Alfallify him.	ow would you improve the consumer acceptance of this bolt ction rifle? That a forecise present checkering pattern on it, securion to 7400. (b) Turn the burse lower some name (hightness (c) Use L'K-W of therease wellower. Whether the bottom of term of term of terms of overall quality, how does this new gun compare o other center fire rifles in Remington's line? For above the 784 but the lotter than the theory of the things t	would you improve the consumer acceptance of this bolt ction rifle? That a forcine present checkering pattern on it, similar to 7400. (b) Turn the bursel lower some muse (highter (it) (c) the LK-W a therefore water. There is the bottom of term in terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line? For others the 784 that callfully him them the 700 "Theose". When the 700 "Theose".
ow would you improve the consumer acceptance of this bolt ction rifle? That a forecise present checkering pattern on it, securion to 7400. (b) Turn the bursel boursel form some nume (highter (it) (c) Use KK-U a transcan water. Checker the bottom of term-in n terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line? For whose the 788 fruit Alfallify him them the 700 Marson. Most Alfallify him.	ow would you improve the consumer acceptance of this bolt ction rifle? That a forecise present checkering pattern on it, securion to 7400. (b) Turn the burse lower some name (hightness (c) Use L'K-W of therease wellower. Whether the bottom of term of term of terms of overall quality, how does this new gun compare o other center fire rifles in Remington's line? For above the 784 but the lotter than the theory of the things t	would you improve the consumer acceptance of this bolt ction rifle? That a forcine present checkering pattern on it, similar to 7400. (b) Turn the bursel lower some muse (highter (it) (c) the LK-W a therefore water. There is the bottom of term in terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line? For others the 784 that callfully him them the 700 "Theose". When the 700 "Theose".
In it, similar to 7400. (b) Turn the burrel boursel boursel from some numer (highter lit) (c) Use KK-W a structure water. Where the bottom of text-in in terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line? For obore the 78% but callfully him them the 700 "Phassic," Word grain Not	then the 700 Plansic, " West 924 Med 1000 Med 10	then the 700 "Marsic," West grain Not
In it, similar to 7400. (b) Turn the burrel boursel boursel from some numer (highter lit) (c) Use KK-W a structure water. Where the bottom of text-in in terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line? For obore the 78% but callfully him them the 700 "Phassic," Word grain Not	then the 700 Plansic, " West 924 Med 1000 Med 10	then the 700 "Marsic," West grain Not
then the 700 "Marsic." When your Not	How the 700 Plansic, " West 92411 Not	there some negles (highter lit) (c) like KK-W a structure water the bottom of text in terms of overall quality, how does this new gun compare to other center fire rifles in Remington's line? For whose the 784 but callfully him them the 700 "Marson" When your work
them the 700 "Placesic," Werd 924 NOT	terms of overall quality, how does this new gun compare of other center fire rifles in Remington's line? For others the 785 but cathelity line then the 700 "Marsic," Mora game with	terms of overall quality, how does this new gun compare of other center fire rifles in Remington's line? For others the 785 that called the line them the 700 "Massic," there gives not
For obore the 785 but collecting him them the 700 "Placesic." Word gran NOT	them the 700 "Placesic." When given wer	o other center fire rifles in Remington's line? For other the 784 but calletty him them the 700 "Phassic," Word grain NOT
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	,	· · · · · · · · · · · · · · · · · · ·
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	,	· · · · · · · · · · · · · · · · · · ·
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	,	· · · · · · · · · · · · · · · · · · ·
	filled us (OTHERY).	
iven a \$210 suggested retail price for the M/788, a \$298 price for the M/700 ADL and a \$358 price for the M/700 BDL,		
	iven a \$210 suggested retail price for the M/788, a \$298	

5 •	Do	you	feel	the	gun's	s de	sign	is	uni	que?
			٠.	.		rest)				a =

7. What do you think is unique about the gun you tested?

(a) Salsty's More to Both (b) Contoured spectron port, (1) hings of flarelate reliance (d) Great Stock screwin concealed (le) (Brossie-stocked carteris

8. The gun you tested has an 184" barrel. Would you prefer some other barrel length?

Yes 🔀 - Answer Q9

No / 🖊 - Skip to Q10

9. What barrel length would you prefer?

Write barrel length here: 20" Looks nowe balance and would still be quick, my see MV is

10a. We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?

Glossy 🗷

Satin /7

10b. If the gun were press checkered, would you prefer a glossy or satin finish?

Glossy

B Buchwer

Satin De Waln

....Continued

•	11.	How do you feel about	the gun's wei	ght?			
		It's a Nittle of	Reaves to	ردىي	ما	北大	<u>-</u>
		weight helps in	baldre,	'outil	relity	and	
		recoil comfort.					•
			<u> </u>				-
	12.	How do you feel about	the new floor	-plate?			
		I blu Ringed t	Clook plate	z . /	ut a	z -Flis	h-
		fitting Clip mas	instine w	<u>reild</u>	lu	(Letter)	_
		for their canh	• /				_
	13.	How would you rate the characteristics and fe		ed on t	he foll	owing	
				Very			
			Excellent	Good	Good	Fair	Poor
		Contour of stock					
	·4	Weight	(c /		-> <u>/</u>		
ف معربان الم	ن مالي مديد كام المرابع علي أ	Recoil	Slanding		Binch		
ر سائمہیں مراہ	. e.	Ease of Operation			,		
		Overall Quality		<u></u>	<u> </u>		
		Color of Stock	-			<u></u>	
		Metal Finish		1/	********************		
		Design of			. /		
		Checkering Pattern					
	14.	To whom do you think t	his rilfe wil	l appea	1?		
		Mountain hunters	Deep wo	reels	Kunt	is	
		Youths.	, , , , , , , , , , , , , , , , , , , ,				_
							-
							-
					(Continue	ed

ريحدلا	7.85 a	feed	ما الما الما الما الما الما الما الما ا	"unianie "700	i i	
	es the wo					, .c *
	it- Kan	•				22001
.243, 6 M/700 A fire ri	g the new imm, .308 DL, what fles?	and 7mm- impact	-08 at a would it	retail have on	price \$ cother	20 beling
Respo	ondent's N	ame:	G. A.	Cinin	N	
	shout ver <i>glins</i> ril, it					af 4 Yuun

RATUSE PRECLURED IN THIS TOSHOOT RIPLE IN THIS TOME PLANE REACTIONS ONLY BOLT ACTION RIFLE QUESTIONNAIRE

7mm-08 Cal. Serial \$ 362261B

٠.	
What	o you like about the new bolt action rifle?
TH	E COUCEPT - CARBINE - SHERT FAST
	WOLING COLT ACTION RIFLE
Mat	o you dislike about this new gun?
I	E EXECUTION - THE RIFLE IS TOO HEAVY
ŧ	ND CLUBBY LOOKING - DO NOT LIKE SHEE
-/4	THL TRIGGER GUPPED FLORPLATE - BOI TO
Ja	unid was immune the same and a contract of this t
	ould you improve the consumer acceptance of this has rifle?
Clis	Maria 24 Octor Sicht Without Fred
<u>34 M</u>	MUND BHI, BETTER SIGHTS, WHINUT STOCK, A DOWN STOCK PROFILE, DIFFERENT BOLT
25	4 DOWN MICK PROFILE, DIFFICIENT BOLT
	BOL FORPLATE MSSBLY
	·
In te	ms of overall quality, how does this new gun com
	ner center fire rifles in Remington's line?
<u>(1</u>	OSEK TO 788 THATH 700. QUALITY OF
E	ECUTION IS SIMILAR. QUALITY OF DE
	A BIT IN LAMBO . NOT CLEHR WHETHER S
73	BE CHEAT MYSS REPLIKEMENT OR WITH
	a \$210 suggested retail price for the M/788, a \$
price	for the M/700 ADL and a \$358 price for the M/700
where	do you think the new gun would fit in our line fi standpoint?
MAN	4BE-\$1250. SOMEWHERE BETWEEN
	700, v4DL,

6.	Do you feel the gun's design is unique?
	Yes
	No Skip to Q8
7.	What do you think is unique about the gun you tested?
8.	The gun you tested has an 184" barrel. Would you prefer some other barrel length?
	Yes - Answer Q9 NOT HT THE EXPENSE
	Yes II - Answer Q9 NOT HT THE EXPENSE NO ET - Skip to Q10 OF WE16HT
9.	What barrel length would you prefer?
	Write barrel length here: Do" IF COULD KEEP WTS: (AFTEK REDICTION PER OFF
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy BELIEVE CUSTOMEDE WOULD
	Glossy DELIEVE CUSTOMEDE WOULD PREFER THIS. PERSONALLY PREFER SATIN.
10b.	If the gun were press checkered, would you prefer a glossy or satin finish?
	GLOSSY TO WOULDN'T WINT PRESS CHECKERILE

....Continued

Satin

How do you feel about					
CHEAR LO					-
WRONG PZAC	_				-
FINGEL AGA SHOOTING		ENE	<u> 120 S</u>	OME	-
Bow would you rate the characteristics and f	e gun you tes	ited on t	the foli	lowing	
_	Excellent	Very Good	Good	Fair	Poc
Contour of stock	******			X	
Weight					\Rightarrow
Recoil NJ					-
Ease of Operation	-	-	<u> </u>		
Overall Quality				<u> </u>	
Color of Stock				<u> </u>	
Metal Finish			\overline{X}		
Design of Checkering Pattern			<u> </u>		

(

1	Now should we advertise the rifle you tested?
_	SHORT, LIGHT FAST HATUDUNG HANDY.
_	COMPLEMENT TO FULL SIZE WITH DUN BIK
_	GIAME RIPLE. GOOD FOR MOUNTAIN AND
	THOS COUNTRY HUNTING.
V	That does the word "carbine" mean to you?
	A SHORT, LIGHT SLENDER AND EFFICIENT
	RIFLE OF HIGH QUALITY. A MORE
	PERTUBLE VERSION OF MY MAIN BIG
•	GAME RIFLE
Į	Assuming the new gun was introduced in 1980 in .222, .22-250, .243, 6mm, .308 and 7mm-08 at a retail price \$20 below the 4/700 ADL, what impact would it have on other Remington center fire rifles?
	DO NOT SEE VERY MUCH PLUS BUSINESS
	IN CULLENT FORM FEAR WOULD MOSTLY
	TAKE FROM 288 +700 ADL SALES. IF GUN
•	WITH LULY ALLY "/ TO RATHEN" TO
	TOO BUL WOULD PRIX IP MORE PLUS BUSINESS FROM INCUMBENT BUNDERS OF THAT MODEL
	FROM INCOMBENT OWNERS OF TITHE MODEL
	Respondent's Name: Town Robwson
	LOOKING FOR A "CARBNE"

7mm-08 Cal. Serial #<u>B(A)</u>(253

1.	What do you like about the new bolt action rifle?
A	
	Operall length is good trigger and exten
	again and bal strong and well made.
	Cut cherkering a definite plus.
	What do you dislike about this new gun?
-	Stock dimension and profile are
	short and stocky - too" FAT" In carbine
	- 0.00
	n sadde gun
	The could not improve the consumer escentiance of this help
	How would you improve the consumer acceptance of this bolt action rifle?
	Modify stock: forks int like 788 with
	checkering. It to be gold in selected coliber
	10, 0,
	as carbine the stock needs to be turnmed down.
_	Hos plate is plus, but my for three who don't went to carry as to chip
4.	In terms of overall quality, how does this new gun compare ' to other center fire rifles in Remington's line?
	tarrel with and other appears be very close
	to M/700-if nit actually the same the wood is obviously
	not valent so wood quality is not a consideration (Pachaps
	then cut heckering and necessary) On bolance comparison is favorable
\ 5.	Given a \$210 suggested retail price for the M/788, a \$298
	price for the M/700 ADL and a \$358 price for the M/700 BDL, where do you think the new gun would fit in our line from a
	price standpoint?
	$\bigcap_{i=1}^{n} A_{i}$
	Lewen the spread, the new you would not
	lit Needs to be at a new 788.
	,

6.	Do you feel the gun's design is unique?
•	Yes — Answer Q7
	No 💆 - Skip to Q8
7.	What do you think is unique about the gun you tested?
8.	The gun you tested has an 181 barrel. Would you prefer some other barrel length?
	Yes
	No 🔀 - Skip to Q10
9.	What barrel length would you prefer?
	Write barrel length here:
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy
	Satin E
105.	If the gun were press checkered, would you prefer a glossy or satin finish?
	Glossy
	Satin Ø
	•

\ 11.	How do you feel about	the gun's we	ight?				
	Toolenny		·			-	
	<u> </u>					•	
						-	
12.	How do you feel about	the new floo	r-olate?	?			
V	0 1 1	und empume		. d	Mes A	me.	
	- 1 00 0:0	6)101	extra	2-3	. no.	with a	
	an seriodie reno	trd flan		,	100 ox	enim 1	ملل
	Ist shock of finin	frup dus j	لا يل علاما	•	le m of	· Rown	-T. ()
13.	How would you rate the characteristics and fe	e gun you tes eatures?	ted on 1	the foll	lowing '		
		Programme 1 1 and 1	Very	7 223	75.1m	Da	
	Contain of short	Excellent	Good	Good	Fair	Poor	
	Contour of stock	and the same of th	-			<u> </u>	
	Weight	-					
	Recoil				$\overset{\sim}{\sim}$		
	Ease of Operation		X				
	Overall Quality			X			
	Color of Stock			X		-	
	Metal Finish		X				
	Design of Checkering Pattern			X			
				-		***************************************	
114.	To whom do you think	_			,		
	Budget conscion	o; Muao m	Legest	· origin	tell con	ksumi.	•
	Must be "Romington	" brand to	cipiza	o. al	10 to 1	ga druh n	As
	wants a most on	n - Heren	able co	Lacc	unte	with	∱ -
	all the field of a - put a lot of lead in his am looks and ne clavical proble	700 hype 12	all year	Sl	ئېىپى ش	4 2iles -	40
	put a lot of seed or	n the air,	witten	นฐาน	Continu	Ban h	س
	his am lostes and	n average of	renter	y abou	ed pos	وكالأنان	
	mechanical probes	no of auto	المعاضدون	•			

\15.	How should we advertise the rifle you tested?
	Containly by tell - and to the attention
	of the cost consciens. Remington quality at old
	fashined nice. Must be substantially Identition 4/900 through.
	Let the mars merchant sell this.
V 16.	What does the word "carbine" mean to you?
	Shot lightweight, "rapid-Piring" salle sun.
	Alache be able to combatable let in scabband.
\17.	Assuming the new gun was introduced in 1980 in .222, .22-250, .243, 6mm, .308 and 7mm-08 at a retail price \$20 below the M/700 ADL, what impact would it have on other Remington center fire rifles?
	Out brankly I don't know I think that grice is too
	high It would take away mar 200 ADL business palips
	Than ald to 788 turn business.
	_
	17.0
	Respondent's Name: 10 0000000000000000000000000000000000

7mm-08 Cal. Serial # B6226275

lines	•
What	do you dislike about this new gum?
Does	not have a walnut stock.
	ould you improve the consumer acceptance of t n rifle?
Walnu	t stock - recoil pad.
In te	rms of overall quality, how does this new gun her center fire rifles in Remington's line?
Carbi	ne version of Model 700 with birch stock.
price where	a \$210 suggested retail price for the M/788, for the M/700 ADL and a \$358 price for the M do you think the new gun would fit in our listandpoint?
Below	700 ADI.

6.	Do you feel the gun's design is unique?
	Yes 🔀 - Answer Q7
	No
7.	What do you think is unique about the gun you tested?
	Typical carbine - Ideal pick-up truck rifle.
8.	The gun you tested has an 18½ barrel. Would you prefer some other barrel length?
	Yes — Answer Q9
	No Skip to Q10
9.	What barrel length would you prefer?
	Write barrel length here:
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy 🔀
	Satin
106.	If the gun were press checkered, would you prefer a glossy or satin finish?
	Glossy Z
	Satin

How do you feel about	the new floo	r-plate	?	
Excellent feature.				
		**		
How would you rate the characteristics and f	e gun you tes eatures?	ted on	the fol	lowing
	Excellent	Very Good	Good	<u>Fair</u>
Contour of stock	X			
Weight	X			
Recoil		<u> </u>		
Ease of Operation	X			
Overall Quality		<u>x</u>		
Color of Stock		<u> x</u>		-
Metal Finish		<u> x</u>		
Design of Checkering Pattern		<u>x</u>		 -
	-			

BÒLT	ACTION	RIFLE	QUESTIONNAIRE

PAGE 4

hat does the wor	d "carbine" me	ean to you?	
Short barrel.			
		·	
			
ssuming the new			
243, 6mm, .308 a /700 ADL, what i			
ire rifles?			
Will hurt Model	788 sales.		·····



7mm-08 Cal. Serial # <u>R 10</u> 26-273

(The Rolf short !	y (in one) IL
ItaBeans itis Alla	ChivE- Sheel Were
height Functions of Fe	eps Well fron polis
	/
What do you dislike about this	<u> </u>
Bolt Should be Des	igular 11) the Along Cus
Scar id to have o	a) Acy thing - Not 1
Strok L. Hl. Killy	1. Som Bereite
How would you improve the cons	
action rifle?	maer acceptance of this bo.
Ance - Layler IN Weight	CAL- ESpecially in to
Anco- Loubles in Weigh	(11) Smalle Colibe
Walsel Stoke	
In terms of overall quality, h to other center fire rifles in	ow does this new gun compa Remington's line?
The mile quelly is	
It cirro.	·
Given a \$210 suggested retail	price for the M/788, a \$29
price for the M/700 ADL and a where do you think the new gun	\$358 price for the M/700 B would fit in our line fro
price standpoint?	
	Del Ker - Willethel
it new her	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

6.	Do you feel the gun	's design is unique?
	Yes	— Answer Q7
	No	Skip to Q8
7.		s unique about the gun you tested?
	TR Might	That there is withing on the
	Mindlettele	
8.	The gun you tested some other barrel 1	has an 18½" barrel. Would you prefer ength?
	Yes	∠ − Answer Q9
	No	Skip to Q10
9.	What barrel length	would you prefer?
	Write barrel	length here:
10a.	to cut or press che	a number of stock finishes and whether ecker the gun. If the new rifle were you prefer a glossy or satin finish?
	Glossy	
	Satin	
10b.	If the gun were preor satin finish?	ess checkered, would you prefer a gloss
	Glossy	
	Satin	
		Continued

ţ

Atesture A Orghous does not i	
HARAGER HUBERNIE ARS NOT 1)	Mulally 12
How would you rate the gun you tested on the characteristics and features?	following
Very <u>Excellent Good G</u>	ood Fair
Contour of stock X Event	62 Tares A
Weight	<u> </u>
Recoil	<u> </u>
Ease of OperationX	
Overall Quality	
Color of Stock	<u> </u>
Metal Finish	,
\	

What does the word " Oct langto Compact - I P. Chilep + To. P (-	carbine* mean to you? LANDLE, FACT PRINCE LE COP Smell and Lear- Youth House	st - She not ST Roma Red P /le
.243, 6mm, .308 and	was introduced in 1980 7mm-08 at a retail price ct would it have on other than the 188- 4-	e \$20 below ther er Remington c

1. P. C. J. H.C.

BOLT ACTION RIFLE QUESTIONNAIRE

7mm-08 Cal. Serial # B6226249

	do you dislike about this new gun?
The i	finish is too light. The muzzle blast in the 7M
is ex	ctremely strong. The safety is too small.
The 1	rifle is too heavy for a carbine.
acti	would you improve the consumer acceptance of this on rifle?
I wo	ald darken the finish, make the safety larger large
one	on the Model 788 and remove the sights.
I do	erms of overall quality, how does this new gun conther center fire rifles in Remington's line? not think the cosmetic appearance of this rifle
comp	are with the Model 700 and the Model 788. I wo
much	prefer the Model 788 for the additional money.
Give	n a \$210 suggested retail price for the M/788, a e for the M/700 ADL and a \$358 price for the M/7 e do you think the new gun would fit in our line

6.	Do you feel the gun's design is unique?
	Yes — Answer Q7
	No
7.	What do you think is unique about the gun you tested?
8.	The gun you tested has an 184" barrel. Would you prefer some other barrel length?
	Yes — Answer. Q9
	No Ø - Skip to Q10
9.	What barrel length would you prefer?
	Write barrel length here:
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy ZZ
	Satin
105.	If the gun were press checkered, would you prefer a gloss or satin finish?
	Glossy 🔼
	Satin
	Continued

11.	How do you feel about the gun's weight?
	It is too heavy for a short barrel rifle. My sample
	weighed approximately 84 lbs., which is too heavy a gun
	of this design.

- 12. How do you feel about the new floor-plate?

 The new floor plate is good. It could be of thicker material.

 I think that we could use the same type of floor plate we are using in our Model 700s.
- 13. How would you rate the gun you tested on the following characteristics and features?

	Excellent	Very Good	Good	Fair	Poor
Contour of stock			<u>X</u>		
Weight					X
Recoil					*
Ease of Operation	-		1		
Overall Quality			X		
Color of Stock					1
Metal Finish			X		
Design of Checkering Pattern	-		<u>x</u>		

14. To whom do you think this rilfe will appeal?

I feel that this rifle would appeal to the beginner hunter or shooter. I do not believe a real avid rifleman would be in the market for this gun. He would go with the Model 700.

Respondent's Name:

That does the word "carbine" mean to you? If feel that a carbine is a fast swinging, light weight short barrel rifle, one that can be carried for a graph of time through the brush. Assuming the new gun was introduced in 1980 in .222, .243, 6mm, .308 and 7mm-08 at a retail price \$20 bel M/700 ADL, what impact would it have on other Reming fire rifles?		is introduced, I would advertise it ve
feel that a carbine is a fast swinging, light weight short barrel rifle, one that can be carried for a grant of time through the brush. Assuming the new gun was introduced in 1980 in .222, .243, 6mm, .308 and 7mm-08 at a retail price \$20 bell M/700 ADL, what impact would it have on other Reming fire rifles?		
short barrel rifle, one that can be carried for a grant of time through the brush. Assuming the new gun was introduced in 1980 in .222, .243, 6mm, .308 and 7mm-08 at a retail price \$20 bel M/700 ADL, what impact would it have on other Reming fire rifles?	That does the	word "carbine" mean to you?
Assuming the new gun was introduced in 1980 in .222, .243, 6mm, .308 and 7mm-08 at a retail price \$20 bel M/700 ADL, what impact would it have on other Reming fire rifles?	feel that a	carbine is a fast swinging, light weigh
Assuming the new gun was introduced in 1980 in .222, .243, 6mm, .308 and 7mm-08 at a retail price \$20 bel M/700 ADL, what impact would it have on other Reming fire rifles?	short barrel	rifle, one that can be carried for a gr
.243, 6mm, .308 and 7mm-08 at a retail price \$20 bel M/700 ADL, what impact would it have on other Reming fire rifles?	ength of time	e through the brush.
	.243, 6mm, .30 4/700 ADL, whater rifles?	08 and 7mm-08 at a retail price \$20 belo
	.243, 6mm, .30 4/700 ADL, whater rifles?	08 and 7mm-08 at a retail price \$20 belo
	.243, 6mm, .30 4/700 ADL, whater rifles?	08 and 7mm-08 at a retail price \$20 belo

7mm-08 Cal. Serial #36226270

What	o you dislike about this new gun?
Stock	finish, type of wood, sparse checkering on for
trigg	er guard and floor plate.
	ould you improve the consumer acceptance of this rifle?
Walnu	ristock, improved fore-end checkering as class
	restock, improved fore-end checkering as class 000 BDL trigger guard.
In te	one of overall quality, how does this new gun coner center fire rifles in Remington's line?
In te	on BDL trigger guard. The second of the sec
In te to ot Only a "78 Given price where	one of overall quality, how does this new gun coner center fire rifles in Remington's line?

6.	Do you feel the gun's design is unique?
	Yes — Answer Q7
	No ZZ - Skip to Q8
7.	What do you think is unique about the gun you tested?
8.	The gun you tested has an 185 barrel. Would you prefer some other barrel length?
	Yes — Answer Q9
	No ZZ - Skip to Q10
9.	What barrel length would you prefer?
	Write barrel length here:
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy 🗷
	Satin
106.	If the gun were press checkered, would you prefer a glossy or satin finish?
	Glossy 🗷
	Satin
	Continued

	Test rifle weighed 6 longer stock) weighe					-
	recoil.					-
L2.	How do you feel about	the new floo	r-plate	?		
	A strong dislike for	aesthetics.	Tinny	look" as	with S	41 -
	complaints would be	heard in this	s area.	Sugge	st a 700	BDL
	type trigger guard -	floor plate	•			-
13.	How would you rate the characteristics and f			the foll	lowing	
		Excellent	<u>Good</u>	Good	Fair	Poor
	Contour of stock	-		<u>x</u>		
	Weight			_X_		*****
	Recoil		<u> </u>			
	Ease of Operation				<u> </u>	
	Overall Quality		·		<u>x</u>	
	Color of Stock	*				<u>x</u>
	Metal Finish		x			
	Design of Checkering Pattern	-			x	
lt stice for the latest terms of the latest te	cky, major difficultion of loud for hunting reactions to whom do you think	es with ease ifle. this rilfe wi	of oper	ation o al?	f safet	y and
	Very narrow group as	s tested. No	economy	, no lu	xury. O	<u>n</u> ly

	dling and a "purist's carbine".
What	does the word "carbine" mean to you?
Sho	rt, brush-type rifle. Light and quick handling.
	
.243 M/70	ming the new gun was introduced in 1980 in .222, ., 6mm, .308 and 7mm-08 at a retail price \$20 below 0 ADL, what impact would it have on other Remingto rifles?
Sc	me reduction of 700 ADL sales.

Respondent's Name: 1. 1. Wash 4

7mm-08 Cal. Serial # <u>B6226</u>248

	do you like about the new bolt action rifle? d looking, quality gun, strong action.
	es up to "Remington Quality"
What o	do you dislike about this new gun?
Rea	r sightdifficult to move. Ejection
was	not smoothshell remained in bolt head 1/2 t
	ould you improve the consumer acceptance of this n rifle?
Tuc	k bolt in more and thin down stock and
ren	nove floor plate
	rms of overall quality, how does this new gun cher center fire rifles in Remington's line?
	It compares very well
price where	a \$210 suggested retail price for the M/788, a for the M/700 ADL and a \$358 price for the M/7 do you think the new gun would fit in our line standpoint?
	If possible, gun should be \$20 to \$30 less

	••	
6.	Do you feel the gun's design is unique?	
	Yes — Answer Q7	
	No 🖾 - Skip to Q8	
7.	What do you think is unique about the gun you tested?	?
8.	The gun you tested has an 184" barrel. Would you prosome other barrel length?	efer
	Yes	
	No ZZ - Skip to Q10	
9.	What barrel length would you prefer?	
	Write barrel length here:	
10a.	We are considering a number of stock finishes and who to cut or press checker the gun. If the new rifle we cut checkered would you prefer a glossy or satin finishes.	ere
	Glossy 🔀	
	Satin	
106.	If the gun were press checkered, would you prefer a or satin finish?	glossy
	Glossy 🗷	
	Satin	
	, 	
	Continued	

How do you feel abou				
Should not have	a iloor place	on a ca	TED THE	
		,		
				···
How would you rate t		ted on	the foll	lowing
		Very		
	Excellent	Good	Good	Fair
Contour of stock		·	<u> </u>	
Weight			<u>x</u>	
Recoil			<u> x</u>	•
Ease of Operation				
Overall Quality		<u> x</u>		
Color of Stock	-			x
Metal Finish	X			
Design of Checkering Pattern		<u>x</u>		
To whom do you think	this rilfe wi	.11 appe	al?	
•				ruck

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

	should we advertise the rifle you tested?
	uality, strength, low cost, accuracythese
5	hould be included in advertising
Wha	t does the word "carbine" mean to you?
	Carbine means a short light-weight gun.
	·
.24 M/7	3, 6mm, .308 and 7mm-08 at a retail price \$20 below
.24 M/7	3, 6mm, .308 and 7mm-08 at a retail price \$20 below 00 ADL, what impact would it have on other Remington e rifles?
.24 M/7	uming the new gun was introduced in 1980 in .222, .23, 6mm, .308 and 7mm-08 at a retail price \$20 below 00 ADL, what impact would it have on other Remington e rifles? This model, with prices indicated above, would take sales from our 700 ADL
.24 M/7	3, 6mm, .308 and 7mm-08 at a retail price \$20 below 00 ADL, what impact would it have on other Remington e rifles? This model, with prices indicated above, would take
.24 M/7	3, 6mm, .308 and 7mm-08 at a retail price \$20 below 00 ADL, what impact would it have on other Remington e rifles? This model, with prices indicated above, would take
.24 M/7	3, 6mm, .308 and 7mm-08 at a retail price \$20 below 00 ADL, what impact would it have on other Remington e rifles? This model, with prices indicated above, would take

7mm-08 Cal. Serial #____

What	do you dislike about this new gun?
	,
How we action	ould you improve the consumer acceptance of thin rifle?
	Jettle Wood question
\int	Improve Gretion
In te	rms of overall quality, how does this new gun of the center fire rifles in Remington's line?
price where	a \$210 suggested retail price for the M/788, a for the M/700 ADL and a \$358 price for the M/7 do you think the new gun would fit in our line standpoint?

5.	Do you reet the dan's design is auridaes
	Yes Answer Q7
	No Skip to Q8
7.	What do you think is unique about the gun you tested?
8.	The gun you tested has an 18½" barrel. Would you prefer some other barrel length?
	Yes
	Yes — Answer Q9 No — Skip to Q10
9.	What barrel length would you prefer?
	Write barrel length here:
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy 📶
	Satin
10b.	If the gun were press checkered, would you prefer a glossy or satin finish?
	Glossy 💋
	Satin

How do you feel abou	t the new floo	r-plate:	?	
	OK	j	· · · · · · · · · · · · · · · · · · ·	
How would you rate t characteristics and	features?	Very		
	Excellent	Good	<u>Good</u>	Fair
Contour of stock			<u>~</u>	
Weight				<u> </u>
Recoil				
Ease of Operation	47			_
Overall Quality			1	
Color of Stock	******			
Metal Finish	****		<u> </u>	
Design of Checkering Pattern			<u> </u>	

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

BOLT .	ACTION	RIFLE	QUESTIONNA	LIRE
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PAGE 4

What does t	the word "carb	ine* mean to y	ou?
	Saddli	l gun	
		J	
.243, 6mm,	.308 and 7mm- what impact w	08 at a retail	1980 in .222, . price \$20 below n other Remingto
			,
<u>-</u>			

7mm-08 Cal. Serial #B6226236

Wha+	do you dislike about this new gun?
	stained Birch stock is completely not acceptable.
	is compounded by the cut checkering on the Birchwood
The	stock dimensions and design are not consistent with
inte	nded purpose, nor for the bolt handle. Both need rethe attached memo.
HOW W	ould you improve the consumer acceptance of this bol n rifle?
See	the memo attached.
In te	rms of overall quality, how does this new gun compar her center fire rifles in Remington's line?
In g	eneral'- very well.
price where	a \$210 suggested retail price for the M/788, a \$298 for the M/700 ADL and a \$358 price for the M/700 BD do you think the new gun would fit in our line from standpoint?
price where price	for the M/700 ADL and a \$358 price for the M/700 BD do you think the new gun would fit in our line from

6.	Do you feel the gun's design is unique?
	Yes
	No ZZ - Skip to Q8
7⊷	What do you think is unique about the gun you tested?
8.	The gun you tested has an 18½" barrel. Would you prefer some other barrel length?
	Yes Answer Q9
	No
9.	What barrel length would you prefer? Same as #8 above.
	Write barrel length here:
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy 💯
	Satin
10b.	If the gun were press checkered, would you prefer a glossy or satin finish?
	Glossy 🔀
	Satin
	Continued

How do you feel about the new floor-plate? Unnecessary and inappropriate on a carbine.							
How would you rate t	he gun you tes	ted on	the fol	lowing			
characteristics and				,			
	Excellent	Very Good	Good	Fair			
Contour of stock							
Weight				X			
Recoil			X				
Ease of Operation			$\overline{\chi}$				
Overall Quality		$\overline{\chi}$					
Color of Stock							
Metal Finish			不				
Design of Checkering Pattern	·		$\frac{1}{2}$				

With cost stressing v	alue, quality and position
specifically toward th	e potential carbine user.
What does the word "car	rbine" mean to you?
Short, light, flat an	d suitable for use with a saddle
scabbard.	
.243, 6mm, .308 and 7mm M/700 ADL, what impact	as introduced in 1980 in .222, .2 n-08 at a retail price \$20 below would it have on other Remington
.243, 6mm, .308 and 7mm M/700 ADL, what impact fire rifles?	n-08 at a retail price \$20 below would it have on other Remington
.243, 6mm, .308 and 7mm M/700 ADL, what impact fire rifles? In a good market suc	n-08 at a retail price \$20 below
.243, 6mm, .308 and 7mm M/700 ADL, what impact fire rifles? In a good market suc	n-08 at a retail price \$20 below would it have on other Remington the an introduction should not have all effect on the sales of other
.243, 6mm, .308 and 7mm M/700 ADL, what impact fire rifles? In a good market suc significant detriment	n-08 at a retail price \$20 below would it have on other Remington the an introduction should not have all effect on the sales of other
.243, 6mm, .308 and 7mm M/700 ADL, what impact fire rifles? In a good market suc significant detriment	n-08 at a retail price \$20 below would it have on other Remington the an introduction should not have all effect on the sales of other

BOLT ACTION RIFLE QUESTIONNAIRE

7mm-08 Cal. Serial # <u>B6226251</u>

1.	What do you like about the new bolt action rifle?
	Gun looks like a quality our. Very hands
	to carry Represents on excellent , elece (dyamaing
	The courty in freedom of the feedback
	on price) to summary & like the seen, Like
	RKW Style ferrich dit checkering
2.	What do you dislike about this new gun?
	Recall was very high-own but to lar.
	Trigger pull was too sill signty (iten)
2	were difficult to adjust and had to be adjusted to extreme left
_	Hoor plate release was too being, might be released when greenes
3.	How would you improve the consumer acceptance of this bolt action rifle?
	Charles sichet in mans timere vall
	Angrive sights, improve tregger pull
	'
4.	In terms of overall quality, how does this new gun compare
	to other center fire rifles in Remington's line?
	Very close if not superior to ADL
Cut	Cheiking is big plus
00 0.	
5.	Given a \$210 suggested retail price for the M/788, a \$298
	price for the M/700 ADL and a \$358 price for the M/700 BDL,
	<pre>where do you think the new gun would fit in our line from a price standpoint?</pre>
	\$275-300
	_ & 10 = 200
	Continued

6.	Do you feel the gun's design is unique?
	Yes — Answer Q7
	No
7.	What do you think is unique about the gun you tested? Oun has 700 quality in but action carline
8.	The gun you tested has an 18½" barrel. Would you prefer some other barrel length?
	Yes — Answer Q9 No Skip to Q10
	No Skip to Q10
9.	What barrel length would you prefer?
	Write barrel length here:
.0a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy 📐
	Satin
106.	If the gun were press checkered, would you prefer a glossy or satin finish?
	Glossy
	Satin

You positive.	the new floo Nellow id but when	int	o lor	42-
How would you rate the characteristics and it	ne gun you tes features?	ted on t	the fol:	lowing
	Excellent	Good	Good	Fair
Contour of stock		$\overline{\lambda}$		
Weight			<u> </u>	
Recoil				
Ease of Operation		$\overline{\lambda}$		
Overall Quality	×			
Color of Stock	*******			<u> </u>
Metal Finish		X		
Design of	<u> </u>			
Checkering Pattern				

A ·	we advertise the rif	-
Emplesi	n its size and	I hadling qualitu
1		10
	·	
What does ti	he word "carbine" me	ean to von?
SMY'	one late	ssight, quick pour
easy to	UN ASSESSED	<u> </u>
0		
		duced in 1980 in .222, .
		a retail price \$20 below t have on other Remingto
fire rifles:	•	
	Λ · · Λ Λ .	~/
Recommen	V yan include a	2) Culling would
* Kecommen	the month	ill be minumed
* Kecommen	the import	25 culiber as well will be minimal
He comment	the import	vill be minimal

Respondent's Name: OC Cellula.

BOLT ACTION RIFLE QUESTIONNAIRE

7mm-08 Cal. Serial # <u>86226</u> 225

	you dislike	. •	-	inich,
	Contraction	,	•	
How woul	d you impro	ve the cons	sumer accept	ance of thi
Star	ig wales inch we	est estre cigil h	de, sir	ten berin
	of overall center fir			
1/en	- Javar	rfle		
				

6.	Do you feel the gun's design is unique?
	Yes — Answer Q7
	No 💆 - Skip to Q8
7.	What do you think is unique about the gun you tested?
8.	The gun you tested has an 18½" barrel. Would you prefer some other barrel length?
	Yes — Answer Q9
	No 🖾 - Skip to Q10
9.	What barrel length would you prefer?
	Write barrel length here:
10a.	We are considering a number of stock finishes and whether to cut or press checker the gun. If the new rifle were cut checkered would you prefer a glossy or satin finish?
	Glossy 🔼
	Satin 💆
106.	If the gun were press checkered, would you prefer a glossy or satin finish?
	Glossy 🗁
	Satin 🗷

	t the new floo	r-place:	?	
Lile it!			···.	
		,		

How would you rate t characteristics and	he gun you tes features?	ted on	the fol.	lowing
	Excellent	Very Good	Good	Fair
Contour of stock		X		
Weight				\angle
Recoil				
Ease of Operation		X		
Overall Quality		X		
Color of Stock		*******	Y	
Metal Finish			X	
Design of Checkering Pattern		X		

	The in	1		
	es the word "o			neight.
			,	
.243, 6m M/700 Al fire rif	the new gun nm, .308 and 7 DL, what impac fles?	7mm-08 at a ct would it	retail pri have on ot	ce \$20 below her Remingto
Respo	ndent's Name:	Jan	Style	2
Q, .	ionselly :	on I fee	et Het	1/2 12
0	m-08	0 /2.	1.01	, apple

EYHIRIT 34

REMINGTON ARMS COMPANY, INC.

INTER-OFFARTMENTAL CORRESPONDENCE

Remington

PETERS

Xc: C.B. Workfard P.H. Holmherg

D.E. Bullis

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

Ilion, New York October 28, 1980

TO:

W. H. FORSON

FROM:

J. W. BROOKS & Tile

BOLT ACTION CARBINE

We have gone over the field test results you sent to us last week and from further discussion with you and Faul on the subject we are proceeding with a new rifle design with the following changes:

- New lighter barrel that will be approx. 12 oz. lighter than on field test models.
- Thinner and shorter walnut stock that will be approx. an ounce lighter than present walnut sample.
- Increase release latch spring force and/or reduce length of latch.

The weight of the finished rifle in 7mm-08 caliber will be approximately 6% pounds. All other features will remain as indicated on our letter of May 8, 1979, or as on the field test models. The weight of the rifle will change approximately 2.5 oz. from 308 to 222 caliber.

We have checked other items that could help reduce the overall weight. We will not proceed with any of these items unless you are interested.

- 1. New design floor plate assembly using aluminum, similar to M700 BDL type. Save approximately .84 oz.
- 2. Receiver remove material from ejection port. Save approx. .3 oz.
- 3. Model 788 rear sight in place of Model 700 rear sight, Save approx. .38 oz.
- 4. New design forged bolt handle similar to Model 600. Save approx. .48 oz.

If you have any further thoughts or information, please call.

JWB:T

Firearms Research Division

20-49-E

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Xc: C.B. Workman
P.H. Holmberg

D.E. Bullis

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"__

Ilion, New York November 3, 1980

TO:

W. H. FORSON

FROM:

J. W. BROOKS

SUBJECT:

BOLT ACTION CARBINE REQUIREMENTS

As a followup to my letter of October 28th, on the above subject, we are proceeding with the attached list of requirements for the bolt action carbine.

If you have any additions or changes, we would appreciate information from you as soon as possible.

JWB:T Attach.

Firearms Research Division

BOLT ACTION CARBINE Model Requirements

- 1. Stock Walnut wood average weight decrease of walnut over birch approx. 3½ oz. Making stock shorter and thinner than present field test sample will decrease weight approx. 1 oz. RK-W glossy finish and pressed checkering using pattern on field test models. M600 butt plate.
- 2. Barrel Proposed .100 smaller OD than present M700.
 Approx. 12 oz. decrease over field test models, pending satisfactory performance.
- 3. Receiver Like M600 but with longer tang like present field test models.
- 4. Model 600 bolt assembly with a Model 700 bolt handle. Bolt body altered to work with bolt lock.
- 5. New bolt plug with new bolt lock.
- 6. Model 700 barrel bracket.
- 7. Model 700 trigger assembly with new bolt stop release and reshaped M700 safety arm.
- 8. Model 600 bolt stop.
- 9. Model 700 BDL magazine.
- 10. Model 600 Follower and spring.
- 11. New trigger guard and floor plate assembly as used on field test rifles. Release latch will be made shorter and/or release latch spring stronger.

- 12. New rear trigger guard screw.

 Model 700 BDL front guard screw.
- 13. Model 700 rear sight base and sight. (New or alter to fit new barrel contour.)
- 14. Model 700 front sight base and sight. (New or alter to fit new barrel contour.)
- 15. Sling swivel studs.

JWB:T

REMINGTON ARMS COMPANY, INC. Fireards Research Division

January 5, 1981

Xc: J.W.Brooks
D.E.Bullis

= 132

TO:

J. R. SNEDEKER

FROM:

C. J. MILLER - R. E. NIGHTINGALE

SUBJECT:

MODEL 700 CARBINE

Work Order:

C 1856

30 - 0 1/2 (J.).

INTRODUCTION

Four Model 700s with undersized and shortened barrels were supplied to the Measurements Lab for strength evaluation.

SYNOPSIS

The two Model 700s tested passed our most severe strength tests.

PROCEDURE

The two Model 700s with barrels undersized on the outside diameter by .120" and shortened by 4 inches were chosen for testing. The .100" O.D. undersized barrels were not tested.

The first rifle (\$86261719) had a strain gage applied to the barrel for pressure measurements. Five proof rounds were fired and the barrel's O.D. was measured at one inch intervals starting at the muzzle. Then a super proof load (52.4 gr. of IMR 4198 and a 220 gr. bullet) was fired.

The second 700 Carbine (#86261940) was proof tested. Then four 220 grain bullets were forced into the barrel and a super proof load was fired.

RESULTS

There was no measurable or visual damage to either barrel. The stocks were broken due to gases escaping through or by the bolt.

The peak pressures measured by strain gage technique on B6261719 with super proof was 192,000 PSI-Strain.

The peak pressure on rifle #B6261940 with super proof and 4 bullets estimated (from other 700 testing) to be 400,000 PSI-Strain.

CJM:REN:T

Research Measurements Lab

- 1				i	ļ ;		Sugar
		1st Proof	2 800-	3 Proof	Proof	Proof	Proof
11	.537	537	.537	537	-537	537	
Muzik	<u> </u>	- 337	1537	-537	-537	537	-537 -537
2"	- 	537	1939	-537	-507	דענ	2537
311	.537	.537	.5.27	537	.500	557	537
47	.537	1537	.5371	537	1537	537	٠٤٦٦
5-11	.537	15 75	1550	.537	537	537	-5317
5"	,540	540	1541	1540	540	541	-540
74	.5-51	557	155/	551	.551	551	152
8"	.568	1.568	15621	.558	568	568	:568
91/	.598	577	- 578	1.598	2798	598	598
10"	.625	.626	. 6 25	625	6125	.626	625
11"	.655	1855	1455	655	655	1555	.655
12"	685	1.685	1685	1689	.585	625	.685
13."	.718	1.718	1.718	7/8	1.773	777	1.718
14"	.77 6 .885	.775	775	・フスス	1776	-777	.777
15"	. 885	885	885	885	.885	885	286
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CHAMBER STRAIN TO P.S.I.

IODEL: 700 (100010-	SERIAL No.: <u>8325/740</u>
CALIBER: 30-06	DATE: 12-11-80
GAUGE: =4-06-125BT	
DISTANCE FROM BOLT FACE:	
INSIDE DIA: . 34/	
OUTSIDE DIA : 1029	\
PRESSURE = Strain x $\left(\frac{E}{2} \times \left(\frac{Ro^2}{Ri^2} - 1\right)\right)$ = Strain	x (121.58) PSI/Uinlin)
REFERENCE AMMO:	

	Uin / in	P.S.I.
Rem 180,1		52,000
Saam; WY14		60,000
Saam VEINY		50,000
Proof4		38,000
5		
Avg.	,	

Saper proof + 4x200gr Gillets

Estimated 400,000 PSI- STRAIN

CHAMBER STRAIN TO P.S.I.

MODEL: 700 Carbin	2	SERIAL No.: <u>862617</u>
7001		10 11 20

CALIBER: 30-06 DATE: 12-11-80

GAUGE: <u>E 4-06-125-BT</u>

DISTANCE FROM BOLT FACE: 2.3"

INSIDE DIA: .34/

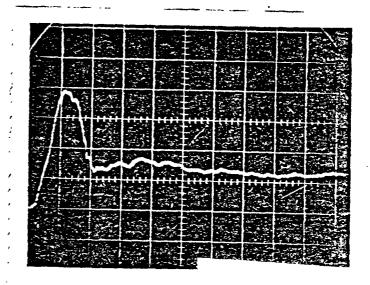
OUTSIDE DIA : /. 030

PRESSURE = Strain x ($\frac{E}{2}$ x $\left(\frac{Ro^2}{Ri^2} - 1\right)$) = Strain x ($\frac{121.85}{85}$ $\frac{95I}{16ahn}$

REFERENCE AMMO: _

		Uin / in	P.S.I.
Proof	1		84,700
Proof	2		84,700
Proof	3		83,400
Proof	4		89,100
	5		
	Avg.	,	

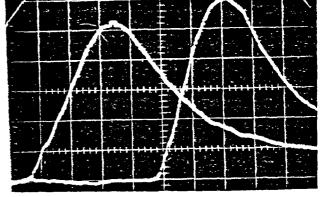
Super Proof
524g-IMA4198-2294.1.4
50,000 PSI-Strain Div
2msec Div.



Model 700 Carbine Chamber Pressure PSI-STRAIN 12-31-80 B 526/940

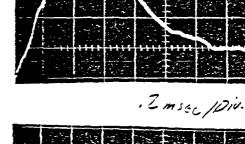
Aan 180g-

Saani 180g-10,000 PSI-STANI/DIL

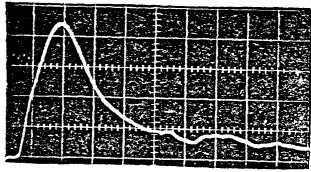


, 2 msec /Dil.

Soami 180z-10,000 PSI-BTRAIN/DI

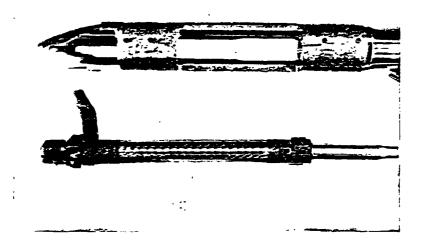


Rem Proof 20,000 PSI-STRAW DIV.

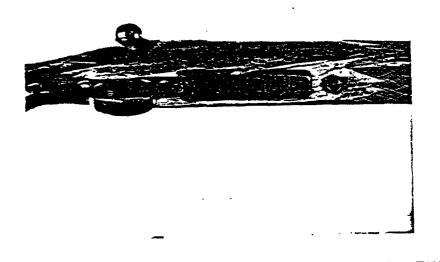


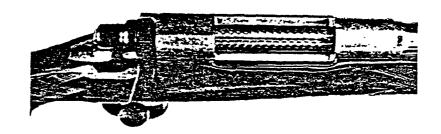
.2 msec/Div.

Model 700 Carbine B6261719 Super Proof



Model 700 Carbine B6251970 Super Proof + 4 x222 pr Ballets





SUMMARY OF INTENTIONAL GUN ABUSE TEST

•	DATA BY REWYCJM
	Data 12-11-80
FIREARM:	Make PENINGTON LARTINE Model 700
	Grade Gauge 3wob Serial Number 36261940
-	Origin Emp
	Test Number Assigned C 1556
	Comments 5 1901 10 20 4. (120.)
•	
HISTORY:	Condition NEW
	Previous Rounds Fired 11 + 17 - 1 P200 F
	Headspace at Test
,	Test Date _/2-11. 50
ABUSIVE	Powder Type
LOAD USED:	Powder Weight 53.491.
,	Case Make and Type Pering Ton - Panel
•	Total Sullet Weight 1100 F1.
•	Total Shot Weight
•	Estimated Pressure
•	
ADDITIONAL COMMENTS:	
COMMENTS.	
	•

REMINGTON ARMS COMPANY, INC. Ilion Research Division

SUMMARY OF INTENTIONAL GUN ABUSE TEST

	DATA By Co N
•	
	Date /2-/
FTREARM:	Make Rom. Carbine 18" BAL Model 700
-	Grade Gauge 30/06 Serial Number 86 26/7/9
•	Origin Exp.
	Test Number Assigned C/35%
	Comments:
HISTORY:	Condition NEW
	Previous Rounds Fired 2 FACTORY - 5 PROOF
	Headspace at Test www.ooz
	Test Data
•	
ABUSIVE LOAD USED:	Powder Type 4198
,	Powder Weight
	Case Make and Type REMINISTON PRIME
•	Total Bullet Weight 220 27.
	Total Shot Weight
•	Estimated Pressure 200,000 - Via STRain 199 5
ADDITIONAL	
	POTION FROZEN. PIPE WRENCH HAMMER
	REQUIRED TO OPEN- TROIT HEAD DAMPARED
	NO MAJOR DAMPGE TO GUN
	•

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	************	(
CATE REQUESTED	- 4-80	WORK CROS	IR <u>C-1850</u>	6
Cesigner or engineer	BULLIS			
HODEL BOTT AT. C	<u>arene</u> al men e	21-06	BARREL TYPE	MA ZIE
	~~~~~ (	<b>ਾ</b> ਜਾੜਦਾ		
•	11320	OF TEST		
NEW DESIGN		DESIGN CH	ANGE	
DRY CYCLE	ACCURACY	DAIDAG		· ·
PRESSURE	MUZZLE VELCOTY		2HOTCS	<del></del>
SVALUATION V	#OLT VELCOTIES			
STIMATED COMPLETION CAT				
	REPORT R	<u> </u>		
FORMAL	(NFORMAL		TEST RESULTS CAL	·
	الم المحادث			
		BJECTIVE		- 7 - 6 - 1 1
NEW M/100				
- 30-06 BBLS	- 400" 001	9 <b>68</b> 5125	} 700 ACZ	icu
-30-06 M	120"	· ·	<i>)</i>	
her presure				
		COURED_		
36262583 - 7 86262650 - 5	loo under			
3626201				
6261719	./Zo UNDER			
TEST COMPLETION DATE		\$1GNED		~~
3 1270				



RD-40 REV. 4-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

EXHIBIT 38

cc: J. P. Glas

J. E. Preiser

= 73

P. H. Holmberg

J. P. Linde

G. D. Campbell

Bridgeport, Connecticut March 11, 1981

TO:

J. W. BROOKS

FROM:

W. H. FORSON, JR.

SUBJECT:

BOLT ACTION CARBINE - REVISED MODEL REQUIREMENTS

We reviewed a prototype bolt action carbine last week. Please make the following revisions to finalize the design requirements.

- Walnut stock to be slimmed down in grip and fore-end areas.
- Grip cap installed Model 870 TC or similar.
- · Classic type rifle butt pad.

WEEL do f

E v 3 ?

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Xc: C.B. Workman

P.H. Holmberg D.E. Bullis

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R D-44-4

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

Ilion, New York March 23, 1981

TO:

W. H. FORSON

FROM:

J. W. BROOKS

SUBJECT:

BOLT ACTION CARBINE MODEL REQUIREMENTS

Per your letter of March II we have changed the model requirements for the Bolt Action Carbine as follows:

### Stock

- 1. Walnut wood
- 2. RK-W glossy finish
- 3. M700 Classic butt pad
- 4. Swivel studs
- 5. Grip cap (similar to Model 870 TC)
- 6. Cut checkering
- 7. Shape of butt stock similar to sample reviewed in March. Grip similar to Model 7 sample. Fore End similar to schnabel but with tip rounded off.

### Barreled Action

- 1. Barrel contour similar to M700 but approx. .100" smaller.
- 2. M700 rear sight assembly.
- 3. M700 front sight base with bottom radius to fit smaller barrel.
- 4. M700 front sight
- 5. M700 barrel bracket
- 6. M600 receiver with longer tang
- 7. M600 bolt stop with M700 type release
- 8. M700 trigger assembly with 2 position safety

To:

W.H.Forson

From:

J.W.Brooks

Subject: Bolt Action Carbine Model Requirements

3-23-81

- 9. M600 bolt assembly with M700 bolt handle and altered for a bolt lock
- 10. New bolt plug
- 11. New bolt lock
- 12. M700 BDL short action magazine
- 13. New stainless steel follower and spring
- New stamped trigger guard and floor plate assembly. Short release latch for front release. 14.
- 15. New trigger guard screw
- 16. M700 BDL front guard screw

JWB:T Firearms Research Division





4



### age presser

FILES

xc: H.K. Boyle H.C. Munson

> C.B. Workman \T.L. Capeletti

W.K. Bryant

L.B. Bosquet R.W. Farrington, Jr.

J.H. Sweeney E.A. Burdick

Est. #4152

December 7, 1981

G.D. Campbell

### Bolt Action Carbine

Estimated economic results have been developed for the proposed Bolt Action Carbine in both the first (1983) and third (1985) years of operation. These results are based on prices and volumes supplied by Marketing, and the "Present Operation" for each year was taken from the appropriate Accounting forecast.

Estimated first year results show net earnings of \$410M and a 7.0% net return on investment (full allocation basis) based on a Bolt Action Carbine volume of 28,500 units. First year incremental results are \$1,270 net earnings and a 23.9% net return on investment.

Estimated third year full allocation results based on a volume of  $3^{14}$ ,700 units are \$740M net earnings and a 10.5% net return on investment. Third year incremental results are \$1,770M net earnings and a 27.0% net return on investment.

J.C. Hutton, Superintendent Industrial Engineering Section

TRAndrews/kc Attached

### Bolt Action Carbine Estimated Earnings and Net Return on Investment (Quantities and Dollars in Thousands)

120131

		FIRST Y	EAR OF OP		(1983)
			RESULTS FROM	OPERATION	
		PRESENT	FULL	INCREMENTAL	AFTER THIS
		OPERATION	ALLOCATION	BASIS	PROJECT
<u>GENERAL</u>	. DATA				
Sales					
Shots		342			342
	ire Rifles	137			137
	Fire Rifles	393	38	2.8	330
21222	Total	771	28	28	7 99
SALES		\$ 168,440	\$6,730	\$6,730	\$ 175,1
Less:	Mill Cost	\$ 123,020	\$ 5,270	\$ 3,880	\$ 128
	Finished Product Distribu	tion	•		
	Expense Selling & Administrative	3,200	130	80_	3,
	Expense	14,070	540	3.10	14
	Total Cost	\$ 140,290	^{\$} 5,940	\$4,270	\$146.
PRETAX	EARNINGS	# 28,150	\$ 790	\$ 2,460_	\$ 28
	,				
NET EAR	NINGS	# 14,500	\$ 410	\$ 1,270	\$ 14.
INVESTM	ENT.				
		i .	<b>41.</b> —	#	<b>.</b>
Projec	t Expenditures ng Facilities used directly	<u> </u>	\$ 570	\$ 570	<u> </u>
in Or	erations	<u>65,650</u>			65, 6
Alloca	ted General Facilities	2,630	100	30_	3.6
Workin	g Capital	729,200	5, 200	4.720	134,4
Tota	1	\$ 197,380	\$ 5,870	[₡] 5,320	\$ 203
NET REI	URN CN INVESTMENT	7.3%	7.0%	23.9%	7.
SUPPLE	ENTAL CALCULATIONS	•			
Net ea	rnings after amortizing (or	ver	*	et .	
143yea	rs) operations charges	-	\$ 400	\$1,260	<del></del>
Total	capital required including		<b>et</b>	#	,
operat	ions charges - net	. •	\$6,010	\$ 5,470	<del></del>
	on total capital required		6.77.	22.07	
includ	ing operations charges		6.170	23.1%	

# BOLT ACTION CARBINE Estimated Earnings and Net Return on Investment (Quantities and Dollars in Thousands)

180 h/21

			. RESULTS FROM	(1985)	
		PRESENT OPERATION	FULL ALLOCATION	INCREMENTAL BASIS	OPERATION AFTER THIS PROJECT
GENERAL	. DATA	0.201.241	· · · · · · · · · · · · · · · · · · ·		1.00001
Sales				0	
Shots	uns	398	_		398
Rim I	ire Rifles	143			143
Cente Short	r Fire Rifles Total	367 908	35 35	35 35	4 6 3 9 4 3
	· ·	#	*	t.	
SALES		\$ 226,990	\$ 9370		\$236,31
Less:	Mill Cost	\$ 167,050	\$ 6,940	\$ 5,340	\$ 173,990
	Finished Product Distributi Expense	4.310	180	110	4.49
	Selling & Administrative Expense	18,910	סרף	440	19,68
	Total Cost	\$ 190,270	\$ 7,890	\$ 5,690	\$198.16
PRETAX	EARNINGS	\$ 36,720	1	[#] 3,439.	
NET EAR	NINGS	\$ 18,910	\$ 740	₹ 1,770	\$ 19,65
INVESTM	<del></del>	:	\$ 570	\$ 570	<b>4</b>
	t Expenditures  ng Facilities used directly		\$ 570	\$ 570	-
in Or	erations	67,720	- '		67,720
	ted General Facilities	3.410	6,370	<u>50</u> 5,930	160,600
	g Capital	\$ 225,360	\$ 7,080	<del></del>	\$ 232,440
Tota		í	\ 0.57	21.0%	
	URN ON INVESTMENT	8.47	/ 0.3/	2.1.0 //	8.5
	ENTAL CALCULATIONS				
	rnings after amortizing (over rs) operations charges	T	\$ 730	\$ 1,760	<del></del>
	capital required including ions charges - net		\$ 7,220	\$ 6,700	

# Bolt Action Carbine Estimated Earnings and Net Return on Investment (Dollars in Thousands)

			Year of Ope	nation (1	983)
		. – <del></del>		THIS PROJECT	OPERATION
		PRESENT	FULL	INCREMENTAL	AFTER THIS
		OPERATION	ALLOCATION	BASIS	PROJECT
<u>GENERAL</u>	DATA				
Sales					
Shorts	uns	341,500	_	•	3 41,500
	ire Rifles	137 050			137,050
	Tire Rifles	293/60	2 9,500	28,500	320.660
guera	ter destrois Total	770710	28,500	29,500	799,210
SALES	~-	\$ 168,442	\$ 6,676	\$ 6,676	\$ 175.11
_					113.11
Less:	Will Cost	\$ \23023	\$ 5,412	\$ 3,988	\$ 128.43
	Finished Product Distrib	ution 3.200	127	80	3.33
	Selling & Administrative				
	Expense	14,067	534	304	
	Total Cost	\$ 140,290	\$ 6,013	#4.372	\$ 146,36
NET EAR	NINGS	\$ 14,498	\$ 317	\$1,193	\$ 14,81
INVESTM	EVT				
		d <b>ir</b>	#F 15-15.	# ~	<b></b>
Projec	t Expenditures ng Facilities used direct	\$	\$ 570	\$ 570	<u>\$ 570</u>
2225		<u> </u>			
	ETATIONS	65,648			
in Op	erations ted General Facilities	2,527	100	33	1,62
in Op		739,190	5,227	4,738	7,62° 134,417
in Op	ted General Facilities ng Capital	2,527			134,417
in Op Alloca Workin Tota	ted General Facilities ng Capital	739,190	5,227	4,738 \$ 5,341	65,648 7,62° 134,417 \$203,26°
in Op Alloca Workin Tota	ted General Facilities  ng Capital	7 537 729, 190; \$ 197,365;	5,227 \$ 5,897	4,738 \$ 5,341	134,417 \$203,26
in Op Alloca Workin Tota NET RET	ted General Facilities  ng Capital	7 537 729, 190; \$ 197,365;	5,227 \$ 5,897	4,738 \$ 5,341	134,417 \$203,26
in Op Alloca Workin Tota NET REI	ted General Facilities  Ig Capital  URN ON INVESTMENT  MENTAL CALCULATIONS  Armings after amortizing (	7.3%	5,227 \$ 5,897 5.4%	4,138 \$ 5,341 22.3%	134,417 \$203,26
in Op Alloca Workin Tota NET REI	ted General Facilities  Ig Capital  URN ON INVESTMENT  TENTAL CALCULATIONS	7.3%	5,227 \$ 5,897	4,738 \$ 5,341	134,417 \$203,26
in Op Alloca Workin Tota NET REI SUPPLEY	ted General Facilities  Ig Capital  URN ON INVESTMENT  MENTAL CALCULATIONS  Armings after amortizing (  LTS) operations charges	7.527 729,190 # 197,365; 7.3%	5,227 \$ 5,897 5.4%	\$ 5,341 \$ 5,341 22.3%	3,62° 134,417 \$203,26
in Op Alloca Workin Tota NET REI SUPPLE- Net ea 14 year Total	ted General Facilities  Ig Capital  URN ON INVESTMENT  MENTAL CALCULATIONS  Armings after amortizing (	7.527 729,190 # 197,365; 7.3%	5,227 \$ 5,897 5.4%	4,138 \$ 5,341 22.3%	3,62° 134,417 \$203,26
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in Or Alloca Morkin Total NET REI Total Operat Return	ted General Facilities  ng Capital  TURN ON INVESTMENT  TENTAL CALCULATIONS  Tennings after amortizing ( Tennings operations charges)  capital required including	2,527 129,190 # 197,365; 7.3%	5,227 \$ 5,897 5.4%	\$ 5,341 22.3% \$ 1,180	3,62° \34,417 \$203,26°

# Bolt Action Carbine Estimated Earnings and Net Return on Investment . (Dollars in Thousands)

	Third Y	ear of Ope	eration (1	905)
	· · · · · · · · · · · · · · · · ·	RESULTS FROM	THIS PROJECT	OPERATION
	PRESENT	FULL	INCREMENTAL	AFTER THIS
	<u>OPERATION</u>	ALLOCATION	BASIS	PROJECT
GENERAL DATA				:
Sales				•
Shotguns	397,500		_	397,500
Rim Fire Rifles	143450			143,450
Center Fire Rifles Shotgun Barrels Total	<u> 367 655</u> 908,605	34,700 34,700	34,700 34,700	943 305
700 CB 200 200 10 [01]	. 708,803	37,100	34,700	7 4 5 30 3
SALES	\$ 226,994	\$ 9,070	\$ 9.070	\$ 236,054
tone Will Com	\$ 167,051	\$ 7,091	\$ 5,515	\$ 174.142
Less: Mill Cost Finished Product Distribu		- 1,091	- 5,515	4 114,142
Expense	4.313	172	109	4.485
Selling & Administrative Expense	100.81	737	408	19,638
Total Cost	\$ 190,265	\$ 3,000	\$ 6,032	\$ 198.269
PRETAX EARNINGS	\$ 36,719	\$1,070		\$ 37,789
NET EARNINGS	\$ 18,910	# 557	#1,571	# 19,46
INVESTMENT				
Project Expenditures	\$	\$ 570	\$ 510	\$ 570
Existing Facilities used direct in Operations	Ly 67,723	<del></del>	<del></del>	67.723
Allocated General Facilities	3,405	136	45	3,541
Working Capital	154,228	6,293	5.867	160 521
Total	\$225,356	\$ 6,999	\$ 6,482	\$ 232,355
NET RETURN ON INVESTMENT	8.4%	8.0%	24.29	8.47
SUPPLEMENTAL CALCULATIONS	·			
Net earnings after amortizing (	ov <del>er</del>	\$ 544	\$1,557	<del></del>
Total capital required including operations charges - net	g 	\$ 7,176	\$ 6,659	<b>2</b>
Return on total capital required	•			

FIGT 9

xc: H.K. Boyle
H.C. Munson
C.B. Workman
T.L. Capeletti
W.K. Bryant
J.P. Linde
L.B. Bosquet

R.W. Farrington, Jr.

Est. #4152 (Revised)

February 9, 1982

G.D. Campbell

#### Bolt Action Carbine

The estimated economic results for the proposed Bolt Action Carbine have been updated based on revised data issued by P.E.&C. The changes reflected in this update include:

- 'Metal finishes equal to the M/700.
- A revised stock machining process utilizing the Richardson RTR NC-Router.
- Revised discount factors and third year pricing.
- *Including the cost effect of the rivetless extractor in the third year.
- ·Revised project expenditures.

The net effect of these changes is to increase the estimated unit cost by \$4.64 in the first year and \$3.17 in the third year. This results in reduced margins and net returns on investment in all positions.

The revised economic results are summarized as follows:

	First Ye	ear (1983)	Third Ye	ear (1985)
	Full Book	Incremental	Full Book	Incremental
% Pretax Margin Net Earnings Net ROI	9.0% \$ 317 5.4%	 \$1,193 22.3%	11.8% \$ 557 8.0%	 \$1,571 24.2%

J.C. Hutton, Superintendent Industrial Engineering Section

10 Hotton / RWTh

TRAndrews/kc Attached

## BOLT ACTION CARBINE ESTIMATE UNIT PRICES, COSTS, AND PRE-TAX EARNINGS

	First Year Of Operation (1983)	THIRD YEAR OF OPERATION(1985)
QUANTITY	28,500	34,700
RETAIL SELLING PRICE	\$ 440.00	\$ 491.00
NET SELLING PRICE	\$ 234.23	\$ 261.38
LESS: TOTAL COST	\$ 213.08	\$ 230.55
PRE-TAX EARNINGS	\$ 21.15	\$ 30.83
% OF NET SELLING PRICE	9.0%	11.8%

GDC:JS 2/10/82

#### REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE





Xc:

Kc: C. B. Workman

J. W. Brooks

F. E. Martin

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

March 2, 1982

TO:

T. L. Capeletti

FROM:

I. S. Martin

SUBJECT:

**Bolt Action Carbine** 

The New Product Design Group was asked to help develop the aluminum cast floor plate/trigger guard. A meeting was held with John Brooks, Fred Martin, and myself on February 25, 1982.

A complete review of the work that Bill Simpson had started was covered. Fred Martin will start the design on February 26, 1982. He has estimated it will take three weeks to layout and detail. After this is complete, it will take four weeks to make a prototype. If the first one is successful, four more would be made and a test program would be set up. It is estimated to take four weeks to build the four prototypes and two weeks to test.

This job will set back the work on the New Bolt Action Rifle (M/7) by six weeks. It will also lay a heavy burden on the Model Shop and Test Lab. It is felt that this job should have been done two years ago and it will not meet the schedule for the 1983 announcement of the Bolt Action Carbine now anyway.

#### Summary

#### Schedule Should Look Like This

February 26 - Start

March 22 - Complete layout/design details

April 19 - Complete first prototype
May 24 - Complete four prototypes
June 14 - Complete test and transmit

#### Schedule Will Be Like This

February 26 - Start

March 22 - Complete design

April 19 - Complete prototype (redesign)

May 10 - Complete redesign

July 19 - Complete second prototype

July 19 - Get Marketing approval

July 26 - Complete four prototypes

August 9 - Complete test (problem come up)

September 6 - Complete redesign

October 4 - Complete third prototype

November 1 - Complete four prototypes

November 15 - Complete test and transmit

It is felt by Management that this design could be needed to reduce cost. However, we can not meet the schedule (1983 announcement) date with this design.

It is also felt it will delay the work we are doing on Bolt Action Rifles that is now needed to increase our share in the market place.

ISM:ws

. RD-69 REV. 5-38

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Clark

Clark

March 4, 1982

C. A. Riley C. B. Workman

#### OUTSIDE SUGGESTION FROM G. H. LEE FOR MODIFIED MODEL 660 CARBINE

Attached is material we received from a Garry H. Lee describing his suggestion for the reintroduction of a modified Model 660 Carbine. I note that we plan to introduce our new bolt action carbine towards the end of this year.

Please let me have your comments regarding Mr. Lee's suggestion so that I can respond.

BE/vh attch. 44.00-L

> REMINGTON ARMS CO. RECEIVED

> > MAR 8 - 1982

FIREARMS RESEARCH DIVISION

Remington Arms Company, Inc.



#### Ideas Pertaining to Reintroduction of a Modified Model 660

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- Recent magazine articles have renewed my interest in your Model 600/660 carbine. In the March 1981 issue of the American Rifleman, pg. 42,

  John E. Maxson told how he made his ideal lightweight rifle by modifying a Model 600 carbine. Jim Carmichel, in the April 1981 issue of Outdoor Life, pg. 88, praised the Model 660 he had used on an elk hunt. It is unfortunately true, to paraphrase Mr. Carmichel, that the gun did not catch the sportsman's fancy until it was out of production.
- The December 1974 issue of Guns & Ammo, pg. 36, carried an interesting article by John F. Rea on the Model 660. After shooting two of these carbines extensively for several years, he said it was undoubtedly the best carbine ever offered to the hunter. It is impossible to know what caused the demise of the firearm. Some have suggested it failed because it was competing with the Model 700. This sounds unlikely because of your introduction of the Model 788 rifle, and now you are marketing the Model 788 as a semi-carbine, as well as a rifle, without hurting your Model 700 sales. The two best possibilities for the failure of the Model 660 are the choice of cartridges for which it was chambered and the use of plastic in its fabrication.
  - Rifles are made with falling block, lever, pump, autoloading and bolt actions. They are chambered for the many different rounds from the .222 Rem. to the .458 Win. Although the bolt action is the most popular, the favorite singular rifle-cartridge combination is the Winchester/Marlin lever action chambered for the .30-30 Win. Levers chambered for other cartridges have only limited appeal. Undoubtedly the late John Wayne contributed much to the nostalgia of the .30-30, but the continuing acceptance of the rifle is because hunters realize the cartridge is adequate for their needs and the rifle is easy to

handle and pleasant to shoot. A bolt action carbine with similar performance and characteristics would gain the acceptance and popularity that the .30-30 Winchester has. The ideal choice for such a gun is the Model 660 chambered for the .30 Rem.



There will be those who will want the carbine chambered for some cartridge other than the .30 Rem. It is well known that a 5½ to 6 lb. carbine with a 20-inch barrel has greater recoil and muzzle blast than a 7½ to 8 lb. rifle with a 22 to 24-inch barrel has when chambered for the same cartridge. The avid shooter is impervious to heavy recoil, but the average hunter is not an avid shooter. Although it is true recoil is not noticed during the excitement of the hunt, the anticipated recoil is considered in the gun shop when a rifle is being selected and is felt on the range when the rifle is being fired and zeroed in. This carbine is not designed for the Elmer Keiths, the Col. Askinses or the Jim Carmichels. It is designed for the John Does and the Joe Doakses who comprise the larger segment of the market. Col. Townsend Whelen believed the average shooter could tolerate approximately 15 ft.lbs. of recoil. This tolerance, along with muzzle blast, must be kept in mind when selecting alternate cartridges for the carbine.

For those hunters who will want a cartridge that has a flatter trajectory than the .30 Rem. has, I suggest developing a new one based on the .30 Rem. case. It will utilize the same bolt face and thus absorb some of the tooling costs. The .243 Win. and 6 mm Rem. cartridges are loaded with lightweight bullets for high velocity. They produce mild recoil, approximately 13 ft.lbs., but have small expansion ratios which cause some muzzle blast. Although these cartridges are acceptable, they are not ideal for a carbine. An ideal cartridg can be made by necking the .30 Rem. case to .257 caliber and moving the shoulder forward approximately .145 inch. The case may have to be strengthened to withstand chamber pressures of 50,000 to 53,000 c.u.p. By retaining the

outside dimensions of the case while increasing the thickness of the walls, the capacity would be reduced by no more than one grain of water. With a 100-grain bullet seated to a depth of .270 inch, the cartridge will have sufficient powder capacity to propel the bullet at a velocity of approximately 2800 fps. This is between the velocities developed by the nearly obsolete .250 Sav. and .257 Roberts and well below that generated by the .25-06 Rem. Just as the .222 Rem., .222 Rem. Mag. and .223 Rem. complement rather than compete with the .22-250 Rem. and nearly obsolete .220 Swift, this cartridge would appeal to those who are not interested in the .25-06 Rem.

- It goes without saying that developing and introducing a new cartridge is not without risk. Therefore, it is necessary to consider all possible applications for which the cartridge/case may be used. Here, the axiom, "Need is the mother of invention", comes into play. A .224 caliber cartridge based on this case would perform approximately the same as the popular .22-250 Rem. A .243 caliber cartridge would have somewhat less velocity than the .243 Win. and 6 mm Rem. For these reasons, plus the fact this is a light hunting carbine rather than a heavy varmint rifle, these cartridges may be disregarded. A .264 caliber cartridge would be nearly the same as a .257 caliber. It is true the larger caliber of two bullets of the same weight will have a greater muzzle velocity, everything else being equal, but it also has a smaller ballistic coefficient and therefore loses the velocity advantage on the way to the game at ranges of 200 yards or so. The 6.5 mm suffers from a bad reputation, although undeserved, and should be avoided.
- A .257 caliber cartridge is the only practical one that can be developed from the .30 Rem. case for use in a hunting rifle. However, there is a conspicuous gap between cartridges based on the .308 Win. and those based on the .222 Rem. used in benchrest rifles and silhouette/hunting pistols. Cartridges for these

Page 4

and the control of the control of the control of the control of the control of the control of the control of the

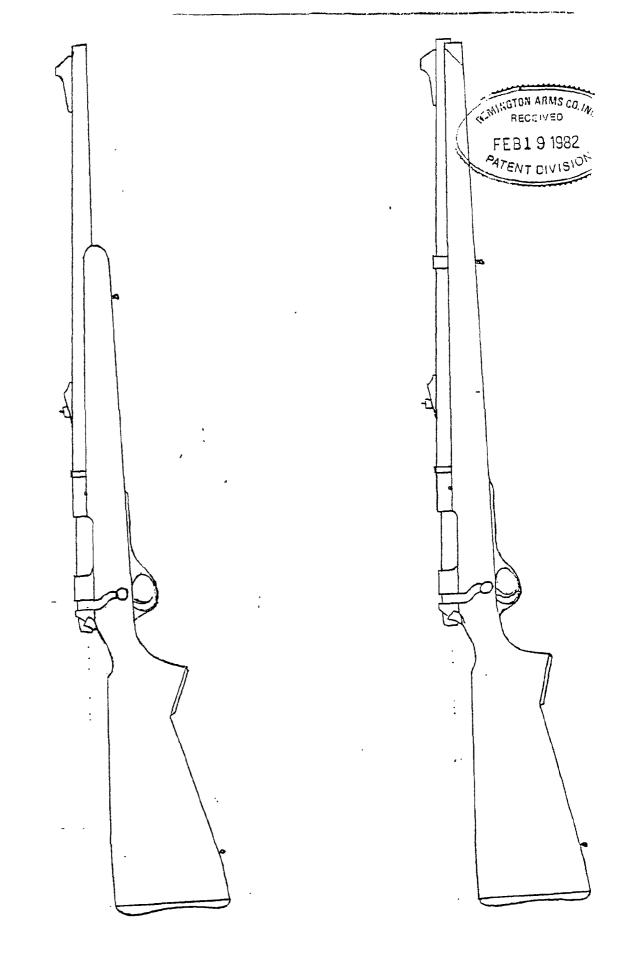
firearms based on the new brass would fill that gap and prove to be quite successful, particularly in the 6 mm and 7 mm calibers. The lack of an adequate supply of this brass to date has precluded wildcat development of such cartridges. If Remington Arms were to develop these cartridges in addition to the .257 caliber rifle cartridge, the rewards for the efforts invested would be greatly increased.

- The .223 Rem. and possibly 6 x 47 mm are two additional cartridges well suited for this carbine. They are good varmint cartridges at the shorter ranges and when properly handloaded are excellent for turkey hunting.
- For those who wish a more powerful weapon, the obvious choice of cartridges is limited to the .308 Win. and .358 Win. The .308 Win. is a well known and respected cartridge. Nothing derogatory can be said for its selection, and there is no need to repeat its fine qualities. The .358 Win. is a different matter. Since its introduction in 1955, it has never become popular. The reason for this, and this applies to the .350 Rem. Mag. also, is that hunters prefer bullets of .30 caliber or less for deer size game. A .35 caliber bullet appeals only to a relatively few hunters of the larger elk and moose. The .358 Win. is less powerful than the .350 Rem. Mag, but it kills just as effectively and recoils considerably less. Therefore, the .358 Win. will be accepted by those who would not accept the .350 Rem. Mag. and will be preferred by those who would not accept the .350 Rem. Mag.
- As to the carbine itself, it will, naturally, use the Model 660 action. It should be a quality piece so as to complement your Model 700 rather than compete with the Model 788. It should be offered with two styles of stock, a full Mannlicher and a conventional short stock. The stock should be as

straight as possible with minimum drop at the heel. The comb should be high and wide with a very slight forward slope. A builtin cheekpiece also may be considered. The butt plate area should be ample with 5½" x 1½" minimum dimensions. The length of pull should be 13½". The grip should be full or nearly full pistol, especially for the heavier cartridges. The forestock should be of sufficient size, not less than 1½" width, to provide a firm grip. The cross sectional dimensions in the receiver area can be scaled to the appropriate cartridge head diameter of .422" and .473" to achieve the desired slimness and weight. The 20-inch barrel should have a blade front sight similar to the Model 788. I prefer an aperature receiver sight but realize an open rear sight is quicker and more familiar to most hunters.

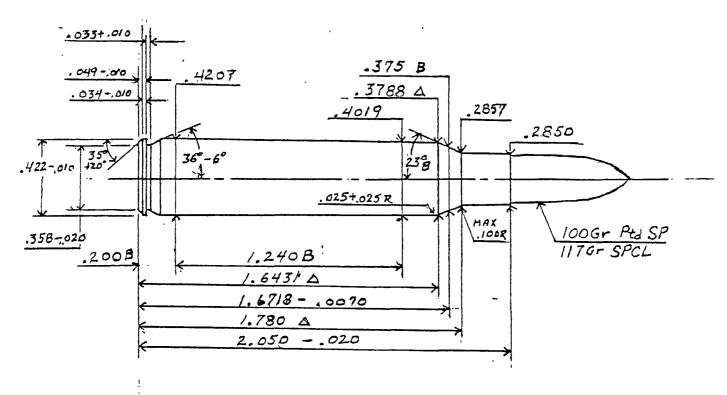
- Remington is continually involved in research and development. Your introduction of the .25-06, 8 mm Mag., 7 mm Express, 7 mm-08 and 7 mm BR cartridges are fine examples of your endeavors. You have redesigned your autoloading and pump rifles to improve already excellent products. There is a need for a small, light sporting rifle. Your comments on the resale value of the Model 600, as told by the editors of Outdoor Life, July 1981, pg. 8, indicates the current interest shown in the weapon. A Model 660, modified along the lines suggested will satisfy the need for a bolt action carbine that is easy to handle and pleasant to shoot, and chambered with an adequate cartridge. It will be welcomed by sportsmen and will enjoy a lasting popularity in the years to come.
- respectfully hope you find this idea compatible with Remington's policy to provide products that satisfy the needs of the shooting community.

Sarry Here Garry H. Lee





## .250 REM.



RD-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

XC:

F.M. Ames
J.F. Bates
J.J. Bechard
J.W. Bower
H.K. Boyle
J.W. Brooks
T.L. Capeletti
G.E. Fletcher
J.P. Linde
J.S. Martin

C.E. Ritchie

Ilion, New York May 27, 1982

C.B. Workman

LIMITED DISTRIBUTION

#### MODEL SEVEN PRODUCTION TOOLING

To alleviate an approximate 1600 man hours of tool room backlog work, caused by the 5/4 work plan, the Research Model Shop is providing assistance on a first priority basis.

Six jobs, estimated at 700 man hours of work, have been released to the shop. To meet the scheduled completion dates, six (6) model makers have been assigned to these jobs. This will result in approximately 120 man days delay of Research prototype work. Presently this will affect the XSG program.

The remaining model makers (6) will continue on priority model work, namely the Model Seven and 700 ADL Restyle. No delay is anticipated in completion of the six (6) XSG prototype models scheduled for July, 1982.

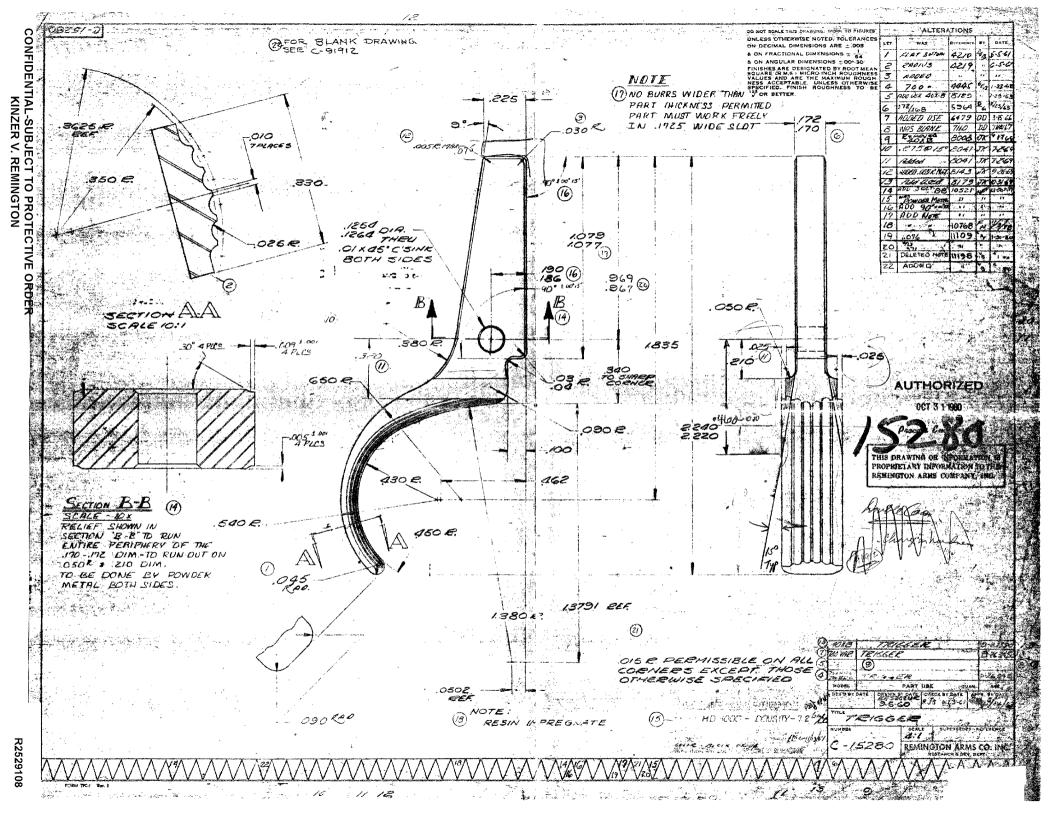
R.L. Sassone, Supervisor

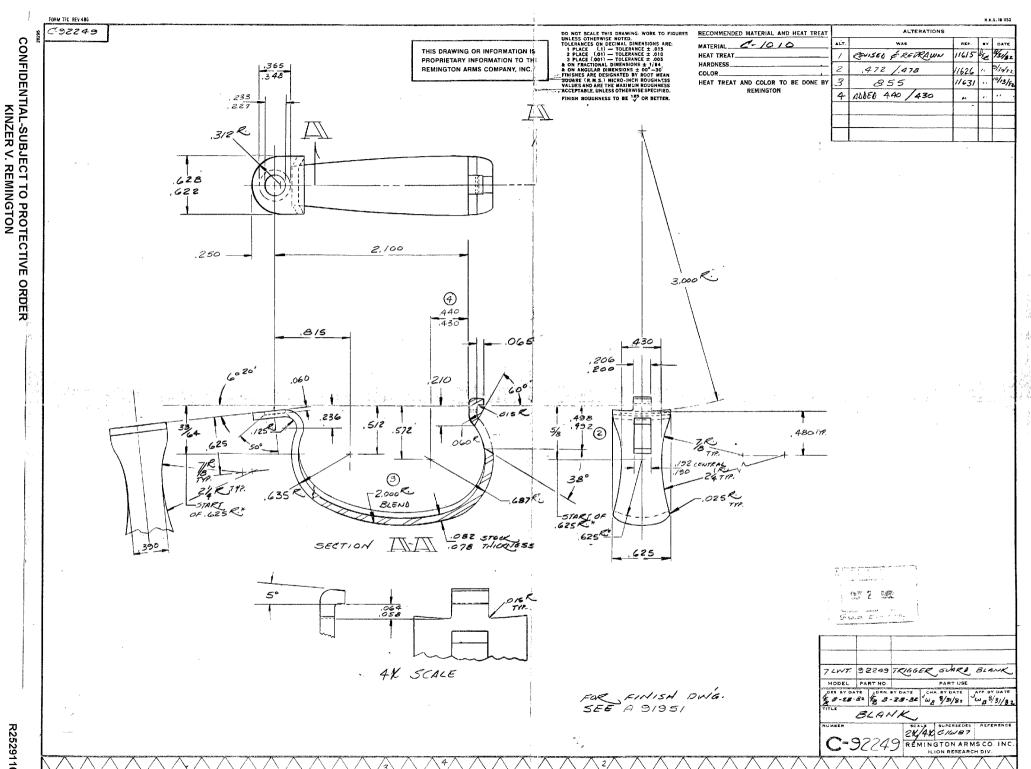
Project Control & Administrative Services

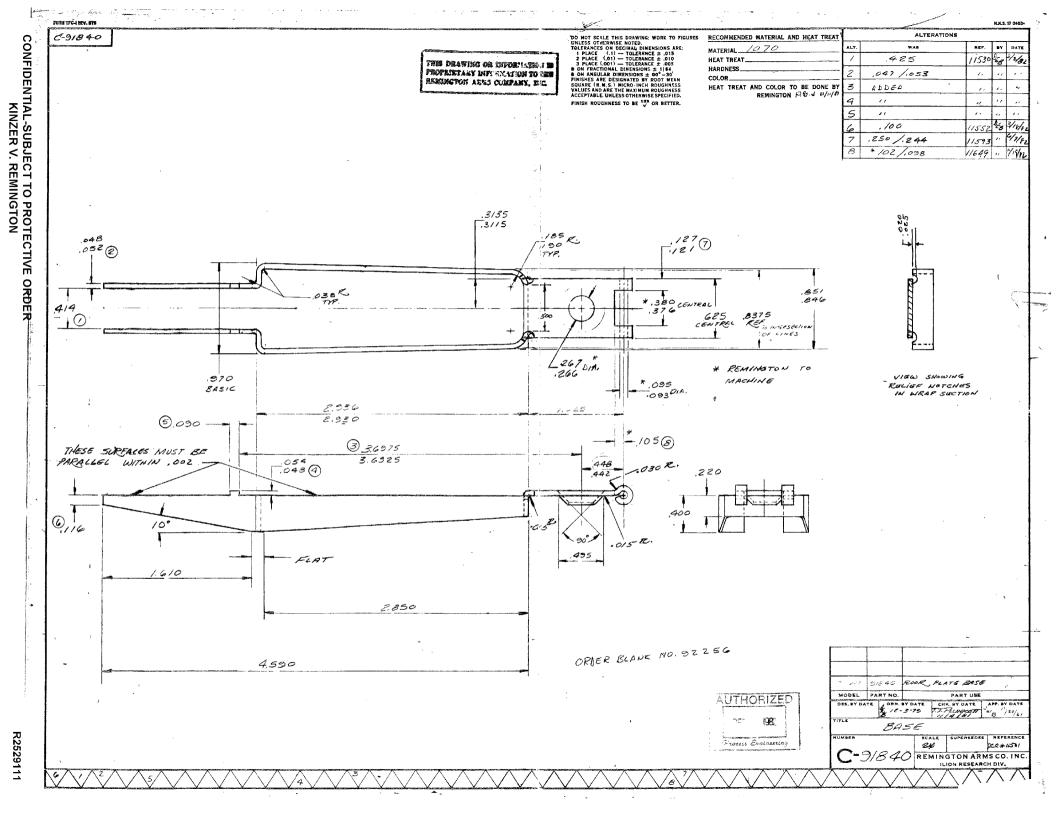
RLS:m

MODEL SEVEN LWT 1983

RECORDS CONTROL SCHEDULE
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PROJECT FILE
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FACILITY OR UNTIL OBSOLUTE
GS-11050 Rev. 8/78







## Model Saven Lately

Elanks produced	12/30/82	1/4/83	1/5/83	1/6/83	1/7/83	1/10/83
Remington Fermer	432	76	0	0	39	
Fermer		47	30	30	30	
	432	555	585	615	69	
POWDUR MUTAL						
12 / · /a						
Parts in prices	<b>~</b>				_	
Strakela will	87	0	0	0	30	
Will Slat	0	0	0	0	۵	
. Arill holes	0	0	47	0	0	
burmali	0	0	0	0	39	
Color	0	76	0	0	0	
		,				
Parts to assembly	67	87	75	77	30	
Total to date	345	432	507 5	84	614	

Lot Enedeker

1-6-83

Publicus Excessive opening between Flow Plate Cover Assembly and Stak at Final Assembly.

Sockground: There was no specification for acceptable gap included in the gum speces. During The the question came up at Final Augustion and the decision was made to use the M/700 spece.

of .030. This persel to be insufficient and was increased to .035. The M/700 is not gazed for this spec. and when the M/Saren production gums come them, they were not gazed either.

On 1/5/53 an arbitrary spece of .025 was decided on. Jums were brought to Final Surge. from the Warehouse and were gazed (with a feeler gaze) to the .025 dimension. Forty-one (41) only of one bundled sipty-one (16) passed.

Buguam: Have a study new on the components in held love an effect on this condition. The study should fallow a group of parts from the blank then the processing steps to Line be breakly. The components involved are:

· Flace Blake Base Blank

C-92256

· Flore Plate Love

C-91840

· Filos Plate Coner Blank

C-92255

· Floor Plate Coner

C-9/84/

· Floor Plate Pad Blank

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C-92449

Prints of each model dearing are attacked.

Included in the prints are the Floor Plate base

Quantly and the Floor Plate Comer Quantly. There
prints are included for information purposes, as
the study will include the beging operations on
both accemblies.

Thank you, Bead Saguet

## REQUEST FOR MEASUREMENT ASSISTANCE REQUEST !

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### REQUEST FOR MEASUREMENT ASSISTANCE REQUEST !

REQUESTED BY	En Pro	CTS ENG.	DATE	MODEL 3 7/Let	PART CESCR!	PTION PLATE COUER
PART NO.	CPER.	DESTRICT O	ESCRIPTION	\	J . COOK	GEPT. BLOG.
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nocel DNG-Bin-	MODEL DUG-GIN-	MODEL.	HOCEL CNG.CIM.	HODEL ONG.OIH.	NOCEL CHG.DIM.	1300h 1300h -NIG-DWO -NIG-DWO
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## REQUEST FOR MEASUREMENT ASSISTANCE REDUEST !

REQUESTED SY  NEW PRODUCTS © PART NO. DPER.	~6,	1/6/83	TLWT	FLOOP F	PTION LATE COVER	1
PART NO. 10,20,3	OPERATION CESC	RIPTION			8575	ELDG.
HORK REQUESTED		_				
CHE	CK 3.850 D	ing.	. ,			
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### REQUEST FOR MEASUREMENT ASSISTANCE REDUEST !

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## REQUEST FOR MEASUREMENT ASSISTANCE REQUEST !

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### REQUEST FOR MEASUREMENT ASSISTANCE REQUEST . -

PERT NO. PER.	F . 12	DATE	MODEL 7 LWT	PART DESCRI	PTION PLATE BAS	C
PART NO. CPER. 10, 20,30	DESTRICT OF	SCRIPTION +	De		8575	BLOG.
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0°30' 0°35'		<del>                                     </del>			<del></del> ! :	
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#### REQUEST FOR MEASUREMENT ASSISTANCE REDUEST

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	ART NO			GPER.	<u> </u>	v	OP€RATIO	N C	ESC	RIPTION	£A	~	HOLI	<u> </u>					BEPT.	75	_	BLOG.
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#### REQUEST FOR MEASUREMENT ASSISTANCE REDUEST .

REQUESTED BY	5.16	HTE HOOEL 1/6/35 7LW	PART GESCR	PERT GESCRIPTION FLOR PLATE BASE BEST. BLOG.							
PRRT NO. CPER.	DPERATION DESCR	IPTION P-		DEPT. BLOG.							
HORK REDUESTED 10, 20, 3		T 4 REAM	^ -	8575							
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MERSURED BY G. BARNE	٠ · · · · ·	DATE 1/13/	/a 2	SAMPLE SIZE							
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NOTE: X INDICATES OUT OF TO	Canaca III			<u>'</u> L							
TO 1UL CEINALUM + FRANCE	LERMALE										

### REQUEST FOR MEASUREMENT ASSISTANCE REQUEST .

REQUESTED BY	C	ENG,  DPERATION OF	DATE	HOUEL	PART DESCRIE	TION	<del></del>
PRIT NO.	TROPUCTS	ENG, DESTRICTION OF	1 1/6/8 3 SCRIPTION	> 17LWT	1-Look	PLATE BALE	BLOG.
1,0,-		30 M.L.	SLOT of	PCAM		8575	
CRK REQUESTED		OF COUNT			•		
	CRALL SIZE				•		
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TERSURED BY	& BARN	<b>©</b> 5		IATE 1/13/2	33	ANPLE SIZE	
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## REQUEST FOR MEASUREMENT ASSISTANCE REQUEST ! -

REQUESTED BY  NEW PRODUCTION PORT NO. GPER.	ets hwa .	1/6/83	TLWT	FLOOR	PLATE BASE	
92256 PURCHASE PA	CT CARRIED CESC	RIFTION	•		1289 1289	8626.
HORK RESUESTED	ME TO PLATE					
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MERSURED BY	(F. 6		1/2C/	83 ·	SAMPLE SIZE	3 <i>0</i>
REHARKS	<u> </u>			<del></del>		<u> </u>
	MEAS	URED	DIMENS	IONS		<del></del>
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e air. × e air. ×	e din- × e	gin. X	e cin. X	s din- X	s CIN- X	. gin.
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	H 59		74	37		-
15 +.005 30005	45 60		75	90		
NOTE: Y INDICATES OUT OF TO	LERRICE		Mark Williams			

## REQUEST FOR MEASUREMENT ASSISTANCE REQUEST #

PERLETED BY PRAN. ENG.	presention description	MOSEL PART GESCRE	PLATE BASE
	OPERATION DESCRIPTION  MILL REAM		9289 BLDG.
SEE CHANGE	E IN QUAFTER MIL	L + REAM TO BASE P	. * . *
		•	
			:
MEASURED BY	0 (0.5	12/2/83	SAMPLE SIZE
REMARKS.	SIME 2	L/6/83	30
	W500W05D	DIMENSIONS	
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NOTE: X INDICATES OUT OF TO	TI FRONCE		

#### REQUEST FOR MEASUREMENT ASSISTANCE REQUEST .

PEQUESTED BY	J PROD.	Ē,	٦٩,		DATE	18	5	MOGEL 7 LW	1	-	FLUO	RIP C	PLATE	В	95	£	
PART NO.	PROD.  PURCHASE	Δ.,	CHERRITO	N CE	SCRIPTIO RE RE	N Am	· ^^						928	a		SLGG.	
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#### REQUEST FOR MEASUREMENT ASSISTANCE REQUEST!

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# Samphe

## PURCHASED PART 17512511

Part No. 922	.55	Lot iv.				
Drawing No		Quantity	30			
Part Name 71W	T Floor Plate Cover Blu	ank Gage or Cal				
P. O. Number		Sample Size	lst30 /2nd			
Vendor		AQL				
Date Received		Material				
Inspector kw	Date /- //- &3	For Lab	Date			
Accept Lot	Reject Lot	Accept Mtl	Reject Mtl			
Special Notes:						

GAGE NO.	DIM.	# IN		# OUT O UNDERMIN lst 2nd	-OVERMAX	REMARKS
mics	054-050	30			-	
Phug Gaye	090-075	30				
46036	3" Rodius	30				
Cahipers	.)	30	i '	<u> </u>		
·	640 - 630	30	1	,		
46055	Pos Gage	30	1	)		
46054	Pas of hoLE	30	, 1			
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Lenght	3,960 - 3.950	30		;		
	155 - 145	30		:		
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72-5-47

## Samphe

## PURCHASED PART INSPECTAL.

Part No. 92256	Lot Ma.			
Drawing No.	Quantity30			
Part Name 7 LWT FLOOR Phote Base Bl	landage or Cal			
P. O. Number	Sample Size lst_30 /2nd			
Vendor	AQL			
Date Received	Material			
Inspector & Date /-//-83	For Lab Date			
Accept Lot Reject Lot	Accept Mtl Reject Mtl			
	o be Fixed to Fit comp fisture Quee			

GAGE NO.	DIM.		TOL.	11	RMIN	F TOL. -OVERMAX 1st 2nd	REMARKS
NI C	090-080	1st	2nd	17	1	ISC ZIIG	004-005 undersiz
Phug Gaye	<del>  </del>	13	-				002 undersize
	258 - 251		-	30			OS Z UNGERSIO
mics	052 - 048	30		t  	<u> </u>		1) 
Calipers	405 - 395	30	1	1			
45-637	448 - 442		1	30	j j		Flush pin Won'T Go
	1.030 - 1.020			:	i F	1	
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45638	Contone (max)	30	:	i'			Pez+ +91T
Bac-Ch-10	PROFine		1		i	30	Deets, 030 Low
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J. P. LINDE

XC: S. D. Bennett

Z. J. Kowaslki

J. B. Mroz

J. R. Snedeker R. L. Snedeker

File

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

Brad Bosquet,

February 2, 1983

TO:

LE B. BOSOUET

on the m17

JOHN

FROM: G. E. BARNES

## MODEL SEVEN LWT FLOOR PLATE ASSEMBLY

PROBLEM:

Final Inspection Rejects - excessive space

between Floor Plate Cover and Stock

METHOD:

Sample pieces (30) of floor plate base blank, floor plate cover and floor plate pad taken from Purchase Parts and measured for the following dimensions:

- A.) Floor plate base blank
  - 1.) All dimension checks for incoming purchase parts.
  - 2.) Dim..448-.442 before operations.
  - 3.) 90° c'sink
  - 4.) Centerline hinge hole to flat of hinge before mill, ream and deburr.
  - 5.) Width of c'sink (.495)
  - 6.) Orientation of hinge to base.
  - 7.) Dimension .448-.442 after operations.
  - 8.) Centerline hinge hole to flat of hinge after mill, ream and deburr.

•

TO: L. B. BOSQUET - 2 -

FROM: G. E. BARNES

## MODEL SEVEN LWT FLOOR PLATE ASSEMBLY

#### METHOD:

contd.

- B.) Floor plate cover
  - 1.) All dimension checks for incoming purchase parts
  - 2.) Dimension 3.850
  - 3.) Dimension .055
  - 4.) Contour before opeations
  - 5.) Contour after operations
  - 6.) Diameter of reamed hole (.093-.095)
- C.) Floor plate pad
  - 1.) 90° c'sink
  - 2.) Depth of c'sink (.107-.093)
  - 3.) Diameter of hole (.300)

#### **OBSERVATIONS:**

- A.) Floor Plate Base
  - *l.) Hinge hole undersize
  - * Take down hole undersize and eggshape
  - * Width of hinge oversize
  - * All parts out of parallelism from flat of base to hinge.
  - 2.) Dimension .448-.442 parts in tolerance (Note: holes are eggshaped)
  - 3.) All parts at 90° c'sink
  - 4.) Centerline hinge hole to flat ranges from .004-.005 before process.

TO: L. B. BOSQUET

FROM: G. E. BARNES

# MODEL SEVEN LWT FLOOR PLATE ASSEMBLY

## OBSERVATIONS: A.) Floor Plate Base - contd.

- *5.) C'sink oversize all 30 parts.
  - 6.) Hinge not parallel to base
- *7.) Dimension .448-.442 not in tolerance after mill, ream, deburr.

3 -

8.) Centerline of hinge hole to flat ranges from -.003 to .003 after mill, ream and deburr. (Note: ranges before and after may vary due to hinge hole being at taper.)

## B.) Floor Plate Cover

- 1.) Found all 30 parts acceptable
- *2.) Dimension .3850 found parts at low limit or below
- Dimension .055 found most parts in tolerance.
- *4.) Contour on comparator showed both ends to be .010 high.
- *5.) Contour after braze showed two variations to a lesser amount with several parts having hinge bent.
  - 6.) .093-.095 hole found to be to model drawing.

## C.) Floor Plate Pad

1.) Made 5 castings - found all to be 90°, but not at 4° angle and no .010 step at neck.

TO: L. B. BOSQUET - 4 --

FROM: G. E. BARNES

#### MODEL SEVEN LWT FLOOR PLATE ASSEMBLY

OBSERVATIONS: C.) Floor Plate Pad - contd.

2.) Depth of c'sink in tolerance

Checked pad with the altered c'sink and found to be .114 deep.

 $\frac{\text{NOTE}:}{\text{to .181}}$  Thickness varies from .171  $\frac{1}{\text{to .181}}$  with a .002 to .004 taper which could cause some plates to be higher than others.

*3.) Diameter hole .280-.281 with large burn at bottom.

* Denotes parts vary from model drawing.

NOTE: Full report upon request.

GEB/bdm

XC: G.E. BARNES L. B. BOSQUET

TO: L.B. Bosquet FROM: G.E. BARNES FEB. 271983

R.L. SHEDEKER J.R. SHEDEKER S.D. BENNETT Z.J. KOWALSKI J. B. MROZ

MODEL SEVEN LUT FLOOR PLATE ASSEMBLY

# PROBLEM: FINAL INSPECTION REJECTS - EXCESSIVE SPACE BETWEEN FLOOR PLATE COURS AND STOCK

- METHOD & SAMPLE PIECES (30) OF FLOOR PLATE BASE BLANK,

  FLOOR PLATE COUER, AND FLOOR PLATE PAD TAKEN

  FROM PURCHASE PARTS AND MEASURED FOR THE

  FOLLOWING DIMENSIONS
  - A) FLOOR PLATE BASE BLANK
    - 1) ALL DIM. CHECKS FOR INCOMING PURCHASE FARTS
    - 2) Dim. 448 ,442 BEFORE OPERATIONS
    - 3) 90° C'SINK
    - 4) CEMERLINE HINGE HOLE TO FLAT OF HINGE BEFORE
      MILL, REAM, AND DEBURR
    - 5) WIGHT OF C'SINK (1495)
    - 6) ORIENTATION OF HINGE TO BASE
    - 7) D.m. 448- 442 AFTER OPERATIONS
    - 8) CENTER LINE HINGE HOLE TO FLAT OF HINGE AFTER MILL, REAM, AND DEBURR
  - B) FLOOR PLATE COVER

1) ALL DIM. CHECKS. FOR INCOMING PURCHASE PARTS

- 2) Dm. 3.850
- 3) Dm .055

- 4) CONTOUR BEFORE OPERATIONS
- 5) CONTOUR AFTER OPERATIONS
- () D.A. OF REAMED HOLE (.093-0095)
- C) FLOOR PLATE PAD
  - 1) 90°C'S.NK
  - 2) DEPTH OF C'SINK (107-1043)
  - 3) D.A. OF HOLE (.300)

## OBSERVATIONS: A) FLOOR PLATE BASE

- * 1) HINGE HOLE UNDERSIZE
- TAKE DOWN HOLE UNDERSIZE AND ECGSHAPE
- WIDTH OF HINGE OVERSIZE
- * ALL PARTS OUT OF PARALLELISM FROM FLAT OF BASE TO HINCE
  - 2) Dim. 448-442 PARTS INTOLERANCE (NOTE: HOLES ARE EGGSHARE
  - 3) ALL PARTS AT 40°C'SINK
  - 4) CEPTER LINE HINGE HOLE TO FLAT RANGES FROM. DOY -> T.OOT BEFORE PROCESS
- * 5) C'SINK OVERSIZE ALL 30 PARTS
- ( ) HIUGE NOT PARALLEL TO BASE

  * 7) D.M. 448-142 NOT IN TOLERANCE AFTER MILL, REAM, DEBURY
  - 8) CENTERLINE OF HINGE HOLE TO FLAT RANGES FROM 5003 TO .003 AFTER MILL, REAM, AND DEBURR (NOTE: RANGES BEFORE ANDAFTER MAY UARY DUE TO HINGE HOLE BEING AT TAPER)
- B) FLOOR PLATE COVER

  - 1) FOWD ALL 30 PARTS ACCEPTABLE

    * 2) Din. 3,850 FOUND PARTS AT LOWLINIT OR BELOW
    - 3) D.m. 055 FOUND MOST PARTS IN TOLERANCE

- * 4) CONTOUR ON COMPARATOR SHOWED BOTH ENDS TO BE.010
  High
- * 5) CONTOUR AFTER BRAZE SHOWED TWO VURIATIONS TO A

  LESSER AMOUNT WITH SEVERAL PARTS HAVING HINGE BENT

  C) .093-.095 HOLE FOUND TO BE TO MODEL DRAWING
- C) FLOOR PLATE PAD
  - 1) MADE 5 CASTINGS FOUND ALL TOBE 90° BUT NOT AT 4° ANGLE AND NO .010 STEP AT NECK
  - 2) DEPTHOF C'SINK INTOLERANCE
    CHECKED PAD WITH THE ALTERED C'SINK AND FOUND
    TOBE IN DEEP

NOTE: THICKNESS VARIES FROM: 171 TO. 181 WITH A . DOZ TOO DOY TAPER WHICH COULD CAUSE SOME PLATES TO BE HIGHER THAN OTHERS

* 3) DIA. HOLE .ZBO-.ZBI WITH LARGE BURR AT BOTTOM

* DENOTES PARTS VARY FROM MODEL DRAWING

NOTE: FULL REPORT UPON REQUEST

## RECOMMENDATIONS TO ALTER FIXTURES

PORT	FIXTURE OR GAGE NUMBER	OBSERVATION	RECOMMENDATIONS
FLOOR PLATE COVER	D-46056	THE SPRING WHICH HOLDS	COAT SPRING WITH
•		PART ON THE FIXTURE 15	PLASTISOL OR DEVEN
·		SCRATCHING THE PARTS	
FLOOR PLATECOVER	E-46058	INDICATOR ARM PART OF	LONGER INDICATOR
		GAGE AND ARE UNABLE	TIP REQUEED OR
		TO GAGE FULL CUT ON	ALTER HOLDING
		Himme	FIXTURE
FLOOR PLATE COUSE	E-46060	TAKE DOWN HOLE HAS PROPER	NEED BUSHING TO
		Positioning BUT THE REAMER	GUIDE ROAMER
		FOLLOWS THE ORIGINAL HOLE	TO CONTROL PROPER
		WHICH IS AT TAPER	Positioning
CLOOR PLATE BASE	E-45641	HINGE LOCATED IN Q'V" ON THE	GRIND RELIEF IN
	E-45640	FIXTURE & GAGE. THEHINGE	BOTH THE GALE &
		HAS RAISED & DEFORMED METAL	FIXTURE
		AND IS CAUSING A DEFLECTION	
FLOORPLANE BASE	E-45644	ALSO LOCATES INA "V" AND	Needs Relief Ground
		PART HAS BURRS + Deformed	IN THE"V"
		Metal	
		THE FIXTURE Need'S ALSO.	Needs a Guine
		ALLOWS THE REAMER	BUSHING TO HELP LOCATE
		TO FOLLOW THE ALREADY	HOLE PROPERLY
		FORMED HOLE	

NO. 14	<del></del>		DATE	১-១-৪	3
то:	B. Bac	quet			
FROM: J. P. LIN	IDE	<del>/</del>			
SUBJECT: 27	117 E	igger L	mard-	Floor-	Plate
DESCRIPTION:	leave o	nganige	a m	eeting -	meth
B+D, Qua	lity, c	miner	g and	Produ	tron
on the n	117 ZW	- Trigge	, Cum	1- Flow	flate
List the	andlen	a fan -e	ach co	moment	and
proposed	solut	ion (i)	the exis	x).	
		/		_	
COMPLETE ACTION:	ASAP	DATE	2 - 2 ?-83DIS(	RETION	
AUTHORITY:					
•		ADVISE BEFORI	E TAKING ACTIO	ON.	~
PROBLEM ANALYSIS S	HEET REQUIRE	D:		YES	
REPORT: VERBAL	N	OTE	LETTER	REPOR	PT
STATUS REPORT REQU	JIRED: YES				·
ORIGIN OF REQUEST:	BRIDGEPOR	T MANAGEMEN	THCN	//HKB	
:	JPL	OTHER DEP	TS		
COMPLETION DATE: _2	-/28/83				
STATUS REPORT DUE:					

m & 35

Flow Plate Sace becambly - Braying.

• Seem a controlled test for I shift

— sereen or straighter enought

Trigger June Plates (P 250)

for one shift of operation

— monitor:

Reprindikt N.P. Carrers Justity Cont.

flatures spec on Jung ger fraud Plate affect of power recietions to Joes. In there a relationship to specific times of the day in terms of poor legs?

T.P. Proces June Court, Vielention

overcome difficulty of loading and flustery puts by investigating possible design changes to provide a mechanical means of accountly given to have

Rosearch

Floor Plate Coner Assembly - Bingings

· Continue work on redesing of industrian said

· Instigation of more support for FP Coner in broging

fixture will be delayed until cail design in

· finalized.

Polling Komelski

· P. C. report on braging operation was reviewed. It is felt that the warpage experienced is not existing.

## MODEL KEY

DUC - D.U. COMM
DUS - D.U. SPECIAL
BAC - BOLT ACTION CARBINE
4LE - MODEL FOUR LIMITED EDITION

TRIAL & PILOT START KEY EVENTS								
ENGINEER	MOD	COMPONENT	PROCESS RECORD ISSUED	TRIAL & PILOT NOTIFICATION	COMPONENT WITHDRAWAL	T & P   START		
Bottini	DUC	Barrel & Barrel Ass'y	ISSUED	ISSUED	WIII	2/15		
Kowalski	DUC	Rec. & Rec. Ass'y	15SUED	1.55LIETO	משעצעו	2/15		
<del>Bottini</del>	4LE	=				2/19 2/19		
Poore	DUC	Fore-end	ISSUED	ואטפט		2/22		
Poore	DUC	Stock Ass'y	ISSUED	ISSUGD		2/22		
Kowalski	DUS	Rec & Rec Ass'y	15501870	15521675		2/22		
Bottini	DUS	Barrel & Barrel Ass'y	145060	ISSUED		2/22		
Bottini	4LE	Receiver Ass'y	1880 1880	155060		3/5		
Orf	BAC	Stock				3/12		
Bennett	DUC	Trigger Plate Ass'y	ISSUCED	15SUED		3/15		
Orf	4LE	Stock (Aluminum master)	1			3/19		
Poore	4LE	Stock	العنان العنان العنان العنان العنان العنان العنان العنان العنان العنان العنان العنان العنان العنان العنان العنان	ISSUED		3/19		
Bennett	DUS	Trigger Plate Ass'y	1550 ad	ISSULTO		3/22		
<b>Kowalski</b>	4LE	Upset & Drilled Bbl Blank				3/26		
Kowalski	DUC	Final Assembly	IESUED	, SSUED		4/1		
Poore	4LE	Fore-end	1581/100	1SSUUD		4/2		
<del>Kowalski</del>	4LE	CFM Barrel Blank				4/2		
Kowalski	4LE	Rear Sight Base	ISSUED			4/2		
Kowalski	DUS	Final Assembly	ISSUEED	ISSUED		4/5		
Polley	4LE	Fore-end Tip Spacer				4/9		
Bennett	4LE	Magazine	155060	155000		4/9		
Kaw BLSKI	445	BARRIEL - FINAL SUR ASSIDIBLY	ISSUED					
KOWALSKI KOWALSKI	שעם שעכ	STOCK- LECUIVER ASSEMBLY STOCK. RUCKIVER ASSEMBLY	138UGD 138UGD	135UED 135UED		3-15 2-18		

## MODEL KEY

DUC - D.U. COMM
DUS - D.U. SPECIAL
BAC - BOLT ACTION CARBINE
4LE - MODEL FOUR LIMITED EDITION

		TRIAL &	PILOT START KEY EV		<b>3211</b>	
ENGINEER	MOD	COMPONENT	PROCESS RECORD ISSUED	TRIAL & PILOT NOTIFICATION	COMPONENT   WITHDRAWAL	T & P 1 START
Bennett	4LE		I SSUILD	15SUED	WITHDAMAD	4/9
Kowalski -	4LE	Barrel		<u> </u>	<u> </u>	4/9
Kowalski	4LE	Front Sight Ramp	1534 650			4/16
Poore	4LE	Fore-end (Profiled)	1550क			4/23
Poore	4LE	Stock (Profiled)	ISSUIFO			4/23
Kowalski	4LE	Barrel Assembly	1.S.S.L.JEXED		}	4/23
Bennett	4LE	Fore-end Cap	1384160	ISSUED		4/30
Bennett	4LE	Trigger Plate	1530ED	135000		4/30
Poore	4LE	Fore-end Ass'y	135000			5/7
Kowalski	4LE	Rear Sight Assembly	155000			5/7
Bennett	4LE	Magazine Assembly	1530GD \	ISSUND		5/14
Poore	4LE	Stock Assembly	135000			5/14
Bennett	4LE	Fore-end Screw	1530ED	ISSUUTO		5/21
Bennett	4LE	Trigger Plate Assembly	1530630	ISSUED		5/21
Kowalski	4LE BAC	Barrel Assembly Comp.	ISSUED	133060		5/21
Kowalski	BAC	Receiver BLANK	1330CD 1350CD	1830ED	15000-150	6/11
Ciecko	BAC	Barrel Blank				6/18
Kowalski	14	Stock - Receiver Ass'y	/53ଥୟନ			7/2
Bennett	BAC	Floor Plate Cover				7/9
Bennett	BAC	Mag. Spring Retainer				7/9
Kowalski	4LE	Final Assembly	/53009			7/16
KOW ALSKI	444	BARREL FINIAL ASSETTIBLY	יו באינונים			1,22
107						

## MODEL KEY

DUC - D.U. COMM
DUS - D.U. SPECIAL
BAC - BOLT ACTION CARBINE
4LE - MODEL FOUR LIMITED EDITION

٠.,	TRIAL & PILOT START KEY EVENTS						
1.3	ENGINEER	MOD	COMPONENT	PROCESS RECORD ISSUED	TRIAL & PILOT	COMPONENT	T & P
. !	ά·,	1100	CONFONENT	1990ED	NOTIFICATION	WITHDRAWAL	START
ء ق	Bennett	BAC	Floor Plate Base				7/16
	Kowalski ·	BAC	Floor Plate Cover Ass'y	155047			7/23
¥	Bottini	BAC	Bolt Body Assembly				8/13
• •	Bennett	BAC	Trigger Guard Plate	1364150			8/13
1	Kowalski	BAC	Floor Plate Base Ass'y	1552150			8/20
	Bennett	BAC	Bolt Handle				9/3
	Bottini	BAC	Bolt Plug			<u> </u>	9/3
الله ا الله الله الله الله الله الله الل	Polley	BAC	Floor Plate Pad				9/3
1 60	Bottini	BAC	Barrel & Barrel Ass'y				9/10
1/2	Rowalski ·	BAC	Front Sight Ramp	135deep			9/10
ا الأنام الأنام	Bennett	BAC	Safety Assembly	\			9/10
	<b>B</b> ennett	BAC	Safety				9/10
	Bennett	BAC	Safety Button				9/10
関係が	Bottini	BAC	Bolt Assembly	·			9/17
	Bennett	BAC	Front Sight Ramp Screw				9/17
4 ,00	Korba	BAC	Bolt Stop 'Release	155UED			9/24
	Bennett	BAC	Floor Plate Latch				9/24
	Korba	BAC	Rear Guard Screw				10/1
12	Korba	BAC	Trigger Assembly				10/1
j.	<b>Ko</b> rba	BAC	Trigger Guard				10/1
K-	Kowalski ·	BAC	Final Assembly				10/29
	Kowalski	DU TRADE	ROCLEIVER				
			STOOK REC. ASSURABLE	l •, <b>1</b>		İ	1



Floor Plate Bace

Stank - review and list all problems to be recolved.

with rendor

· Will all for himse - no groblem

· gaging for mill and ream opens adazunte

Floor Plate Love Visig.

· Brazing operation - approx. 20 % scraps

-XTDR issued to release park after brage.

- Leizer June Plato not flat as received from newlor

- Poor and microsistent brage

to get beittle.

- Burned areas on legs - flex having ramoved before keat is applied?

- Joseo broze unit -

power surger? control assistable gower-?monitor?

* presuentle Bare Quently grist to trage

are we cheeking flatuers on Leiger Juand Plate?

Filose Plate Coner - heroming good - clack one fightere.

Marhining -

- 3.850 dems. running endersige

- maring at milling operation - TORin to reache

- coloring - mare - new rack designed to growing separation

Brazing operation - P 5% scrap - warpage & .010 as rec'd or at brage (maybe from hot spots) - investigate better support

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

R2529143

- check rand timble specition - if not accomplishing
anything - remove - (charpedges cut into wood)

- Row Palley - working on new coil during - felp from vocco?

- 100 % until we get out of trouble.

- soot enough for an 8 for run (250)

Werently 
o in proper debureing - review and correct

filing.

o binding at beinge area

- · Meeting: 2/16/83 at 2:30 Pose C.R.

  Sich all pertinent peoblems (don't try to recolve them

  at this time) peoblem ---- effect ----
- · Keniew list if necessary, establish a ranking from most senere to miner. have typed - send to all - regresh input (if any) from location.
- · Establish a solution and time/dollar estimate for recolving each groblem if a solution exist.
- · Schedule a follow-up meeting and review proposals with everyone.
- · lesne letter and schedule to John Linde by 2-28

Brad Booquet, when is the report with the tanker, completion dates, and regionable

xc: [J. P. Linde S. D. Bennett J. B. Mroz R. D. Polley

February 16, 1983

A meeting was held this date to discuss problems involving the Model Seven Floor Plate Base Assembly - Floor Plate Cover Assembly and their related components. Present were:

L. B. Bosquet

J. W. Brooks

D. E. Bullis

G. E. Barnes

P. C. Earl ) IN

W. Roark ) TURN

The purpose of the meeting was to generate as complete a list as possible of problems being encountered with these components. This initial meeting concentrated mainly on the components as they are received from the vendors and are processed through to final assembly. Noted were:

- Floor Plate Base Blank
  See attached Quality Control report.
- Floor Plate Base Machining Operations

  Mill slot in hinge production has no problems with this operation. Fixturing and gaging appears to be adequate.
  - Ream Front Take Down Screw Hole and Hinge Pin Hole.

    Fixturing and gaging appears to be adequate. Quality Control study indicates that all hinge pin holes are angled relative to the rest of the part.
- Parts are not flat as received from the vendor. Model drawing calls for parts to be flat within .010. Purchase Parts Inspection procedure to be reviewed and vendor will be contacted.
- Floor Plate Base Assembly Brazing Operation

  The brazing of this assembly is yielding approx. 25-30% scrap.
  - assembled FPBA difficult to remove from fixture after braze. A TDR has been issued (ZK-199) to provide a means of removing assembly without damage.

- poor and/or inconsistent braze
   flatness and/or straightness of parts could be
   a contributor.
   power supplied to TOCCO unit appears to vary during
   the shift.
- difficult to flux and load parts and position brazing preform.
- As received from the vendor, the blank is dimensionally good. The only problem appears to be that the ends are approximately .010 higher than the center. One Purchase Inspection gage appears to mar the surface.
- Floor Plate Cover Machining Operations

  3.850 +005 dims is running slightly undersize. It
  was found that a clamp at the milling operation was
  marring the surface. This will be taken care of by
  changing the clamp surface from steel to nylon.
- Floor Plate Cover Assembly Brazing Operation

  This brazing operation runs better than the Floor

  Plate Base Assembly. It produces approximately 5% scrap.

The main problem noted at this operation is a slight warpage in two areas. This may be the result of hot spots developed in the heating cycle. Work is in progress on the redesign of the induction coil.

A TDR will be issued to revise the fixture to provide additional support for the part during braze. This work will have to be coordinated with any change to the coil.

A question was raised concerning the efficiency of the sand tumble in removing sharp edges which cut into the Stock finish. It was also pointed out that some deformation of the Magazine Spring Retainer may be caused by this operation. An operation will be added to check for warpage 100% until coil and fixture design is finalized.

#### Final Assembly Problems

The main problem mentioned was the binding of the hinge. It is felt that this is caused by improper deburring of the mill cuts. This operation will be reviewed by the engineer and the filers will be reinstructed.

Another cause for binding is covered on the attached study done by Quality Control. The hinge as formed by the vendors runs at an angle. This condition will be corrected.

Steps have been taken to eliminate poor coloring on the Cover and Base Assemblies. New racks have been designed - one in use for Floor Plate Cover (approx. 120/rack), one for Floor Plate Base due by 2/18.

#### Functional Problems

The single most critical functional problem is the unlatching of the Floor Plate Cover when the gun is fired. This problem is being actively worked on by another group, but if any solutions come out of this committee, they will be implemented. Bending of Floor Plate Covers - thicker material samples are being machined and will be tested to see if any improvement is noted. Thicker Trigger Guard Plates are available and a request has been issued to obtain thicker Floor Plate Base Blanks from the vendor.

LBB:hf Attach.

Brad Boaquet,

I would like each item broken
February 23, 1983

into tack as you have then with

into tack as you have then with

into tack as you have then with

J. P. LINDE

RE: MODEL SEVEN FLOOR PLATE BASE, ETC. - PRODUCTION PROBLEMS

Attached is a list of items requiring follow up which came out of the meeting held 2/16. Responsibilies have been assigned for each item.

L. B. Bosquet

LBB:hf Attach.

## FLOOR PLATE BASE BLANK

2. DUE

- Review Purchase Inspection procedure. Is it adequate based on experience gained to date?

Bennett Quality

Send marked print to vendor indicating the results of Quality Control's study. Work up a program to resolve problem areas.

Bennett Purchasing

- Marked prints have been sent to vendor requesting samples from thicker material (.062).

Bennett Purchasing

## FLOOR PLATE BASE (MACHINING OPERATIONS)

- Review the .100 ± .005 slot in the hinge. Engineering layouts indicate a potential bind condition at assembly. Engineering recommends that this dimension be changed to .115 + .005.

Research Bennett

- Review reaming operation to verify that part is located correctly.

Bennett

- Review filing operation - is it adequate? Is it being done correctly?

Bennett

## TRIGGER GUARD PLATE

 Quality Control study shows these parts are bent as much as .035. The model drawing calls for parts to be flat w/in .010. Review gaging of incoming parts.

Bennett

- Samples of Trigger Guard Plates have been received made from .062 material. They were assembled and turned over to Research for testing 2/22.

Kowalski Research

## FLOOR PLATE BASE ASSEMBLY

- Brazing operation

Bent Trigger Guard Plates may be a contributor to the brazing problems. Run a controlled study for one (1) shift using screened or straightened Trigger Guard Plates (approx. 250). Monitor the output to determine effect of flatness on yield. This study should also indicate whether or not there is a relationship between poor braze and specific times during the shift.

Kowalski
Polley
Production
Quality Control

3.

TDR (ZK-199) has been issued to make removal of assemblies from the brazing fixture easier.

Kowalski Tool Design

- TDR's (ZK-197 and 198) have been issued to alter the drill jig and pinning gage for positioning and sizing the rear take-down screw hole.

Kowalski Tool Design

## • FLOOR PLATE COVER BLANK

review gaging of hinge pin hole as formed by vendor. We should check to be sure this is 90° to long axis of part and parallel to the flat portion of the tab.

Bennett

#### • FLOOR PLATE COVER - PROCESSING

 review reaming operation (Production has no problems with this operation) to verify that drill jig is orienting part correctly.

Bennett

 sharp edges at Latch end of part are cutting into the finish on the Stock. Run a sample of parts through sand tumble prior to brazing operation.

Bennett Production Research

- review deburring operation - is it adequate? Is it being done properly?

Bennett

- obtain quotation and lead times to go to thicker material (.062 or possibly .078).

Bennett Purchasing

#### FLOOR PLATE COVER ASSEMBLY - BRAZING

 continue work already in progress to redesign induction coil for better heat. Redesign of brazing fixture to add additional support (if possible) will be investigated when coil design is finalized.

Polley Kowalski

- Thicker Floor Plate Covers (.062 material) have been processed and are ready for braze. They will be turned over to Research for testing by 2/28.

Production Kowalski Research

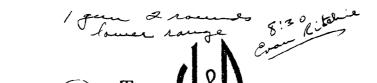
LBB:hf

- ALTERING THE COINING PUNCH WHICH CREATES THE SERRATIONS ON THE FINGERPIECE AND,
- A NEW COINING DIE FOR SERRATING THE FINGERPIECE.

  THE BEST ESTIMATE FOR A NEW DIE AND ALTERED

  PUNCH IS 3-4 WEEKS.

L.B.Broquet 3/14/83



J. Brooks
B. Bosquet
J. Mroz

DIE & STAMPING COMPANY

DIV. OF UNITED SCREW AND BOLT CORP.

Engineering · Tools · Dies · Stumpings Sub = Assemblies · Bus Supplies

> 4650 TIEDEMAN ROAD CLEVELAND, OHIO 44144

216 671-8000

February 28, 1983

Remington Arms Company, Inc. Ilion, New York 13357

Attention: D. D. Ricci

Reference: #92256 Floor Plate Base

Dear Dwayne:

ì

In reply to your letter of February 14, 1983, we find the following and make suggestions as noted below:

- The .251/.258 diameter hole should be changed to .248/.256 as this diameter is line contact only and will always be egg shaped. It would be better on the low side to always assure ream stock.
- The .080/.090 diameter hole should be changed to .078/.088 as this diameter will change with stock thickness variations.
- 3. The .442/.448 dimension should be eliminated as H & P manufactures to the 1.025 dimension.
- 4. The .620/.630 dimension over the hinge pin should be changed to .633/.645. H & P noted their quotation stated Remington to machine. This width over the roll will change with stock thickness variations.

February 28, 1983 Remington Arms Co., Inc. Page 2

- 5. The parallelism of the hinge platform to the legs are 90° + 30'. H & P checks as 90° + 38'. We believe there should be common methods of checking. Material thickness and chemistry will affect the squareness. Would suggest a sizing operation if this condition gets out of control.
- 6. The .215/.225 dimension H & P checks as .218/.221. We believe there should be common methods of checking.

We have checking fixtures on hand that need considerable rework to make them usable.

Yours sincerely,

Frank Amorose

rn

71...



Remington Arms Co., Inc. Ilion, N. Y. 13357

Attn: D. D. Ricci

48P

## DIE & STAMPING COMPANY

DIV. OF UNITED SCREW AND BOLT CORP.

Engineering * Development * Tools * Dies * Stampings
Sub-Assemblies * Bus Supplies

4650 Tiedeman Road * Cleveland, Ohio 44144

Date March 4, 1983

Terms 1% 10 days—30 days NET F.O.B. Our Plant—Cleveland, Ohio

Gentlemen:

To

Quantity	Description	Price
	Part Number 91840 Base 92256 Blank	
	Temporary tools and engineering to drop bottom of hinged platform in line with top of legs radius to be approx035 rad.  Twelve (12) piece sample.	41400 00
	TOTALI	\$1400.00
-	requires a madel de avent to to requires a madel de avent char to to charge to and relief not charge to 20/025 charge to and a section of 20/025 the rail connector section 3.9-83  Total:	

The above Quotation is subject to acceptance within 30 days from date hereof; thereafter, prices are subject to change without notice, according to fluctuation of market prices of material, over which we have no control. We are not responsible for delays in deliveries due to strikes and conditions beyond our control.

Very truly yours,

H & P DIE & STAMPING CO.

Rv		
~ y	 	

##P- 3-9-83 M/7 Feloor Plate Bore 8000 pcs oved Remin to 3000 shipped with .485 mer. corrected .495 abelonce will be to corrected dim

on nesh order - ofter above uder is complete?

1400° will cover alt to permanent tolg - put from a god in position and add relief noteles - maintain .015 radies (may regime, 080 - 025 deep on noteles)

MARKED PRINTS TO REFLECT AFFECT OF ADD'L MAT'L THICKNESS WHERE APPLICATED (MAINTAIN INSIDE DIMS PER J. BROOKS)

& PRINTS TO DIRICCI, I TO J. BROOKS, 1-LBB

3-10-83

CHANGE .414 DIM ON MARKED PRINT TO TAKE ADD'L
MAT'L. THICKNESS TO INSIDE PER D.BULLIS - CHANGED
TO .394

CONTACTED PURCH & HEP - WILL REQUIRE ADD'L MONEY
AS QUOTE WAS BASED ON USING PORTIONS OF EXISTING
TOOLING WHERE POSSIBLE. THIS CHANGE REQUIRES
HOLDING INSIDE DIM FOR MAG. OPENING BUT CLOSING
IT IN UNDER THE TRIGGER GUARD PLATE.

HSP-THIS WILL AFFECT A SERIES OF FORM FOOLS-COST ADD'L.

AND DELAY SAMPLES

REMINGTON - STAY WITH . 414 FOR SAMPLES - CHANGE IF . OGZ

MATERIAL WILL BE MADE PERMANENT

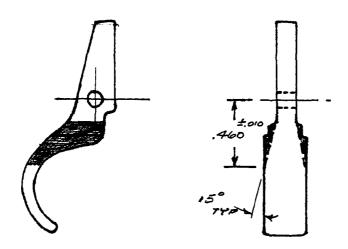
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

Ra: MODEL SEVEN LIGHTWISIGHT TRIGGER.

PROBLEM: POTENTIAL FOR BINDING ON SIDE OF TRIGGER
SLOT IN TRIGGER GUARD PLANE.

## SOCUTION:

· IMMODIATE - PROVIDE ADDITIONAL CLEARANCE ON BOTH SIDES OF TRIGGER (15280) BY SETTING UP A MILLING OPERATION. CURRENT PRODUCTS IS WORKING ON A FIXTURE AND CUTTER TO ACCOMPLISH THIS.



- *LONG-RANGE SOLUTION IS TO CHANGE THE P/M BLANK (91912)
  THIS REQUIRES:
  - ALTERING UPPER & LOWER PRESSING PUNCHES. ALTERATIONS
    CAN BY DONE ON PLANT.
  - ALTERING UPPER & LOWER COINING PUNCHES. ALTERATION

    CAN BE DONE ON PLANT

3.16.83

Model Sance LWT Febrar Plate Base Blank

410

3½-4½ who from order point and shicker fr. P. B. Slank (.062 mat'l)

O.T. has been authorized - will letter del. by P I wh

Jo alead ginen H & P 3 x 9
sompler due wh of 3/28 or 4/4

Randy & for Krish, Jerry. Jæ Regal Opril 23

1 SCAC

MISMATCH RIGHT INLETTING



MAX MAT'L. .054 MIN MAT'L .050 CAN BG .014 MAX.

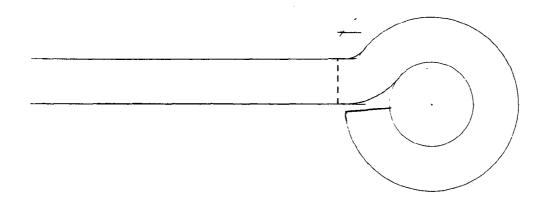
MAX TO & HOLE .060 MIN TO & NOLE .050 STUD AT TOP

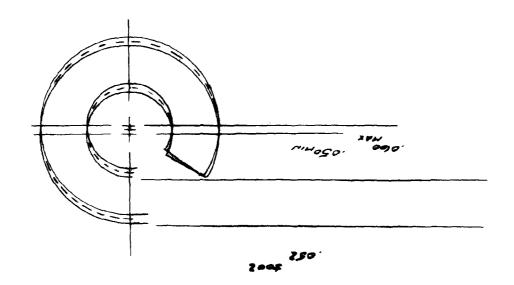
.114

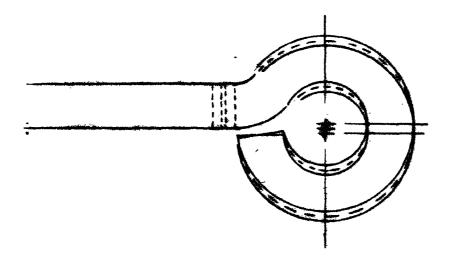
THIS COULD ALSO CAUSE:

- · HOLE TO BE REAMED AT AN ANGLE RETATIVE TO OUTSIDE
- . THIN WALL CONDITION
- · BINDING AT ASSEMBLY
- * VERIFY .055 ±005 POSITION OF HINGE HOLE IN BLANK AND
  REMOVE DRILL BUSHING AND ALLOW REAMER TO FLOAT
- * CHECK DRILL VIG TO BE SURE PART IS LOCATED WITH HINGE HOLE

  VERTICAL IN BOTH DIRECTIONS







. J.P. LINDE	Date 3-17-83
rom L.B. Bosquer	

25: HODEL SEVEN LEUT - REVISED TRIGGER

COSTS AND LEAD TIMES TO REVISE P/M TOOLING TO PROPOSED TRIGGER DESIGN.

PRESSING TOOLS ! NO CHANGE TO DIE

ALTER UPPER GLOWER PUNCHUS IN 2-3 DAYS

COINING TOOLS ' NO SILL OF

! NO CHANGE TO DIE ALTER UPPER & LOWER PUNCHES IN 2-3 DAYS

NOUSE

COINING TOOLS... FINGURPHICE SURRATIONS

: NEW DIE

ALTER UPPER PUNCH

4 WEEKS

(ALLOW P INSER TO CHANGE)

DRAWINGS AND SHIP TOOLING)

1 work -

"YOUR SAFETY ATTENTION MEANS ACCIDENT PREVENTION"

Ilion Resea	rch D	IVIS	ion		RD - 6514					
DATE		,	MC	DDEL SEVEN LIGHTWEIGHT						
6-15-83		ı								
			BC	LT ACTION CENTERFIRE RIFLE						
3-14-83		<del> </del>			308 W	n. 6mm	243	7mm-08	222	.223
SHEET	1	_	)oti	ted line $()$ indicates same part number.		·			_	Rem.
OF	3	_		, , , , , , , , , , , , , , , , , , , ,	Win.	Rem.	Win.		Rem.	
DWG				PARTNAME						
NO		ļ.,	_	PATTY NAME						
	4	Ш	_		<u> </u>		PART N			
				ASSEMBLY COMPLETE	21460	21461		21463		21465
D-34990	B			Assembly	34990	34991	34992		34994	34995
D32725				I (Blank 92252)	32725	32726	32727	32728	32729	32730
B-15279	_ _			Bracket (Blank A-15128)	15279					
D-91876				iver (Blank B-31485- 31487)	91876				711 12:27	
C-91877	$\sqcup$	R	ec e	iver (Blank B-31485)	<b></b>			<b> </b>	91877	
		$\sqcup$	,			ļ	<u> </u>			ļi
C-91882		Ш		(Bb) & Rec. Marking)	10000			ļ		
D-34970	B	+ 1	-	sembly	34970				34971 28737	
D-28735	$\sqcup$	Bo		Body Assembly	28735				<u> </u>	
C-15407	$\bot \bot$	Ш	В	olt Body	15407					
C-28500			Ц	(Body Blank	28502					
A-18493		ot	В	olt Body Brazing Slug	18493					
D-28665	$\sqcup \bot$	┶	В	olt Head (Blank C-32820)	28665				28667	<b>_</b>
A-18758	$\sqcup$	$oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{ol}}}}}}}}}}}}}}}}}}$	В	olt Pin	18758					
B-17011		$oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{oldsymbol{ol}}}}}}}}}}}}}}}}}}$	E	ector Washer	17011	_==_	_==_	<u> </u>		
B-92229		В	ш	Handle (Blank D-92227)	92229					_ =
C-20185				ing Shim	20186	<u> </u>				
A.17017		Dec	10	(Blank A-13974)	17017				L <del></del>	<u> </u>
A-17676	1 6	lec	10	Pin (Blank A-91802)	17676	<u> </u>		<u> </u>		<u> </u>
A-17019	1	·loc	م	Spring	17019	<u> </u>				
C.91816				for (Blank A-90523)	91816					<u> </u>
C-91906		ku	ac	tor (Blank A-90522)		<u> </u>	<u> </u>	<u> </u>	91906	
C-15373	E	i o	ÀL.	Sight (Blank C-90393)	15373	<u> </u>			<u> </u>	
C-15719				Sight (Alternate)(Blank C-90425)	15719		<del> </del>	<u> </u>		<u> </u>
B-92081		_	_	Sight Ramp (Blank B-92080)	92081	<del></del>				
B-92084				Sight Ramp Screw (2) (Blank 92247)	92084					<u> </u>
B-28505	_		_	ight Base Screw (2) (Blank B-90347)	28505		<del>  ===</del>	<del> </del>	ļ <del></del>	<del> </del>
B-32520			_	oht Assembly	32524			<del>  ===</del>	<del> </del>	<del> </del>
C-32510	1 1		₹	Sight Aperture (Blank C-32535)	32510		<del> </del>	<del> </del>		<del> </del>
C-91595		•	1	Sight Base (Blank C-32530)	91595		<u> </u>	<del> </del>	↓ <u></u>	<del> </del>
C-90905		- 1	1	Sight Slide (Blank C-90925)	90905		<del> </del>		<u> </u>	<del> </del>
B-90906	T T		1	ation Screw (Blank B-91910)	90906		<del> </del>	<del> </del>	<u> </u>	<del> </del>
B-90904				dage Screw (Blank B-91911)	90904		<del> </del>	<del> </del>	<del> </del>	
	7 7		_	IN ASSEMBLY	28601		<del>  ===</del>	<u> </u>		<del> </del>
A.92288				lug (Blank C-15674)	92288		_===	_===		<del>  = = =</del>
B-15410				Pin (Blank B-16509)	15410		<del> </del>		<u> </u>	<del> </del>
B-17022				Pin Cross Pin	17022			<u> </u>		
C-23320				Pin Head (Blank B-27975)	23321					
A-1541	++	Μа	ip_	Spring	1541	<u> </u>	<del> </del>		<u> </u>	
<b> </b>	++	+	+	<del> </del>	<del></del>	<del> </del>	<del>-</del>	$\perp$	•	•
<del> </del>	++	+	+	<del> </del>				1		
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Ilion Resea	rch	Di	vis	noi				RD - 65	14		
DATE 4-29-82 6-15-83			MODEL SEVEN LIGHTWEIGHT BOLT ACTION CENTER FIRE			308	6mm	243	7mm-08	s 222	223
SHEET OF	ı	2	0	oti	ted line ( — — — ) indicates same part number.	Win.	Rem.	Win.		Rem.	Rem.
DWG. NO.					PART NUMBER						
								PARTN	JMBERS		
C-15412	В	ılt	Sik	ы	(Blank 92253)	15412					
C-24475	Βd	lt	Stk	90	Pin	24484					
A-15413	В	lt	Stk	orl	Spring	15413					
					ard Screw (Blank C-28810)	22037					
			7	1							
C-16715	М	g	ziŧ	e	(Blank C-91934) (Blank C-17971)	16715			<del> </del>		<del> </del>
B-16716	M	aga	ziţ	ıe	(Blank C-17971)	00455			<del> </del>	16716	<del> </del>
A-92455	M	PDE	zir	ie	Follower (Blank C-92454)	92455				00500	<del> </del> -
A-92508	M	aga	깩	ıe	Follower (Blank C-92507)	<b></b> _			ļ	92508	
B-15286	M	aga	zij	1e	Spacer (Blank B-91936)	ļ			ļ	15286	
A-15699	M	194	刘	ıe.	Spring (Blank 113713)	15699			<u> </u>		
C-91905										91905	
B-91881	R	ar	G	ıar	d Screw (Blank 92248)	91881				-	
		П									
B-17034	R	CE	ive	-	Plug Screw (3) (Blank B-91913)	17034					
C-24475	Se	ar	Pi	,	(2)	24476					
A-100010	ารา	'n	TR.	- 4	SSEMBLY WALNUT	100010			<u> </u>		
D-91544					Pad	91544					
C-25410					Pad Screw (2) (Blank C-91916)	25410					
B-15651					cing Screw	15651			<del> </del>		
	+	-	-	-		<del></del>	<del> </del>		<del> </del>		<del> </del>
E-91950					Checkering Pattern D-91977)	91950			<del> </del> -	===	
A-15358	1	:	. 1		Screw (2)	15358					
D-91780	╀	G	1D	٢	10			Г		===	+
C-91779	+-	G	ip	듸	p Insert	91779		<del></del>	_==	===	<del> </del>
A-25380	4	G	ΪĐ	드	p Screws(2) (Blank A-91914)	25380	<del></del>		<del> </del>		<del> </del>
	1	L				1	<u> </u>				
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	Γ										
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	+	+	<del> </del>	-		+	<del> </del>	<del> </del>	<del> </del>	<del> </del>	
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٠.	Hion Resea	rch Division			RD - 651	14		
ļ	DATE					ļ		
	שאוב	MODEL SEVEN LIGHTWEIGHT			Ì			
	12-6-82	BOLT ACTION CENTER FIRE RIFLE						1
L	6-15-83	BOLL ACTION CENTER FIRE KILLED		ļ		į		}
	SHEET	3 Dotted line () indicates same part number.	.308 Win	6mm Rem.	.243 Win.	7mm-08	.222 Rem.	223 Rem.
	DWG. NO.	PART NAME						
Ì				<u> </u>	PART NU	JMBERS		<u> </u>
	D 92458	TRIGGER ASSEMBLY	92458					
- 1	C-91828	Bolt Stop Release (Blank 92251)	91828					
- [	B-91853	Safety Assembly	91853					
Γ	C-91851	Safety	91851		1			
	C-91852	Safety Button	91852					
ſ	B-23220	Safety Detent Ball	23222					
1	A-15368	Safety Detent Spring	15368					
Ī	B-17043	Safety Pivot Pin (Blank B-91918)	17043					
ľ	A-17044	Safety Snap Washer	17044					
ı	C-15666	Sear Safety Cam (Blank C-91919)	15666	<u> </u>				
Ī	A-17047	Sear Spring	17047					
<u> </u>	C-15280	Trigger (Blank C-91912)	15280					
f	B-17053	Trigger Screw Front (Blank B-91920)	17053					
t	C-19461	Trigger Connector (Blank C-91921 - C-91937)	19461					
ŀ	B-91128	Trigger Engagement Screw (Blank B-91922)	91128					
ŀ	C-26655	Trigger Housing Assembly	26655	L				
ŀ	A-14632	Trigger Housing Rivet (4)	14632	1				-
1	B-14630	Trigger Housing Spacer (Blk B-91923)	14630					
ľ	B-14631	Trigger Housing Spacer, Rear (Blank B-91924	14631					
ļ	C-30780	Trigger Side Plate, Right(Blank C-32785)	30780					
ı	C-30780	Trigger Side Plate, Left	30781					
t	C-24475	Trigger Pin	2447	===	===			<del>   </del>
ļ	A-15400	_ 1 .	15400					
ľ	Ā-15481	Trigger Stop Screw (Blank A-91926)	15481	<del></del>				
ľ								
t	C-91850	Floor Plate Base Assembly	91850					
ľ	C-91840		91840					
ľ	Δ-92576			1	<del> </del>			
t	B-91845		92576 91846				***	
1		Rioor Plate Cover Assembly:	91842			<del> </del>		<del></del>
st	_C.91842 _C.91841		91842					
nd	A-92577		92577		1			
}	C-91846		91846		<del>                                     </del>	† <u> </u>		<del> </del>
ł	C-910 <del>-1</del> 0	1 sadagite obtitid Vergiter	2104	<del>  ===</del>		<del>                                     </del>		<del> </del>
ł	B-92581	Floor Plate Latch & Spring Assembly	92581					
ł	C-91843	Floor Plate Latch (Blank C-92254)	91843			<del></del>		1
Ì	B-91848		91848		+			
Ì	A-90380		90380			<del></del>		
ł		Floor Plate Pad (Blank C-92449)	92450					
}		Floor Plate Pivot Pin	1645	+	<b> </b>	<b> </b>		
}	A.91051	Trigger Guard (Blank C-92249)	9195		<del></del>	<del> </del>		
	4571701	Anager Guard (Dialis C-762-17)	7173	+===	<del>                                     </del>	<del>                                     </del>	<del> </del>	
1			<del> </del>	1	<del>                                     </del>	†		
		<u> </u>		4		<b>.</b>		

From: LB Borgeret

Re: Peoposed change to thicker material on the Model Seven Llose Plate Base, etc.

· Sample components made from thicker material have been ordered and well he mad for resification texting. Status:

Trigger June

Vendor wiel ship 250 per 4-1

Flow Plate Bace Blank

Vendor will ship 250 per 4-1

Tugger June Plate

Sample parts are on the plant

Flow Plate Comer Blank

Sample parts are on the plant

Flore Plate Latch Spring

Vendor will ship by 3-30

- · In anticipation of acceptable testing of the above pumples, each render has been asked:
  - are the temporary tools capable of producing 7000 part?
  - what is the estimated lead time to produce 7000 parts?
  - what is the externated time involved to change rendon tooling back to the present design?
  - if there are open order for the present park, what is the lead time to produce them?

@

- is the thicker material available? If not, what is the estimated lead time to processe it?

· Lang range program based on permanen	a ship	el	
to thicker material.	mat's lead time	Dona-l	occur. lead time
- Teigger Juses on temp. tools	Come .		4 who
consect taling back to pres, design			6
convert to heavier mutil. permanently		5	11
samples		/	12
production		4	16
- Flore Plate Bose Blank			
produce 7m per on temp. tools		4	4
convert toling back to present des.		1	5
* processe thicker material	11 who		
un open perduction order (present des)		4	9
change tooling permanently		4	13
samples		1	14
preduction		4	18
- Trigger Juand Plate			

- Trigger Just Plate
notaling changes required

produce 71 pieces

material - 2 who

NOTE: .080 MAT'L IS C-1010 NOT 1070
VENDOR WON'T QUOTE 1070 MAT'L. IN .080

- Flore Plate Conce Blank

produce 7 17 pieces on temp. tools

connect to un greened des. (if ports on order)

material

convert tooling parmanently and pupply 2 20ho 2

pamples

production

* produce 7 15 per on temporary set-up 12. (2)

build permanent tooling

material

samples

production

/

* render produces prototype part on temporary bench type hand specations and can produce Tro piece. This way at approx. . 17 lack in 2 who. The other way to go is with parmanent toling - 6 who and a piece price of approx. . 06 each and a tooling charge of about \$2400

045

Lugger flate sompler from Square were 1010 matil

metil. - lead

7000 pièces useing 1010 - 080 ±003 mat'il 2 who existing tools 2 who

won't quate 1090

Floor Plate Comer

malerial - P / week

alter permanent tools & samples

alter permanent tools & samples

2 wh

alter permanent tools - Jack to .050

2 wh

matil duceho with temp set-up P.17 each

2 weeks

permanent tools 2400 p.06 en alter & comple

1 week

6 weeks

Review w/Receased? ?? Reason: in some cases tooling is being to grant? I changed privato exceptance - if not accepted could put production ochedule in japandy.

and - bending fixture - T.R. - Nates? @ Butt frestor for RTR- inlet Be. & Barrel June. Justation for F.P. 73.75. plow'expedite by anthony : engineer; tim cled? sow mat'l - rech - contact render advance release recenary? IT LEAD TIMES -ALTER PERMANENT TOOLING ..... THE weeks (.062) Sample approval - to prod. 3-4 who. send sample of T.G. Plate - for try out of Tigger Just. permanent tooling - approximately the same because tooling for 788 has to remain

STOCK Please review 3/25/83 6 CW Proflem - mostly to left side Inspected Courses 1. Receive seet in stock unever, usually 2. Rear T/D Role run-out Conective action 9-16 baletter 1. Indexing pins realized to usure station to- station controlling 2. Fixtures realizant to insure fixture - to-fixture inletting and turning center controlly Thousand fushings and rode repaired on stations 5, 9 \$11 One quide pen lousing repaired I wo other judged O.K. Of grown / bl langut empleted Process layerts revised for bbl growe. Base gage dugs revised. althotions PR 1100 SPUTC. to be made before next run Rear T/D Role to be merced to , 250 01 Receiver sent to be widered to 1.390 (1.360 receiver) with ,030 flat on bottom to insure receiver will not " cont". ( use 1.360 DIA cutter)

New Il monshell ordered mogazine cut depth to be pulled mp 9/10

1. Clearance cute added to bottom inlet to clear trigger slot and magnice cut.

brievel 3 days Bose gave being reviewed (3/25) 2. Indexer (butt locator) primed to word with garge to confine the -up with M/D tie of the dimension which were transmitted for 2/28/83.

MISC

1. Production ( John Miller, Out 72) has been inspecting and repairing all stocks before soul and checking against on action. 2. Temporary operation (and gage) set up to rediel to .250 da all · in-process stocks in Pent 72. 3. 15 of 16 stocks from prelimenary 6-16 set-up slowed NO TRIGGER MOVEMENT

when assembled by Everett trans

# ALTERNATE INLETTING

On 3/25/63 EL MORRIS VA. issued a capacity study (attacked) which shows that the ATR would be jundened 108% in many by adding top inlitting and transferring the external cuts to the Heim.

funden that only 49% them 1963 it a cost of 455,000 (rough est.) to provide tooling.

Mourice Monteon has outlined and N/C program and designed a fact locator for the RTR is requested by J. P. LINDE, designed But locator completepued decision on which may to go.

1. Much tried run of 11/7 stocker on

6-16 often muchine has feen repaired

and slighed, and the food grape

has been altered. If the parts

ore satisfactions continue to use

the G-16, facked up by

and the grape.

2. If parts are not established to be the G-16;
a. Repair markens and try again b. Proceed with RTR inhthey program for short-term inprovement and order tracking for REML.

1. PARTS FROM G-16 - 4/1/83

2. RTR LOCATOR, PRERAM, CUTTERS - ONE MONTH

3. REML TUBLING

DESIGN ONE MONTH

BID ONE MUNTH

BUILD FOUR MONTH

STAL SIX MONTHS

3-25-83

L.G. Wilke,

Per your request capacities have been re-evaluated on the proposal to relocate operation GO (Top Inlet), presently performed on the G-16 for the M/71tw, to the REML, Richardson RTR Router, and the Heian CNC Machining Center.

	Daily	. Schedu	eral Cincludina 15	% Scop)
Model	April	May	ural (including 159 3rdouerter	4th Quarter
7 Ltw	173	196	255	288
700	426	443	. 460	483
788	115	92	61	58°
	Machin	e Hours	C% Burder	nina)

	Machine	Hours	Colo Burden	ine)	1
Machine	April p	nay	3rd Quarter	4th Quarter	Mocels Run
REML-Current	7.1 (31%) 7.	:4 (33%)	7.7 (34%)	8.1 (36%)	m/700
- Proposed	9.2 (40%) 9.	.7 (42%)	10.5 (46%)	11.1 (49%)	M/700, M/7L+W
RTR - Current	16.7 (73%) 18	3.6 (82%)	23.6 (104%)	26.3 (115%)	M/TLtw-external cuts, M/3200, Torget Star.
Proposed	22,1 (97%) 24	1.7 (108%)	31.6 (139%)	35.3 (155%)	M/THU-Top Inlet, M/200, Torget Stock
	- !		-	1	
Heion - Anticipated				20.0 (82%)	M/100, 74w, 788, 580,541
Proposed			1	24.8 (109%)	M/200, 76tw, 76tw-Inlet, 788,580,341

Assuming M/7Ltw external cuts relocated to Heian

On a capacity basis the REML would be the best condidate for succeeding the G-16 for top inletting of the M/7Ltw.

E.L. Morris Jr.

3-25-83

L.G. Wilke,

Per your request capacities have been re-evaluated on the proposal to relocate operation GO (Top Inlet), presently performed on the G-16 for the M/TITW, to the REML, Richardson RTR Router, and the Heian CNC Machining Center.

	Daily	Schedun	(including 159	6 5000)
Model	April	May	3rd Quarter	6 Scop) 4th Quarter
7 Ltw	173	196	755	288
700 -	426	443	460	483
788	115	92	61	58°

	Machin	e Hours	(% Burden	ina)	1
Machine	April	May	3rd Quarter	44 Guarter	Moriels Run
REML-Current	7.1 (31%)	7.4 (33%)	7.7 (34%)	8.1 (36%)	M/700
Proposed	9.2 (40%)	9.7 (42%)	10.5 (46%)	11.1 (49%)	M/700, M/7L+W
RTR - Current	[G.7 (73%)	18.6 (82%)	23.6 (104%)	26.3 (115%)	M/7Ltw-external cuts, M/2200, Torget Stac
Proposed	27.1 (97%)	24.7 (108%)	31.6 (139%)	35.3 (155%)	M/744-Top Inlet, M/200, Toract Stock
Heion - Anticipated				20.0 (88%)	: : M/100, 74w,788, 580,541
Proposed				24.8 (109%)	.M/700, 76+w, 76+w-Inlet, 788,580,54,

# Assuming M/7Ltw external cuts relocated to Heian

On a capacity basis the REML would be the best condidate for succeeding the G-16 for top inletting of the M/7Ltw.

E.L. Morris Jr.

- Crowled 2 308 Cal with:

primed stocksfixture avail to deill ost-ch,

Trigger franch 
altered = new tab bent up ROSIGNA

LATCH - claused some wear with

tent treated T.G. at P 3000 rounds research

will try h. T. latch

research

f 28 gums teated I F.P. opened cheeking Latel Spains

gennielle arentled sterted

### HODEL SEVEN LIGHTWEIGHT

PROBLEM:

- · STOCK SPLITTING
- · FLOOR PLATE COVER OPENS

RUSPONSIBILITY COMPLETION

PROGRAM TO RESOLVE:

· IMMEDIATE

- Frock SPLITTING

MODIFIED M/600 DRILLING FIXTURE

ORE

COMPLETE

DESIGN AND BUILD TEMPORARY DRILLING

DESIGN

N.P. PROCUSS

COMPLETE

BUILD

Tool Room

- FLOOR PLATE COVER OPENS

# MODEL SEVEN LIGHTWEIGHT FLOOR PLATE COVER DAMS

RESPONSIBILITY COMPLET

· IMMEDIATE

- A QUANTITY OF RIFLES IN . 308 CALIBER WILL BE

- ASSEMBLEDWITH THE FOLLOWING MODIFICATIONS:

PINNED STOCKS

RETERED AND HEAT TREATED TRIGGER ROCESS ENG.

-28 GUNS

GUARDS

RD-49-8

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PETERS

Xc: L. B. Bosquet

D. D. Ricci

J. D. Rogers

C. B. Workman

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

April 8, 1983

TO:

J. P. LINDE

FROM:

G. D. CAMPBELL

#### MODEL SEVEN LWT LARGE CALIBER PRODUCTION

#### Objective

Implement the design revisions which Research proposes for the Model Seven LWT Trigger Guard and Floor Plate components, without altering or disrupting the current production schedule.

#### Status Summary

Research has proposed the redesign of all Trigger Guard and Floor Plate components to prevent potential failures for "Floor Plate Opens" in .308 and 7MM-08 calibers. They are currently producing 250 sample guns for test, and plan to transmit the new design about May 1.

Five purchased components are involved in the design change (Trigger Guard, Trigger Guard Plate, Floor Plate Base, Floor Plate Cover, and Floor Plate Spring). All require tooling changes, some of which will take eight to nine weeks, including sample approval. Another five weeks will be required to obtain production components. Assuming no action until Research transmits the design, redesigned components would be available for assembly beginning about July 21. However, the current production schedule calls for large caliber production from June 13 to August 24.

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Temporary vendor tooling was purchased by Research in March, and was used to produce 250 sample parts for design verification testing. Purchasing has contacted the vendors to determine:

1) whether that tooling can be used to produce 10,000 parts for production; 2) lead times to produce the 10,000 parts; and

3) lead time to convert permanent tools and begin supplying parts. Using this information, a Critical Path Network was developed which maintains the integrity of the current production schedule, subject to the following conditions:

- Temporary tooling cannot be used to produce Floor Plate Cover. The vendor will be released by mid-April to alter permanent tools and produce parts.
- 2. The vendor cannot guarantee 10,000 Floor Plate Bases off temporary tools. P. E. & C. should work with Research and Purchasing to loosen non-critical tolerances to maximize production off temporary tools.
- 3. Purchasing will release the Floor Plate Base vendor to purchase thicker material prior to design transmittal. Material delivery is expected to take about 11 weeks.
- 4. Planning will reschedule 2,000 Model Seven's in .243 caliber ahead of the first .308 run. These .243's were originally scheduled for assembly in late August.

GDC:hv

4-12-83

C. B. WORKMAN

#### SUMMARY

THE COSTS INVOLVED IN CHANGING FROM THE PRESENT DESIGN
AND FOR MATERIAL THICKNESS ON THE MODEL SEVEN LEST
FLOOR PLATE BASE AND RELATED COMPRESSIVES HAS BEEN
ESTIMATED AS FOLLOWS.

VENDORS- TEMPORARY TOOLING	10,950.00
VENDORS - PURMANUST TOOLING	36,975.00
PURCH. INSP. GAGING	9,065.00
PRODUCTION GAGING & FIXTURING	2736,00
TOTAL	\$ 59,726,00

BREAKDOWN BY COMPONENT IS ATTACHED

Shooquet

### BREAKDOWN OF COSTS BY COMPONIENTS

· FLOOR PLATE BASE	
VENDOR - TUMPORARY TOOLING	* 5800.00
VENDOR - PERMANENT TOOLING	11820.00
PURCH. INSP. GAGING	1540.00
PRODUCTION GAGING & FIXTURES	
TOTAL	\$ 21096.00
· TRIGGER GUARD PLATE	
VENDOR - TEMPORARY TOOLING	6,00
NENDOR - REVISE TO NEW DESIGN	1250.00
PURCH. INSP. GAGING	550.00
PRODUCTION GAGING & FIXTURING	0.00
TOTAL	\$ 1800.00
FLOOR PLATE BASE ASSEMBLY	
PRODUCTION FIXTURING	600.00
TOTAL	600.00
· FLOOR PLATE COVER	
VENDOR - TUMPORARY TOOLING	0.00
VENDOR - PERMANUNT TOOLING	2800. <b>0</b> 0
PURCH. INSID. GAGING	200.00
PRODUCTION GAGING & FIXTURING	200.00
TOTAL	# 3200,00
· TRIEGER GUARD	
VENDOR - TEMPORARY TOOLING	5150.00
VENDOR- PERMANENT TOOLING	18730.00
PURCH. INSP. GAGING	6325,00
PRODUCTION GAGING & FIXTURING	0.00
TOTAL	30205,00

## · FLOOR PLATE LATEN SPRING

VENDOR - TEMPORARY TOOLING

0.00

DENDOR - PERMANENT TOOLING

2375.00

PURCH. INSP. GAGING

450.00

PRODUCTION GAGING & FIXTURING

0.00

TOTAL

#2825.00

ABBraguet 4/12/83

C.B. WORKMAN

MODEL SEVEN LWT FLOOR PLATE BASE ETC. PROPOSED DESIGN CHANGE TO HEAVIER MATERIAL

· VENDOR TOOLING

FLOOR PLATE BASE BEANK

TEMPORARY TOOLING CHANGES TO PRODUCE

7000 - 10000 PARTS - (PAID RESIDENCE)

PERMANENT FOOLING

411820.00

TRIGGER GUARD PLATE

NO CHANGE REQ'D TO PRODUCE 10,000

THICKER PARTS TO CURRENT

DUSIGN

TOOLING CHARGES TO GO TO PROPOSED

WIDER DESIGN

4/250,00

TRIGGER GUARD

TEMPORARY TOOLING CHANGES TO PRODUCE

10,000 PARTS (BY RESERREN

\$ 5150.00

PERMANENT TOOLING

\$18730.00

FLOOR PLATE COVER BLANK

PERMANUNT TOOLING WAS ALTERED

TO PRODUCES 10,000 PARTS

ADDITIONAL REVISIONS TO PERMANENT

TOOLING

**2800.00** 

# FLOOR PLATE LATER SPRING

TEMPORARY TOOLING TO PRODUCE

10,000 PARTS

PERMANUAL TOOLING

2375,00

· PRODUCTION TOOLING

GAGES AND FIXTURES WILL HAVE TO BE

REVISED OR BUILT NEW TO

ACCOMMODATE HEAVIER MAT'L.

COST IS ESTIMATED AT

\$ 11250.00

· SUMMARY

TEMPORARY TOOLING

PERMANUT TOOLING

PRODUCTION GAGING & FIXTURING

\$11250.00

TOTAL



Remington Arms Co., Inc. To Ilion, N.Y. 13357

Attn: D. D. Ricci



### DIE & STAMPING COMPANY

DIV. OF UNITED SCREW AND BOLT CORP.

Engineering · Development · Tools · Dies · Stampings

Sub-Assemblies . Bus Supplies

4650 Tiedeman Road • Cleveland, Ohio 44144

Date April 5, 1983

Terms 1% 10 days—30 days NET F.O.B. Our Plant—Cleveland, Ohio

Gentlemen:

Replying to your inquiry of......we take pleasure in quoting as follows:

Quantity	Description	Price
Q.00/rg	Part Number 92249 Guard Permanent .036 increase front end 4°-30' Angle reverse tab back end  Total: \$785.00 per M in 1000 piece lot Total: 738.00 per M in 2500 piece lot Total: 717.00 per M in 5000 piece lot Total: 709.00 per M in 10 M piece lot  1. lst Form Die	\$ 4300.0 470.0 450.0 490.0 5250.0 470.0 445.0 1520.0
	10. Alter Slot Die	620.0 470.0 3750.0
	TOTAL	\$18730.0
	Samples: 7/8 weeks	
	Production start 4 weeks after approval.	

The above Quotation is subject to acceptance within 30 days from date hereof; thereafter, prices are subject to change without notice, according to fluctuation of market prices of material, over which we have no control. We are not responsible for delays in deliveries due to strikes and conditions beyond our control.

Very truly yours,

H & P DIE & STAMPING CO.

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8	y	 	 	





Remington Arms Co., Inc. Ilion, N.Y. 13357 To

Attn: D. D. Ricci



Engineering * Development * Tools * Dies * Stampings Sub-Assemblies . Bus Supplies

4650 Tiedeman Road • Cleveland, Ohio 44144

Date April 5, 1983

Terms 1% 10 days-30 days NET F.O.B. Our Plant-Cleveland, Ohio

Gentlemen:

Replying to your inquiry of ______we take pleasure in quoting as follows: Description Quantity **Price** Part Number 91840 Base Permanent .060/.064 stock Total: \$708.00 per M in 1000 piece lot Total: 683.00 per M in 2500 piece lot 677.00 per M in 5000 piece lot Total: → Total: 668.00 per M in 10 M piece lot \$ 2280.00 1. Alter Blank & Pierce Die --2. Rework Coin Relief Notch Die 465.00 3. Rework 1st Form & Start Curl Die 1670.00 4. Rework U Form Die 1490.00 5. Rework Cam Trim Die Tabs 735.00 6. Rework 2 Stations Curl Die 2240.00 2940.00 7. Develop & Engineering ---TOTAL \$11820.00 Samples: 6/7 weeks Production start 3 weeks after approval.

The above Quotation is subject to acceptance within 30 days from date hereof; thereafter, prices are subject to change without notice, according to fluctuation of market prices of material, over which we have no control. We are not responsible for delays in deliveries due to strikes and conditions beyond our control.

Very truly yours,

H & P DIE & STAMPING CO.

Ву	
----	--

April 18, 1983

Remington Arms
Bridgeport, Connecticut 06602

Attn: Robert R. March Purchasing Agent

Re: Former, Dwg. #E-45992, P.O. # I-82376

Dear Bob:

In reference to your memo of 4/12/83, we have calculated cancellation charges for the subject former, which has been on hold since April 1982. The charges are as follows:

Stock Charge	\$ 350.00
Roughing Charges	935.00
*Fixturing & Set-up	825.00
Carrying Charge	290.00
Total	\$2400.00

*The total fixturing charges were quoted to be distributed equally to this former and the one we completed per your P.O. #I-82374 (completed 10/21/82).

Thank you for the opportunity to resolve this situation. Should you have any questions, please don't hesitate to contact Tim King or myself.

Best Regards,

Doug Price Vice President - Sales

DP/bf

₹D-69-8

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.



xc: C.B. Workman
L.B. Bosquet
D.E. Bullis
S.R. Franz
E. Yetter, Jr.

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

Ilion, New York April 19, 1983

TO:

J.W. BROOKS

FROM:

C.E. RITCHIE

SUBJECT:

MODEL SEVEN THICK FLOORPLATE ASSEMBLIES

A mismatch exists between the Model Seven floorplate base and the magazine box. This mismatch can cause difficulty in loading a fourth round in the magazine. Testing to date indicates the thicker base assemblies greatly aggravate this condition.

Eighty Six (86) guns were built by Production for Research with the thinner assemblies and no magazine loading problems were found. Recently, Research built eight (8) guns with the thicker assemblies and three (3) guns would take only three rounds in the magazine and one other had occasional loading problems. It is, therefore, the Test Lab's recommendation to stop the order for the thick floor plate bases until this condition can be rectified.

CER: js

OPFROTI	104 106 =	- M/7 FLOOR PLATE ASS'Y
<u> </u>	<u> </u>	OPER #30 19/APRIL/83
NoTE:	9LL OPER	PATION CYCLES ARE CONSIDERE
		PRODUCED ADEQUATELY TOTALE.
	<u> 1558 11361</u>	ES EXCEPT AS NOTED
CYCLE	TIME	OBSERVATION
		CYCLE 22 MIN
<u> </u>	START 7:20	WATER PRESSURE ~ 50#
· · · · · · · · · · · · · · · · · · ·		% PATED VOLTS - 88
		7 RATED AMPS - 66
		7. RATES KW - 54
		TO ROTED KUAR - 20 LEAD
3	7:24	FAILURE-LEFT SIDE
		PLATE BOW UPWARD
		BRAZE FLOW DOWNWARD
13	7:47	SAME AS : CYCLE #3
14	7:50	FAILURE LEFT SIDE
		PLATE BOW TIPWARD
		BRAZE FLOW UPWARD
	8:00	FAILURE LEFT SIDE
		PLATE BOW DOWNWARD
		BRAZE FLOW DOWNWARD
25	STOP 8:21	NO CHANGE AT 25 CYCLES

		ARCARIAN
640ce	TIME	OBSERVATION
26	START 8:41	NO CHANGE
27	8:45	FAILURE RIGHT SIDE
		PLATE BOW DOWNWARD
		BRAZE FLOW DOWNWARD
30	8:53	FLOOR PLATE BASE SPRUNG;
		BRAZE OK
35	9:04	FLOOR PLATE BASE SPRUNG;
		Braze ok
35	9:09	FLOOR PLATE BASE SPRUNG;
		BRAZE OK
4>	9:30	FRILURE LEFT SIDE
		PLATE BOW DOWNWARD
		BRAZE FLOW DOWNWARD
50	9:36	NO CHANGE AT SO CYCLES
68	10:25	FRILURE CEET SIDE
		PLATE BOW DOWNWARD
		BRAZE FLOW LIDWARD
75	10:43	NO CHANGE
79	//:34	FAILURE LEFT SIDE
		PLATE BOW UPWARD
		BRAZE FLOW DOWNWARD
	12:00	WATER PRESSURE 75#
97	12:17	FLOOR PLATE BASE SPRUNG;
_ <del></del>		BRAZE OK
100	12:24	NO CHANGE AT 100 CYCLE
	12:30	WATER PRESSURE 50"

CYCLE	TIME	OBSER VATION
106	1:00	FAILURE LEFT SIDE
		PLATE BOW UPWARD
		BEREE FLOW DOWNWARD
125	1:50	FRILURE LEFT SIDE
·		PLATE BOW DOUNWARD
		BRAZE FLOW LIBWARD
		NO CHANGE AT 125 CYCLES
134	2:14	FAILURE RIGHT SIDE
		PLATE BOW DOWNARD
		BRAZE FLOW DOWNWARD
135	2:17	FAILURE RIGHT SIDE
		PLATE BOW UPWARD
		BRAZE FLOW DOWNWARD
145	STOP 2:37	
		R. DELLER
		QC :
		19APRIL 83

FLATMESS	TALLY	TOTAL
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.002	///	3
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-014	111	3
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	X FOR PARTS IN TOL ONLY =	PARTS IN TOL =
	.00603	/7/
	6 FOR PART IN TOL ONLY =	
	.001811	
	X FOR ALL PARTS = . 00667	ALL PARTS = 190
	6 FOR ALL PARTS = . 002604	
		R. Døllør Q. C. Mar. &

		I	1
EATNESS	TALLY	7-7.76	
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. co z	TO M/D TOL.		
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.014	1/1	3	
.015	1//	3	
	ALL PARTS	•	
	X = .00943		
	6 = .00190		
	100 Pcs		
	700 7 63		
	,		R. Dougz
			O.C.
ļ			MAR. 83
1		i i	1

## TO BE DONE BY REM.

## ALTERATIONS TOR THICKER FL. PLATE BASES

## FLOOR PLATE BASE

- · MILL, 030 OFF TRIG. GUARD PLATE SURFACE.
  THRU , 635 WIDTH.
- · MILL , DID OFF EACH SIDE OF TAB.
- MILL , 120 FIGURE AT HINGE.

## FLOOR PLATE PAD

- . USE SAMPLES . OID THINNER
- · MILL CUT FOR HINGED AREA
- · C'S INK SCREW HEAD AREA

## FLOOR PLATE COVER

· COIN OR MILL , 052 DIMENSION AT

## STOCK

- . , OID OVERALL MAG. INLET
- · TRIG. GUARD PLATE INCET . 030 DEEPER

XC: \L. B. Bosquet

J. R. Snedeker R. L. Snedeker

RD-49-B

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

April 21, 1983

TO: J. B. MROZ J.B.M.

FROM: R. C. DELLER

PROBLEM:

Poor yield at operation #30, M/7LWT Floor Plate Base Assembly (Braze) C-91850

PROCEDURE:

- 1. Obtain a sufficient quantity of M/7 trigger guard plates (B-91845).
- Measure and sort the trigger guard plates to M/D flatness tolerance. Enough "Good" plates for an eight (8) hour production shift will be required.
- 3. Using the sorted plates, monitor the braze operation (#30) for a full workshift. Use floor plate bases (C-91840) supplied by the production department.
- 4. Prepare a log of all observations.
- 5. Save all poor braze assemblies for examination by Process Engineering and Trial and Pilot Engineer.

#### OBSERVATIONS:

- 1. Trigger guard plates generally bow in the same direction. (Concave toward the shiny side)
- Based on two separately sampled lots, flatness of the trigger guard plate to the M/D varies considerably.
- 3. This study had to be delayed while Gage D-46123 was corrected to M/D and P/R tolerances. This generated the need for a new machine capability study to reflect the above changes.

Poor yield at operation #30, M/7 LWT Floor Plate Base Assembly (Braze) C-91850

#### OBSERVATIONS: Contd.

- 4. Other than an increase in water pressure from 50 to 75, PSI from 1200 to 1230 hrs. all other operating parameters remained constant.
- 5. Failure observations at braze:
  - a. 2/3 failures were left side.1/3 failures were right side.
  - b. Total failures = 12 (8.275%) (Total Pcs. = 145)
  - c. There were equal freq. of failure with plates bowed up and down.
  - d. Braze material flowed downward on 75% of the failures.
  - e. Braze material flowed upward on 25% of the failures.
- 6. Floor plate bases which were sprung out of shape, did not cause any braze failures during the test. (145 cycles with four (4) sprung bases observed)
- 7. Time of day did not appear to affect braze failure.

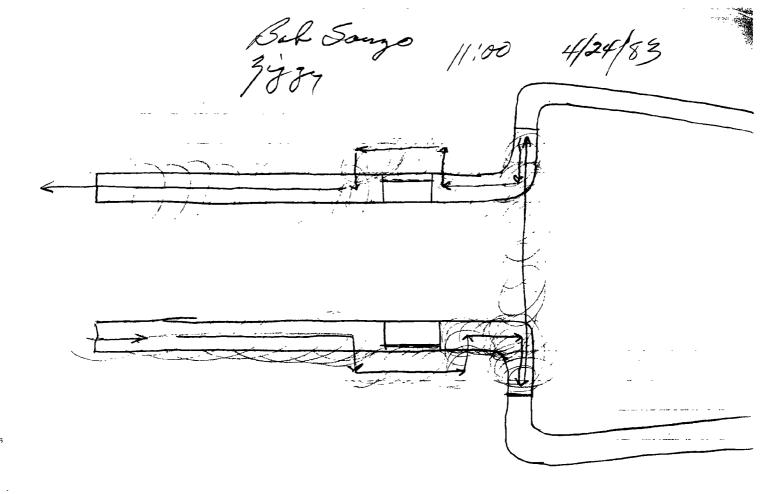
#### CONCLUSION:

- 1. Braze failure is unpredictable.
- Braze failure appears to happen when braze shim deflects away from the influence of flux and junction of parts being brazed due to the sudden heating.

#### ATTACHMENTS:

- Measurement tallies trigger guard plate for two lots of plates.
- 2. Operation log M/7 LWT floor plate ass'y, operation #30.

RCD/cac JRS JRS.



loss pieces made om temperary tooling will require some modification by Remington.

But forlother to the F.P. Bue - will have answer by 4/29 - will probably use Mature will require:

o some soul of fixture

xc: G. D. Campbell

D. J. Anderson

RD-49-B

### REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



DETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

April 26, 1983

J. P. LINDE

MODIFICATIONS REQUIRED TO MODEL SEVEN LIGHTWEIGHT COMPONENTS

BEING PRODUCED ON TEMPORARY VENDOR TOOLING.

#### FLOOR PLATE BASE

The Research N/C group has been contacted to use the Matsura to remove additional material from this compo- N P Process nent to allow use of a thicker Trigger Guard Plate. A Research N/C fixture, program, and operator will be required. Bak

Production

Hinge clearance cut must be milled deeper to permit N P Process proper functioning of the thicker Floor Plate Cover. Production

It may be necessary to deepen the countersink to provide proper seating of the Take Down Screw.

Research N P Process Production

#### FLOOR PLATE COVER

A slight mill cut must be added to ensure proper functioning of the Floor Plate Latch.

N P Process Production

#### FLOOR PLATE PAD

This part must be thinner and the hinge clearance larger to accomodate the thicker Floor Plate Base. Powder Metal to be contacted to press 10M pieces to the thinner platform dimension. A milling operation will be set up to enlarge the hinge clearance. Research has a form cutter. A set of vise jaws will be designed and built.

N P Process Powder Metal Production

#### STOCK INLETTING

A revised tape has been prepared and approximately 200 Stocks have been run with revised inletting.

N P Process Chem. & Met. Production

L. B. Bosquet



PD-49-8

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remineton OTPHD)

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

April 26, 1983

J. P. LINDE

SUBJECT:

MODIFICATIONS REQUIRED TO MODEL SEVEN LIGHTWEIGHT COMPONENTS

BEING PRODUCED ON TEMPORARY VENDOR TOOLING. FLOOR PLATE BASE - need intermediate dung à number

The Research N/C group has been contacted to use the Matsura to remove additional material from this compo- N P Process nent to allow use of a thicker Trigger Guard Plate. A Research N/C fixture, program, and operator will be required.

Hinge clearance cut must be milled deeper to permit N P Process proper functioning of the thicker Floor Plate Cover. Production

It may be necessary to deepen the countersink to provide proper seating of the Take Down Screw.

Research N P Process Production

FLOOR PLATE COVER - transmit find design

A slight mill cut must be added to ensure proper functioning of the Floor Plate Latch.

Production

Production

PLATE PAD

Production

Production

Tolking - results in part on the plank in plant, of time

N P Process

FLOOR PLATE PAD

This part must be thinner and the hinge clearance larger to accomodate the thicker Floor Plate Base. Powder Metal to be contacted to press 10M pieces to the thinner platform dimension. A milling operation will be set up to enlarge the hinge clearance. Research has a form cutter. A set of vise jaws will

N P Process Powder Metal

be designed and built.

Plar con lane set (after 2 new 1) ready in

STOCK INLETTING

The confidence of the formula of the transmitted

A revised tape has been prepared and approximately

N P Process

Chem 5 Met 200 Stocks have been run with revised inletting.

Chem. & Met. Production

L. B. Bosquet

ff. LBB: hf Vrijger Juan Plate

5-7714 San

Floor Plate Part

Ploor Plate Part

Can't increase hinge clearance without:

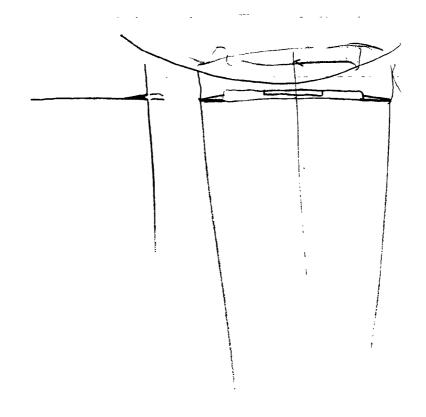
attering 2 punches

make I new punch after punches

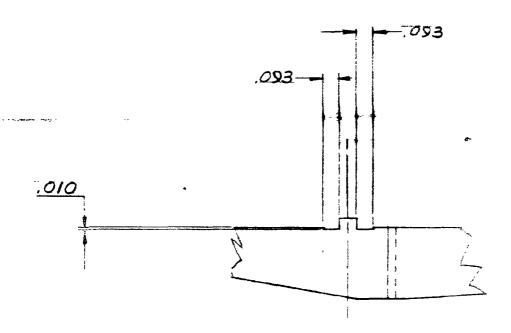
this would take P 5 weeks

present

# 30 PM







2 X SIZ

4/26/23 () judet Even neut-Redesign SB. Status L.E. Bosquet, J.W. Krooks * Transmit ASAP D.D. Ricei, J.D. Gruntet * Cores C92721 (heed blank #) 6 allied can up-date tooling for 1300. - 2 weeks. Brad to verify to Dwayne that Extra time is ok; need revusition Latch Spring B92722 due in 2 week = (5/9) 250 prototypes on order as des . so E din . 100 dia the same Final design pending test. (for permanent tools) rela recuisition * Trigger quard Plate B92718 Source to produce 10,000 pcs on permanent tools need repuisition Trigger Juard Blank C92719 all other dimensions the same as marked grunt for 10,000 temporary justo (XC 92249)

need recusation

(2)

Floor Plate Base: C92720 Weed blank #

Need intermediate humber for 10,000 pcs

on temporary tools (parts are received already

as # 92256)

Boxes must be remarked to new #.

heed requisition.

How flate Rad Blank C92449 (masked print)

P/M needs 5 weeks ARO to change radius from

110 to .120.

Interins parts might need to have .120 R milled

Brad to check schedule for need.

(P/M needs & 6 weeks to design & hild I new act of I have purches to provide parts to later design die would have to be sent int for fitting of punch set. 5/2/83

## Model Seven Lat.

- · dip at rear of bottom inletting check w/ Dane i Bale supply
- · lend or put detent in detch errerage area of Film Plate lover ______
- · coin or chamfer edge of Lugger Guard Plate
- · Katch can reach point where it count more and
- · Katch Spring: what is rendon holding on spread or mydning?

FORM RD 15A REV 1.	12-81	POWDER METAL	O HOLTION	PURCH	IASE	
	5/2/83	PURCHASE RE	QUISITION	ORDEF	NO	
	<del>-                                    </del>	THIS BLOCK FOR PURCHASI	NG DEPT USE ONLY			-
PLACED ON	POWDER METAL PROI	OUCTS DIVISION				
STREET NO.	,	CITY	STATE	z	IP CODE	
CONTACT PERSO	ON		TELEPH	IONE NO		
QUOTATION RE	FERENCE: <u>Verbal (</u>	R.F.Decker)			ORDEI CRITIC	R STATUS
	TATION REFERENCE: Verbal (R.F.Decker)  CRITIC TAXAI VIAF.O.BTERMSEXEM		BLE			
SPECIFIC	CATIONS MUST BE CLEARLY	NOTICE TO V	<del></del>	LOGUE MACHIN	E NUMBERS, E	TC.
QUANTITY		DESCRIPTION		PRICE	DISCOUNT %	DELIVERY WANTED
1	Complete set of	E <del>lower punches</del>	to fit exist	ing		
	- <del>-</del>	SEVEN LWT Floor		-		
	C-92449 (to adv	vance print prov	vided <b>al</b>			<u> </u>
		-#7)		\$1000.00		6/6/8
<del></del>						
-						
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	Born	REASON: LOWEST BOYCE	: OTHER **		<u> </u>	<u>.                                    </u>
ITEM NO.	CHARGE ACCOUNT	REASON: LOWEST PRICE		IVER TO BLDG.	NO.	
				TFY MR.		· · · · · · · · · · · · · · · · · · ·
	18	90290	ISSU	JED BY	ncer Renne	tt &K
		API	ROVED BY			

#### QUOTATION

## ALLIED TOOL & DIE, INC.

16146 PURITAS AVE. --- CLEVELAND, OHIO 44135
Phone: 941-6196

TO:

REMINGTON ARMS CO. ILION, N.Y. 13357 ATTN: MR. DWAINE RICCI Date MAY 4,1983

Gentlemen:

As per your request, we hereby quote you as follows.

Dwg./Part #	Description	Price (P)
12255 Son't saap -	FLOOR PLATE COVER BLANKS:  TO CHANGE PROGRESSIVE DIE TO .062 NATERIAL SCRAP OUT 1185 LBS. OF .062 NATERIAL  LESS SCRAP ALLOWANCE (\$50.40 LONG TON)  COST TO REVERT PROGRESSIVE DIE BACK TO .052 NATERIAL  TOTAL O	\$ - 26.66 \$ 3,284.86 \$ 580.00
	NEUPIECE PRICE FOR 10 M PCS. PER 1 M PCS.	\$ 89.50

Terms: Net 10 days.

This quotation is subject to terms and conditions printed on the reverse side of this sheet and becomes part of your order unless otherwise noted.

Yours truly,

ALLIED TOOL & DIE, INC.

PRICE SUBJECT TO CHANGE DUE TO POSSIBLE MATERIAL AND SERVICE PRICE INCREASES.

#### TERMS AND CONDITIONS OF SALE FOR SPECIAL TOOLING.

This quotation is subject to acceptance within thirty (30) days.

Deliveries are determined from the date of receipt of written purchase order or receipt of material if you are to furnish, whichever is the later. Every effort will be made to deliver as promised. No responsibility is assumed for any delays.

It is understood that there are no conditions or agreements outside of this written proposal; and that all prior conversations, agreements, or representations with reference to its subject matter are hereby superseded. Clerical errors are subject to correction.

Any tax imposed by any present or future law on the sale of the articles covered hereby shall be added to the amount to be paid.

Our terms are net 10 days, f.o.b. our Plant. All sizable and/or long delivery orders are subject to monthly invoicing as the work progresses.

#### ALL ORDERS ARE ACCEPTED WITH THE FOLLOWING CONDITIONS:

- a. All orders are not subject to cancellation nor deferment of shipment when ready unless we are indemnified against loss resulting therefrom, and further, the Allied Tool & Die Company shall not be responsible for delays or nonperformance caused by strikes, fires, or other causes beyond our control.
- b. The Customer shall defend, at his own expense, any suit which shall be brought against us by reason of the manufacture or sale of special parts made to the Customer's specifications.
- c. The Allied Tool & Die Company shall have the right to stop work at any time and withhold deliveries of any or all of the goods ordered and property relating to said work, if any payment herein stipulated is not made promptly as agreed or upon proof of Customer's inability to pay as agreed and thereupon the selling price of hours and material in process at such date shall be due and payable.
- d. The Customer will allow extra charges for authorized changes.
- e. The Customer will have a responsible member of his company approve all designs made by us. We will correct any errors in our designs mutually agreed upon, but we will assume no liability for corrections to the designed product.
- f. The Allied Tool & Die Company will not be responsible for product performance where the product is manufactured to the Cusromer's own design, prints, or specifications.
- g. The Allied Tool & Die Company's liability for defective work or material shall be confined solely to replacement or repair of defective goods.
- h. The Allied Tool & Die Company reserves the right to correct errors in our products. No charges for repair will be accepted without our written authorization.
- i. The Allied Tool & Die Company shall have the right to scrap without liability prints submitted for quotation, patterns, special tools, and designs used in the manufacture of material herein quoted unless notice is given to ship these items with the completed product or within 30 days of completion of the order.

# MODEL SUNGEN LIGHTWEIGHT ELIMINATION OF FPO FOR 305 AND THIT-08

#### OBJECTIVE:

IMPLEMENT PROPOSED DESIGN REVISIONS (WHEN AVAILABLE)
TO THE TRIGGER GUARD AND FLOOR PLATE COMPONENTS
WITHOUT DISRUPTING PRODUCTION SCHEDULE.

### 5-A-US:

THE REVISED PRODUCTION SCHEDULE CALLS FOR PRODUCING
THIS YEAR'S FORECAST FOR GMM, 243, AND 222 WITHOUT
INTERRUPTION. THIS STRATEGY ESTABLISHES A NEW TARGET
DATE OF 9/1 FOR RESUMING FINAL ASSEMBLY OF 308 AND
7MM-08.

A PROPOSED DESIGN CHANGE MUST BE AVAILABLE BY 6/13
IN ORDER TO HAVE OUR VEHDORS SUPPLY PARTS FROM
TEMPORARY TOOLING TO MEET THE 9/1 DATE.

ATTACHED IS THE PROPOSED SCHEDULE FOR GACH COMPONENT

## MODEL SEVEN LIGHTWEIGHT - REVISED SCHEDULE THICKER MATURIAL-FLOOR PLATE BASE, ETC.

#### · ASSUMPTIONS:

- A CHANGE WILL BE MADE TO USE THICKER MATERIAL.
- THE 1982 FORECAST FOR . 243, 6 MM, AND 222 WILL BE MET ABOUT THE FIRST OF SEPTEMBER
- START UP OF FINAL ASSUMBLY FOR 308 \$ 7 MM-08 WILL

  BE THE FIRST OF CEPTEMBER
- FINALIZED DESIGN WILL BE SIMILAR TO THAT

  PROPOSED IN APRIL
- FINALIZED DESIGN WILL ALLOW VENDORS TO USE

  MOST OF THEIR PERMANENT TOOLING WITH SOME

  TEMPORARY TOOLING NECESSARY

- Two week SHUTDOWN NOT CONSIDERED	COMPLU	5710N
	GOAL	LATE
· VERIFY REVISED DESIGN AND TRANSMIT	7-11	8-17
FLOOR PLATE LATEN SPRING		
- PLACE ORDER FOR 10M PARTS	6-13	7-28
ON TOMPORARY TOOLS		
- VENDOR SHIP ION PARTS	7-11	8-31
- RELEASE VENDOR TO REVISE	7-11	8-17
PERMANENT FOOLING		
- VENDOR MODIEY FEELING AND	8-24	10-24
SUBMIT SAMPLUS		
- INSPECT SAMPLES AND RELEASE	8-31	10-31
VENDOR		
- VENDOR SHIP FIRST PRODUCTION	9-15	11-14
Lor		

	-GOAL	LATES
· FLOOR PLATE COVER		
- ORDER 10M PIECES - REQUIRES	6-13	6-29
ALTERATION TO PERHANGENT TOOLS		
- VENDOR HAS 1185 165 OF. OGZ MAT'L. ON HAND	5-27	7-13
- VENDOR ALTER PERMANENT TOOLS	7-11	7-27
AND SUPPLY SAMPLES		
- Inspect samples and Release	7-18	8-3
VGNDOR		
- VENDOR SHIP FIRST PRODUCTION	8-1	8-18
LOT		
- COMPLETE SECONDARY OFERATIONS	8-15	8-31
· FLOOR PLATE BASE		
- PLACE ORDER FOR IOM BLANKS	6-13	7-21
ON TOTAPORARY TOOLS	Ø 13	, 3,
- VENDOR HAS OGOFOGS MATE ON ORDER-DUE A 6-6	7-11	8-19
- COMPLETE SECONDARY OPERATIONS	7-21	8-31
- VENDOR ALTER PERMANENT TOOLING	8-17	9-28
	<b>P</b> 1 /	, 23
AND SUPPLY SAMPLES	8-24	10-5
- INSPECT SAMPLES AND RELEASE	8-54	10-5
VENDOR	a/	11.5
- VENDER SHIP FIRST PRODUCTION	9-14	11-2
LOT OF BLANKS	<b>a</b>	,, .,/
- COMPLETE SECONDAZY OPERATIONS	9-26	11-14

	GORL	LATE
· TRIGGER GUARD		
- ORDER 10M PARTS ON TEMPORARY	6-13	6-27
70065		
- VGNDOR SHIP IOM PARTS	7-18	8-1
- COMPLETE SECONDARY OPERATIONS	8-1	8-31
- VENDOR ALTER PERMANENT TOOLS	9-14	9-28
AND SUPPLY BAMPLES		
- INSPECT BAMPLES AND RELEASE	9-21	10-5
VGNDOR		
- VENDOR SHIP FIRST PRODUCTION	10-5	11-2
Le po		
- COMPLETE SECONDARY OPERATIONS	10-31	11-14
TRIGGER GUARD PLATE - PLACE ORDER FOR IOM PARTS ON	6-13	7-21
	6-13	1-01
- VENDOR PURCHASE THICKER MATERIAL	6-27	8-4
	7-11	8-19
- VENDOR SILIP IOM PARTS	7-71	8-31
- COMPLETE SECONDARY OPERATIONS - RELEASE VENDOR TO ALTER	7-12	8-30
	, 12	8-00
PURMANUNT FOOLING - VENDOR ALTER PURMANUNT TOOLS	8-10	9-28
AND SUPPLY SAMPLES	8-10	1-28
- INSPECT SAMPLES AND RELEASE	8-17	10-5
	8-7/	70.3
- VENDOR SHIP FIRST PRODUCTION	9-15	11-2
	7-70	112
	9-27	//-/ <del>*/</del>
- COMPLETE SECONDARY OFURATIONS	. 77	11-17
NFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON		R2529219

· FLOOR PLATE PAD

- RELEASE PIM TO DESIGN AND

BUILD NIGHT LOWER PUNCH SET

OR

RELEASE P/M TO DESIGN AND BUILD

NEW TOOLS COMPLETE

- P/M RUN 10 M PARTS ON REVISED .

TOOLING,

QZ.

P/M RUN IOM PARTS ON NOW TOOLS

- INSPECT AND RULGASU P/M

- COMPLETE SECONDARY OFGRATIONS

## MODER SUVEN LIGHTWEIGHT TRIGGER GUARD - FLOOR PLANS ASS'Y.

· Die Cast Proposal	
- QUOTED IN 218 ALLOY	,
- TIME LINE FROM FIRM DESIGN:	
- VENDOR QUOTE FIRMED UP TO *200LD GIVE APPROVAL TO FINAL DESIGN START WHILE QUOTE BEBUG FIRMED	2 weeks*
- VENDOR BUILD TOOLING AND	
SUBMIT SAMPLES	16 WEEKS
- INSPECT SAMPLES	1 Wask
- REVISE. TOOLING & SUBMIT	
SAMPLES 4 WOULS	,
- INSPECT SAMPLES AND RULLIASE	
- VENDOR	/ WISTER
- FIRST PRODUCTION SHIPMENT	
(I WEEK TRANSIT TIME INCLUDED)	5 WEEKS
	23-29 WKS
	\$33,000
- PRODUCTION TOOLING	
DUSIGN & 1300 HRS (ASSUMES 4 DUSIGNERS)	A 8 words
BUILD ~ 30 27 HRS	/Z-14 wasks
- PROCUSSING (IM-PLANT)	1-2 works

- TOTAL ESTIMATED LEAD TIME FROM FIRM

DESIGN TO PRODUCTION PARTS AT FINALASSIMALY

6-7 MONTHS

## · INVESTMENT BAST PROPOSAL

- QUETED 1040 STEEL, ANNEALED & CARBON RUSTORUD
- ESTIMATED TIME LINE FROM FIRM DESIGN:
  - VENDOR QUOTE FIRMED UP TO FINAL TO DUSIGN COULD GIVE APPROVAL TO START

2000000

- VENDOR BUILD TOOLING AND SUBHIT SAMPLES.

8-10 weeks

- INSPECT SAMPLES

ر سه محيير

- IF NECESSARY - REVISE TOOLING AND

SUBMIT NEW SAMPLES

- INSPECT SAMPLES AND RELEASE VENDOR

1 665

- FIRST PRODUCTION SHIPHINT

16 000000

26-34 WEEKS \$ 18,000

- PRODUCTION TOOLING

ASSUME ABOUT THE SAME AS THE

DIG CASTING

20-24 WEERS

- PROCESSING (IN-PLANT)

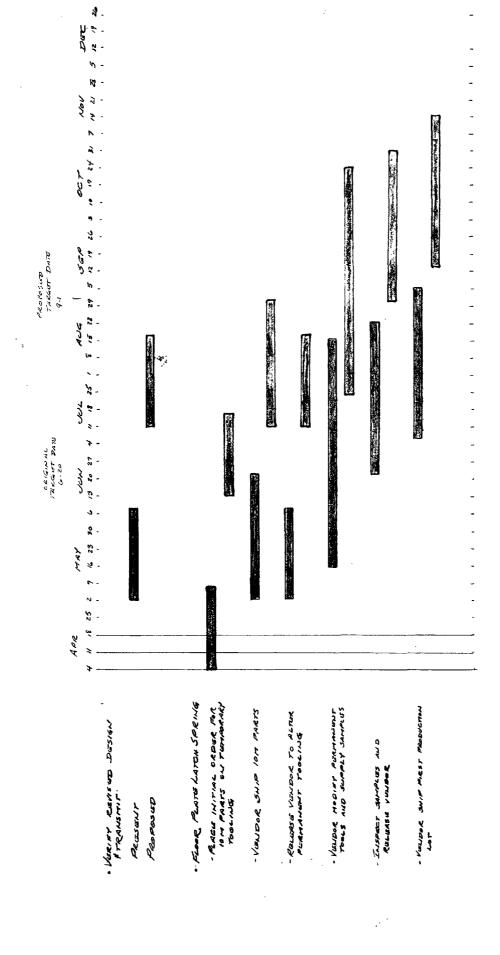
1-2 words

- TOTAL ESTIMATED LUAD TIME FROM FIRM

DISSIGN TO PRODUCTION PARTS AT

FINAL ASSEMBLY

7-9 MONTHS



PURCHASE . FORM RD 15A REV 1, 12-81 4 PURCHASE REQUISITION ORDER NO. DATE ISSUED _5/11/83 THIS BLOCK FOR PURCHASING DEPT. USE ONLY PLACED ON ALLIED TOOL & DIE ______ CITY ______ STATE _____ ZIP CODE _ STREET NO. ___ CONTACT PERSON _____ _____ TELEPHONE NO. ____ ORDER STATUS QUOTATION REFERENCE: CRITICAL TAXABLE □ SHIP VIA __ _____ F.O.B. ______ TERMS ____ EXEMPT NOTICE TO WRITER SPECIFICATIONS MUST BE CLEARLY STATED GIVING WHENEVER POSSIBLE CATALOGUE MACHINE NUMBERS, ETC. **DELIVERY** DISCOUNT % QUANTITY DESCRIPTION PRICE Cost to revert permanent tooling for Floor \$580.00 Plate Blank #92255 back to handle .052 mat 1 REASON: LOWEST PRICE □ OTHER □

TEM NO.	CHARGE ACCOUNT	WORK ORDER	DELIVER TO BLDG. NO.
			NOTIFY MR.
			ISSUED BY
			APPROVED BY APPROVED BY
	İ		

FORM RD 15A REV 1, 12-81 PURCHASE PURCHASE REQUISITION ORDER NO. DATE ISSUED __ 5/11/83 THIS BLOCK FOR PURCHASING DEPT. USE ONLY PLACED ON ___ALLIED TOOL & DIE ______ CITY ______ STATE _____ ZIP CODE _ STREET NO.___ TELEPHONE NO. CONTACT PERSON ___ ORDER STATUS CRITICAL TAXABLE [ _____TERMS __ SHIP VIA EXEMPT **NOTICE TO WRITER** SPECIFICATIONS MUST BE CLEARLY STATED GIVING WHENEVER POSSIBLE CATALOGUE MACHINE NUMBERS, ETC. DELIVERY WANTED QUANTITY PRICE DISCOUNT % DESCRIPTION Cost to alter permanent tooling to make Floor Plate Cover Blank #92255 out of .062

 thick material	\$2800.00		
	, = = = = = =	- 1	
			_

		REASON: LOWEST PRICE . OTHER .	1
ITEM NO.	CHARGE ACCOUNT	WORK ORDER	DELIVER TO BLDG. NO.  NOTIFY MR. S.D.Bennett ISSUED BY L.B.Bosquet
			APPROVED BY

FORM RD 15A REY 1, 12-81. **PURCHASE** PURCHASE REQUISITION ORDER NO. DATE ISSUED _5/11/83 THIS BLOCK FOR PURCHASING DEPT USE ONLY PLACED ON H & P DIE & STAMPING _____ CITY _____ STATE _____ ZIP CODE_ STREET NO. _ CONTACT PERSON ___ _____ TELEPHONE NO. ____ **ORDER STATUS** QUOTATION REFERENCE: __ CRITICAL [] TAXABLE SHIP VIA __ ____ F.O.B. ____ _____TERMS ___ EXEMPT NOTICE TO WRITER SPECIFICATIONS MUST BE CLEARLY STATED GIVING WHENEVER POSSIBLE CATALOGUE MACHINE NUMBERS, ETC. CELIVERY QUANTITY DESCRIPTION **PRICE DISCOUNT %** WANTED To cover cost of temporary tooling to increase locking tab dim. by .036 and to reverse the angle at the rear take down screw hole on \$1175.00 Trigger Guard Blank #92249 (marked print) To cover the cost of 10M Trigger Guard Blanks to be produced on above temporary tooling \$9750.00 at \$975 00/M per marked print REASON: LOWEST PRICE - OTHER -CHARGE ACCOUNT WORK ORDER DELIVER TO BLDG. NO. ITEM NO.

	NOTIFY MR.	s.	D.	Bennett
	ISSUED BY	L.	в.	Bosquet #38
	APPROVED E	3Y		<del> </del>
				,

RD-69-B

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Xc: <u>L. B. Bosquet</u> R. C. Bottini

File: Proposal 1011

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

May 10, 1983

TO:

R. J. LONG

FROM -

D. J. ANDERSON

RE:

MODEL SEVEN LWT - .223 CALIBER

The above project has been accepted by the Operations Committee and a trial and pilot lot of 100 pieces is required for August assembly.

Please make whatever arrangements necessary. Barrel blanks have been completed through the GFM today.

DJA:hv

### REHINGTON ARMS COMPANY, INC.

Distribution: C. B. Workman

J. P. Linde J. Brooks C. E. Ritchie

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY".

RESEARCH TEST and MEASUREMENT REPORT - Report No.	831361
1/0757 65757	

MODEL SEVEN - .222 CALIBER TRIAL & PILOT EVALUATION

1. 0. J. Handenson Q 5/26 2. L. N. Bosquer \$36 5/27

3. P. C. JOHNSON 4. J. Links

C. E. Ritchie

Propinsad and Casared By:

Sichature

Jace

C.E. Ritchie,

Sr. Supervisor - Testing,

Mess. & Mech. Analysis Lab

#### TEST & MEASUREMENT LAS REPORT

Model Seven - .222 Caliber Trial & Pilot Evaluation

831361

REPORT NUMBER:

REPORT TITLE:

MCDEL(S):	Seven
gauge or caliber:	.222
DATE:	5-16-83
WORK ORDER NO.:	81343-904
PART NAME:	
designer/engineer:	G. Hill/J. W. Brooks
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 - 8 OUT OF 40 GUN SAMPLE
9.	ENDURANCE - NO. OF GUNS TESTED:
	NO. OF ROUNDS PER GUN:
	TOTAL ROUNDS FIRED IN TEST:
	AMMO TYPE: MAGS; TARGET:
	RIM FIRECENTER FIRE

May 18, 1983

TO:

C. B. WORKMAN

FROM:

C. E. RITCHIE

REPORT TITLE:

MODEL SEVEN - .222 CALIBER TRIAL & PILOT EVALUATION

#### ABSTRACT

A request was received from G. Hill, Supervisor, Process Engineering, to perform a Trial & Pilot evaluation of the Model Seven .222 Caliber production firearm.

#### SCOPE OF WORK

Perform a Trial & Pilot evaluation on an 8 gun sample from a 40 gun production run.

#### TEST RESULTS

Only a Visual Inspection was performed. The sample lot was rejected due to the following:

- 1.) 3 of the 8 guns had been assembled using old style unheat treated trigger guards with the tab bent in the old position (upwards).
- 2.) 1 stock was cracked.

#### REPORT TEXT

Of the 8 firearms inspected, the following major objections were pointed out:

- 1.) 3 of the 8 guns had been assembled using old style unheat treated trigger guards with tabs bent in the old position (upwards).
- 2.) I stock was cracked (beginning at the floor plate tab and running about ¾" towards the muzzle of the gun).

These objections were the basis for rejection of this sample lot. No other physical testing was performed on the sample.

#### TEST PROCEDURE

An eight gun sample was selected by Charles Stephens, Research Test Lab, from a 40 gun production run.

A visual inspection was conducted in the Test Lab on 5-17-83 at 1:00 p.m. by Z. Kowalski, Process Engineering, D. Bullis, Current Firearms Design, R. Nightingale and E. Ritchie, Test Lab. Guns were wiped down with a clean cloth and inspected by each member of the committee and comments were recorded. Comments on individual guns can be found in the Appendix.

APPENDIX

#### <u>Visual Inspection - T & P Evaluation</u> <u>M/Seven .222 Cal.</u>

#### 7602556

- rear swivel screw hole not properly aligned.
- floor plate cover exceeds .026" gap .
- grip cap over polished to mis-shape the cap.

#### 7602642

- front swivel screw bright mark on dome and hole not properly-aligned.
- dent in top of stock

#### 7602629

- 2 pin holes and 1 dent in stock.
- light checkering on pistol grip both sides.
- trigger guard used has tab bent in the old directior (appears not to be heat-treated).

#### 7602508

- excess space between floor plate pad and inlet cut in stock.

#### 7602651

- comb cut (left side) is mis-shaped.
- wood inlet rear of trigger guard impression of trigger guard in wood screw hole probably mis-aligned.
- 2 pin holes in the bottom of the fore-end area.
- light checkering pistol grip area both sides.

#### 7602631

- 2 dents in pistol grip.
- dent on left top rail of stock.
- bottom of comb is mis-shaped 3 flats.
- trigger guard used has tab bent in the old direction (appears not to be heat-treated).

#### 7602637

- cracked stock - starts at floor plate pad.

#### 7602605

- sight screw hole marred on rear sight.
- rear trigger guard screw marred.
- dent in floor plate pad.
- scratch on the floor plate cover.
- dent in top of the stock.
- trigger guard used has tab bent in the old direction (appears not to be heat-treated.)

- General Note 1.) Barrel bracket on all guns were dull finished.
  - 2.) Ejection port radius on the stock are all 3/16" radius drawing calls for 3/8" radius.

S.B. Breguet

RD-6738 Rev. 380

DESIGN CHANGE REQUEST (DCR)

OR

TRANSMITTAL OF DRAWINGS / PARTS LIST

DCR 11755
Sheet / of /

Requested By	Changed By		Date	
Research	P. Nasupany		7/5/33	
Originating Date		Transmittal Date		
7/5/83		7-12-	83	

Model	Part Name / List		Drawing No.	Part No.		
LWT	Barrel Assembly Complete		B-21460	21465		
t of	Barrel Assembly		D-34990	34995		
ti (/	, , ,		2-32725	32730		
, ,,	Parts	LIST Sheets I Tory ?				
Dwg. No.	Rev. No.	Design Change				
-21460		Added 223 Rem. caliber.				
-34990	3					
- 3 <del>2725</del> 11	5	<u> </u>				
	6	Added Part No. 32730 & LA 507.				
RTS 43	7	Added 123 Rem cal. To.	Parts list Cha	e/s /- 2 * 1		
( ) Appeara	ny or all of ommittee ar	the above changes to current models require append approval of DCR by Div. Manager. On mode inges require approval of Div. Manager ONLY.	s not in product	asypany		
Reason for	Change:	Add 223 Rem. caliber				
Commi		minutes of may 25	1983 meetin			
	of Parts on	Hand: (check below)		V		
( ) Scrap	( ) Alt	er () Use Inventory () RD	6589 Attached			
APPROVED	:	10B. A. a. Comme 1/11/	(P.E.&C: If part is e	ither scrapped or a		

G-88

#### DON'T SAY IT-WRITE IT

From LARRY WILKE

RE: M/7 OPTI-SAND

PLEASE RELEASE THE OPTI-SAND FORMER

FOR BUILD.

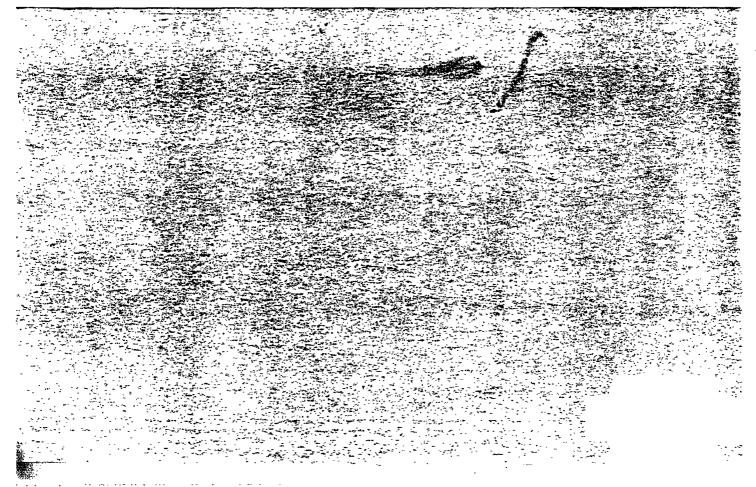
CONMENT: PRODUCTION WILL NOT BE ABLE TO RUN

H/7 ON HEIM FOR 2 YEARS OR MORE.

COST SAVINGS ON OPTI-SAND IS ESTIMATE

AT \$2833 PER MONTH SO WE CAN'T

"YOUR SAFETY ATTENTION MEANS ACCIDENT PREVENTION"



### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET * SEQUENCE OF OPERATIONS *

ΤE	10-21-83 COMPUTER R.J	ORF		SHEET	of
ER ).	OPERATION NAME	MACHINE	DEPT. NO.	HOURS DESIGN	HOUR
$\Box$					
_	SPORTSMAN 12	OPTI-SAND	04	270	
4					Bay 600
-					101
$\dashv$	SPORTSMAN 74-76	OPTI- SAND	04	180	1060
$\dashv$					7600
+	1100-870 Spiteial 1244	OPTI - SAND	04	140	. 840
十	1100-870 Special 12 da	OPT SASS	7		4300
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	1100-870 SPECIAL ZOGA	OPTI - SAND	04	125	570
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_ <u>;</u>	TOTAL			7)=	3.45
-65				715	13670 417,800

# PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET • COMPUTATION •

MODEL STIZ COMPONENT STOCK	·		PART NO.	
OPERATION (DDTI- SAND) MACHINE SH	and Compl	ETE	OPE	R. NO
MACHINE ZUCKERMAN OPTISAN	D		DEP	T. NO. <u>24</u> OF <u>Z</u>
COMPUTER R.J. ORF DATE	10-21-83	<u> </u>	SHEET _	<u></u>
TOOLING	DRAWING NUMBER	REMARKS	HOURS DESIGN	HOURS BUILD
FORMER FARRICATIONS				
FOLLOWER WHEEL (RICHARDSON TO				
ZUCKERMAN)		Wiew.	15	45
CUTIER BODY (RICHARDSON to				
ZUCKERMAN)		NEW	20	55
a) WOOD BLANK				#300
PREP & FARRICATION -			20	20
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				
1) ALUMINUM BLANK				#2007
PREP & FABRICATION			20	110
ALTER ATIONS				40)
THE REPLIENT				1 70 7
C) STEEL BLANK	1			
PRIED & FARRICHTION			- 20	\$3500
JACES - CARCICION 11010				
		<del> </del>		
NEW FORMER FOR CARVE				
FREP & FARRICATION		/	20	110 ?
PLIBRATIONS				40)
7-2131-7-7110N-3		<del> </del>	<del> </del>	70 /
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SUB-TOTAL	•		115	420
SKETCH	<del> </del>			94600
				76-0
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RD-6567 \-18-63	<del></del>			
RD-6567 \-18-63				

### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET • COMPUTATION •

ODEL SPT 12 COMPONENT STOPERATION (OPTI-SAND) MACHINE  ACHINE ZUCKERMAN OPTI-SA COMPUTER R.J. ORF  TOOLING  SUB TO  PART FABRICATION:  TENON DRIVERS  BUT LOCATORS & CENTERS  FORMER DRIVER  FORMER CENTER  CRADLES  SASE GAGE (POSITION OF GRIP)  EPTID & FEED CAMS  MACHINE LAYOUT	DRAWING NUMBER		DEPT SHEET _2 HOURS DESIGN //5 20 /5 /5 /5 /5 /5	NO. 100 NO. 04 NO. 04 NO. 04 NO. 04 NO. 04 NO. 04 NO. 04 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 NO. 05 N
TOOLING  TOOLING  SUB TO  PART FABRICATION:  TENON DRIVERS  BUT LOCATORS & CENTERS  FORMER DRIVER  FORMER CENTER  CRADLES  SASE GAGE (POCITION OF GRIP)  SPEED SEED CAME	DRAWING NUMBER  OTAL  O  O  Total  Total  Total	REMARKS  EREG  REG  REG  REG  REG  REG  REG  R	SHEET _3 HOURS DESIGN //5 20 /5 /5 /5 /5 /0 40	360 roi 45 100 roi
TOOLING  SUB TO  PART FARRICATION:  TENON DRIVERS  BUTT LOCATORS & CENTERS  FORMER DRIVER  FORMER CENTER  CRADLES  SASE GAGE (POCITION OF GRIP)  EPELD & FEED CAMS	DRAWING NUMBER	REMARKS  EREG  REG  REG  REG  REG  REG  REG  R	70 15 15 15 15 20 40	360 roi 270 toi 45 45
PART FARRICATION: TENON DRIVERS BUT LOCATORS & CENTERS FORMER DRIVER FORMER CENTER CRADLES BASE GAGE (POSITION OF GRIP) SPEED & FEED CAMS	0 0 0 0 0 0 1 7 7 7	PRED IRED IRED IREA	20 15 15 15 20 40	360 m 270 to 45 45 100 to
PART FARRICATION: TENDO DRIVERS BUT LOCATORS & CENTERS FORMER DRIVER FORMER CENTER CRADLES SASE GAGE (POSITION OF GRIP) EPERD & FEED CAMS	0 0 0 0 0 0 1 7 7 7	PRED IRED IRED IREA	15 15 15 20 40	360 m 270 to 45 45 100 to
TENON DRIVERS BUTT LOCATORS & CENTERS FORMER DRIVER FORMER CENTER CRADLES ASE GAGE (POSITION OF GRIP) EPELD & FEED CAMS	0 0 0 1 0 1 1 1	PRED IRED IRED IREA	15 15 15 20 40	270 TOI 45 45 100 Toi
FORMER DRIVER FORMER CENTER CRADLES ASE GAGE (POSITION OF GRIP) EPECD & FIELD CAMB	0 0 1 0 1 15 1	IRED IRED IREA	15 15 20 40	45 45 100 To
FORMER CENTER CRADLES PASE GAGE (PASITION OF GRIP) EPELD & FEED CAMS	0 1 0 15 18	IRED IRED IREA	15 20 40	100 To
CRADLES  ASE GAGE (POSITION OF GRIP)  SPEED FREED CAMS	/ O	16 Reo	20 40	100 To
ASE GAGE (POSITION OF GRIP) SPECE SFEED CAME	TE PR	REAU	40	
SPEED FREED CAME	V 90			140
		I EA.		
ACHINE LAYOUT	<del></del>	1 1		20
	F-TS-7039	0	25	
	E-44928			
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TOTA	AL		270	1400
KETCH		<del>1</del>		44600
				, 300

# PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET • COMPUTATION •

MODEL SPT-74876 COMPONENT STOCK OPERATION (OPTI-SAND) MACHINE SAND	COM DUT TE		PART NO.	100	_
MACHINE ZUCKERMAN (OPTI-SANDER)	COM PERS 1 &		OPE	R. NO. 100	-
COMPUTER TO TO DATE	10-21-83	· · · · · · · · · · · · · · · · · · ·	SHEET _	r. no. <u>04</u> / of <u>2</u>	_
TOOLING	DRAWING NUMBER	REMARKS	HOURS DESIGN	HOURS	7
FORMER FABRICATION:					]
FOLLOWER WHERE (RICHARDSON to					]
ZUCKREMIAN)		A/U			4
COTTER BODY (RICHARDSON +0	ļ			<del> </del>	4
PUCKERIAN)		A/u		<del> </del>	┥
DWOOD BLANK				8300	1
PREP E FABRICHTION			20	20	0
					]
(b) ALUMINUM FLANK				800	70
PREP & FORRICATION			20	110	٦
ALTREATIONS				40	4
C) STEEL BLAND		,		+	-
PRIP ( FAIRECATION			20	#3500	C
TRIF ( ) FIGER HITTON				1 33 0	1
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			<del></del>	<del>                                     </del>	1
					1
SUB - TOTAL			60	170	1
SKETCH		<u> </u>	·	P4600	1
				7600	
					1
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				_	1

### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET • COMPUTATION •

MODELST-74876COMPONENT STOCK _PART NO. . OPERATION (OPTI-SAND) MACHINE SAND COMPLETE
MACHINE ZUCKERMAN (OPTI-SANDER)
COMPUTER R.J. ORF DATE 10-21-83 _OPER. NO: _/60 04 DEPT. NO. -SHEET 2 OF HOURS DRAWING NUMBER HOURS TOOLING REMARKS DESIGN (from Pal) -> 60 170 SUB-TOTAL \$ <del>3 500</del> 4... PART FABRICATION 0 20 TENON DRIVERS 8 R40 360 270 0 BUT LOCATORS 15 ALU FORMER DRIVER FORMER CONTER ALL 12 Rep 20 100 CRADLES 0 40 140 BASE GAGE (POSITION OF GRIP) んだめ SPEED & FRED CHMS 20 IRA 5 MACHINE LAYOUT 20 TOTAL 1060 180 4600 SKETCH

20.4547

### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET

ZGa • COMPUTATION • MODEL TO SPECIAL COMPONENT STOCK OPERATION (OPTI - SAND) MACHINE SAND COMPLETE PART NO. _ __OPER. NO. _ MACHINE ZUCKERMAN OPTI- SAND COMPUTER R.J. ORF DATE 04 DEPT. NO. _ DATE 10-21-83 SHEET ___ OF ___ HOURS DESIGN HOURS BUILD DRAWING NUMBER REMARKS TOOLING FORMER FABRICATION: 800. ALUMINUM BLANK 20 80 PREP & FABRICATION PLTERMTICIYS 40 STUBL BLANK 3500. PREP & FHERICHTION 20 SUB-TOTAL 40 120 SKETCH #4300 **8567** 1-18-63

### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET 12 64 • COMPUTATION •

MODEL 1898 SPECIAL COMPONENT STOCK PART NO. OPER. NO. 100 OPERATION (OPTI-SAND) MACHINE SAND COMPLETE MACHINE ZUCKIERMAN OPTI-SAND DEPT. NO. 04 SHEET Z OF Z COMPUTER RIJ DEF DATE 10-21-83 HOURS DRAWING NUMBER HOURS REMARKS TOOLING DESIGN 40 SUB-TOTAL 120 #4300 PART FABRICATION : (SAME AS SPT-12) TENON DRIVERS A/u 270 TOTAL BUT LOCATORS (1100) BRED 270 70774 BUTT LOCATORS (870) FORMER DRIVER AIU Alu FORMER CENTER 16 Reg 100 TOTAL CRADLES 0 20 BASE GAGE (POSITION OF GRIP) 0 20 60 (ALTER SPT-12) SPEED & FRED CAMS PTO 5 IEA ZO MACHINE LAYOUT 25 TOTAL 140 840 SKETCH 94300,

4527____L10.62

#### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET

ZO GA. • COMPUTATION • MODEL TO SPECIAL COMPONENT STOCK
OPERATION OPTI-SAND (MACHINE SAND COMPLETE PART NO. _ _OPER. NO. ________ DEPT. NO. _04 MACHINE ZUCKERMAN OPTI- SAND COMPUTER R. J. ORF _DATE _/0-2/-@3 SHEET ___ OF __ 2 HOURS BUILD HOURS DESIGN DRAWING NUMBER TOOLING REMARKS FORMER FABRICATION: 800 ALUMINUM BLANK 6 PREP & FABRICATION 20 80 40 ALTERATIONS STEEL BLANK # 35CO -PREP & FABRICATION 20 TOTAL 40 120 SKETCH 74300

1-18-63

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MODEL STOCK PART NO. OPERATION OPTI-SANDER OPER NO. 100
MACHINE ZUCKER MAN OPTI-SANDER DEPT. NO. 24

COMPUTER R. J. ORF DATE	10-21-83		SHEET _	OF <u></u>
TOOLING	DRAWING NUMBER	REMARKS	HOURS DESIGN	HOURS
SUR-TOTAL			40	120
				*4300.
PART FABRICATION:				
TENON DRIVERS (SAME AS SPT-74)				
BUT LOCATORS	0	3 Reg	15	270 ToTE
		0.713		<del>                                     </del>
				<del> </del>
			24	100 7073
CRADUIS		767-124	40	100/01/2
BASE GAGE (Position OF GRIP)		-	 	
(PLTER SPT 74-76)	0		20	60
SPEED & FEED CAME	ρΤο	ICA.	5	20
MACHINE LAYOUT			≥5	
				·
		· · · · · · · · · · · · · · · · · · ·		
TOTAL	TOOLING  SUR-TOTAL  SUR-TOTAL  HOURS DESIGN  FABRICATION:  ON DRIVERS (SAME AS SPI-14)  LOCATORS  OF REAL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A/LL  A	570		
SKETCH				#43cu-



428 CHESTNUT STREET . PHOENIX, N. Y. 13135 . TEL. (315) 695-2026

October 25, 1983

Remington Arms
Ilion, New York 13357

Attn: Ed Murray

Re: Remington P.O. #I-82376 dated 4/29/82

Dear Ed:

Per my conversation with yourself and Bob March concerning the subject purchase order, we are requesting an amended order to change the price from \$3900.00 to \$5300.00 due to the real hours established on several former projects since this order was placed in early 1982. Also enclosed you will find a copy of my letter to Bob March in February 1983, in which we had requested an initial change in price to \$4290.00. The \$5300.00 price is based on a full length former we completed for Remington earlier this year at that price.

The delivery for Former #E-45992 will be January 15, 1984. Our normal delivery for a former is in the five to six week range; however, we have a commitment to deliver D-44423 (your P.O. C-11196) on November 28, 1983 and can not start E-45992 until it is complete.

Also, as we discussed, Arrowhead billed you for a cancellation charge of \$2400.00 relative to the subject purchase order. Please find a copy of my letter dated April 18, 1983 attached describing the reasons for those charges. Our accounting department will clear the purchase order by issuing a credit for that amount.

Should you have any questions, please don't hesitate to give me a call. Thank you for your assistance.

Best Regards

Doug Price Sales Manager

DP/bf

cc: Bob March

### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET • SEQUENCE OF OPERATIONS •

DATE	EL 7 LWT COMPONENT Stock	Wriley		RT NO	/ OF /
PER	OPERATION NAME	MACHINE	DEPT.	HOURS	HOURS
NO.			NO.	DESIGN	BUILD
	Irc Sur Acres				
	USE PART # 91950 TO MAKE				
:	STOCK PROFILED # 92466				
				-	
60	Coat but with RKW &	BENCH	71		
	assemble Recoil Pad.				
			<u> </u>		
65T	Glue toe of Ped to Stock.		71		<del> </del> -
70	Sand Outside Contour	ZUCKERMANN OPTISAND	71	yohr.	120hr. \$5.
~	SANA DUTSIAE CONTOUP	EUCEERANN OF 13400	<del>                                     </del>		511 hr. *
81	N/c Rout Stock exterior	HEIAN	72		
		7.			
90	Drill holes for Grip Cap 2	REMINGTON SPECIAL	71		
	Rear Sling Swivel				
	4				
100	Assemble Guip Cap	BENCH	71		-
105	Pill Stock & assemble	DRILL PKESS	7/		<del> </del>
	Reinforcing Screw	DATE (RESS	1		
	1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2				
107	Sort for mojor repair		71		
	<u> </u>				
//5	Machine & hand sand complete.		71		_
	Visual Stock & repair Minor				
<del></del>	wood fults.				
/25	Inspect for proper sanding		8055		
	Shape, and repairs 100%		10033		
	Repair Stacks that have		7/		
	pin knots & bird pecks				
11100	Regair Stocks that have		-		
	Regair Stocks that have chips, cracks, broken or		7/		
	loose pads etc.				
	To MRP Crib #24			_	
				- -	
*	Actual hours already completed.		<b> </b>	z	
			<del>                                     </del>	-	
			<del>  </del>		
<del>-                                    </del>				•	
		-			
			1	40 hr.	120 hr. \$53
	TOTAL	7			511 hr.*

### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET

	PUTATION			
MODEL 7 LUT COMPONENT Stock	Prof	iled	PART NO.	92466
OPERATION Sand Outside Contour MACHINE ZUCKERMANN OPTISAND			OPER	. NO
COMPUTER 7.R. Whiley DATE	10/31/83	_	SHEET	/ OF
TOOLING	DRAWING NUMBER	REMARKS	HOURS DESIGN	HOURS BUILD
ZUCKERMANN OPTISAND		Add Use		
Machine Layout -TDR#81-Completed	F-45995	New	60 *	365 ⊀
Master Stock	E-45974	ALL USE		
Former Moster - Aluminum -TDR#82, TOR#87, 88, 92, 134, 135	E-45993	New	2/ ⊀	/38*
Former - Cast Iron - TOR # 83	E-4599 2	New	12 *	#5300
Firmer Diver - Det. 9/2	F-45995	(in Layout)		
Former Conta		· Add Use		
Stock Driver - Det. 2,5,6	E-44928	Add Use		
Stock Center - Det 3/2	F-45995	(in Laport)		
Cradle Plate - Front - Det. 6/3	F-45995	(in Layout)		
Credie Plate - fear - Det. 5/3	F-4599 5	(in Layout)		
Follower Roll (2)	C-43072	Add Use		
Contact Roll (16)	C-43125	Add Use		
TOTAL			93 <b>*</b>	#5300 503*
* Actual hours on work alrea	dy comple	eted.		
			DESIGN BUIL  Id Use — — — — — — — — — — — — — — — — — — —	

### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET

• COMF	PUTATION	•		
MODEL 7 LAT COMPONENT _ Stock	Profile	<u> </u>	_PART NO.	92466
OPERATION and outside contaur			OPER.	. NO
ACHINE BULEERMANN OPTISAND	15/41/63		DEPT	NO. 7/
COMPUTER - 3.1. Wasiles DATE	10/31/83	<del>_</del>	SHEET _	· · · · · · · · · · · · · · · · · · ·
TOOLING	DRAWING NUMBER	REMARKS	HOURS DESIGN	HOURS BUILD
Belt quide (8)	C-45473	Add Use		
Rough Souding Belts - (8) 5"x 59" -80 Gr. +		Add Use		
Finish Sanding Betts - (8) SX 59" -PIZO Grit		Add Use		
Dial Base Gage Grip Centrality	G-42541	Alter	40	/20
Goip Centrality Position of Goip				
Feed Template -TOR#146	E-45915	· Alter	2*	4*
Speed Template -TDR#147	E-45480	Alter	2 *	4 *
TOTAL			40	/20
SKETCH			4*	8*
* Actual hours on work alread	y complet	ed.		

ENGINEERING ESTIMATE xc: D.J. Anderson P.G. Johnson
L.B. Bosquet W.S. Johnson
H.K. Boyle C.H. Kohn
H.K. Bryant J.P. Linde
T.B. Bosquet W.S. Johnson
H.K. Boyle C.H. Kohn
H.K. Bryant J.P. Linde
R.W. Farrington R.J. Long
Timated DV F. Whieley

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stimated by F. Wrisley G.J. Hill

	PRUPUSED START-		20. 30	. 40. 19 <u>84</u>
	MODEL SE	VEN LWT		
·	CAP. \$	OP. \$		
ETTING/DEVELOPMENT	CAL.			
ivestigation				
sign				
dels for Evaluation				
sign Testing				
-				
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chines				
cling	2100	1700		
AND PROCURE				
chine Fabrication				
chine Shipping			<u> </u>	
crime Installation chine Alterations		<u> </u>		<del></del>
ol Fabrication	9500	11200		
ol Alterations	3600			
rishable Tooling				
nder Tooling				ļ
eduction Aids				
				<b>].</b>
OPERATIONS				
chine Reschangement				
lot Lot Manufacturing Lot Lot Testing		1 400		
Rooment Obsolescence		1 400	<del></del>	
				<del></del>
Veryerra			<del></del>	
flation	800	600		
olanned Tool Revisions	300	2100	<b></b>	
clanned Machine Revisions				
TAL	16000	16000	<del></del>	
INVESTMENT		2000	<del></del>	

#### ENGINEERING ESTIMATE

xc: D.J. Anderson

P.G. Johnson

L.B. Bosquet H.K. Boyle

W.S. Johnson C.H. Kohn

W.K. Bryant

J.P. Linde

R.W. Farrington

R.J. Long .

G.E. Fletcher

J.W. Smith

G.J. Hill

PAGE 2 OF 3

itie

OPTI-SAND STOCK MACHINE

11-14-83

scimated by R. Orf

	ROPOSZO START-U SPORTSMAN	<del></del>	20. 30. 40 SPORTSMAN 74-	
	CAP. \$	OP. \$	CAP. \$	OP. \$
INE-RING/DEVELOPMENT				
Investigation				
Design				
Models for Evaluation				
Design Testing				
TEN				
Machines				
Teeling	3300	4200	2200	2700
LD AND PROCURE				
Macrine Fabrication .				
Machine Shipping			•	
Machine Installation				
Machine Alberations			177000	
Tool Fabrication	17500	27200	13000	22800
Tool Alterations Perishable Tooling		2000		700
Vendor Tooling		2000		700
Production Aids				
OT OPERATIONS	<del></del>			
Machine Restrangement				<del></del>
Pilot Lot Manufacturing		900		900
Filet Let Testing Component Obsolescence		600		(00
		600		600
TINGENCIES				
Inflation	2200	3100	1800	2700
Urplanned Toni Revisions		4000	<u></u>	3600
Urplanned Machine Revisions				1
TETAL	23000	42000	17000	34000
AL INVESTMENT	650			31000

xc: D.J. Anderson

P.G. Johnson W.S. Johnson

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W.K. Bryant R.W. Farrington

J.P. Linde R.J. Long

G.E. Fletcher G.J. Hill

J.W. Smith

PAGE 3 OF 3

istimated by

- Title

)ate

OPTI-SAND STOCK MACHINE

R. Orf

•	PROPOSED START-U	12 & 20 Ga.	20.	30. 40. SPORTSMA	
	CAP. \$	OP. \$		CAP. \$	
GINEER ING/DEVELOPMENT	J V	-	┥┢╸		1 3
Investigation		***	7		
Design			7		
Models for Evaluation			1 [		
Design Testing			-		
IEN					
Machines					
Tooling	2200	5000	╅	2700	2400
LD AND PROCURE			+ =		
Machine Fabrication			┥┾		
Machine Shipping Machine Installation			┥╞		
Machine Alterations			┥┝		<del></del>
Tool fabrication	15800	33900	┥ ┝	20800	21900
Tool Alterations	19000		7 -		
Perishable Tooling		1300			1 700
Vendor Tooling			I I		
Production Aids			<del>-</del> -		
OT OPERATIONS			<u> </u>		·
Machine Restrangement Pilot Lot Manufacturing		1400	} =		900
Pilot Lot Testing			1 [		
Component Obsclascence		1000	+ -		600
NTINGENCIES			<u> </u>		
Inflation	2000	3400	4 1	1500	
Unplanned Tool Revisions Unplanned Machine Revisions		5000	<u> </u>		4000
		_			
STUTAL	20000	51000	<b>1</b>	25000	
AL INVESTMENT	171	000	1 1	51	8000

Attached are five estimates which cover costs for formers and part fabrication required to sand the entire Sportsman line, the Model Seven LWT and the M/870-1100 12 & 20 Ga. Stocks on the Opti-Sand Machine.

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DON'T SAY IT-WRITE IT

TO DE Anner

From E.L. Marris Jr

Dale Nov. 4, 1983

re: Opti-sand M/7 Ltw Long Stocks

Per your request a high-spot evaluation has been performed on the proposal to Opti-Sand M/7Ltw long stocks and perform a reduced Machine and Hand Sand rs. the current Machine and Hand Sand Operation. This high-spot indicates a potential \$\frac{1}{30,000}\$ annual (1984) labor savings based on the reduction in labor required at operation 110 Machine and Hand Sand Complete.

"DON'T TAKE A CHANCE, THINK SAFETY IN ADVANCE"

Proposal	No.	# 1081

Xc:

#### P E & C EVALUATION REQUEST

MODEL:				Revised 🗍
TITLE:	The Saul Medine	Former		·····
DEVELOPMENT S	SCHEDULE ITEM?	PRODUCT	ACCEPT. DA	TE
SUBMITTED BY	7. While + R. O.	DATE _//	14/83	
		Year	Volume	Price
FOR NEW/REVISED MODELS ONLY	First Year Third Year			
	SOURCE:			
m/7/wT	CHED:	00 /2820	ja itoer	D
PARTS LIST DA	TED:			
ENGINEERING C	OST ESTIMATE: DATE RI	EQUIRED	1-21-83	
LEAD EST	IMATOR F. Wrisley & R	Of DAT	E COMPLETE	11/29/83
	ATE REQUIRED /2-2-	0		<i>(</i>
OPERATIO	NS COMMITTEE REVIEW			
PROJECT	DRAFT COMPLETED			
COMMENTS:				



216 671-8000

Die & Stamping Company

DIV. OF UNITED SCREW AND BOLT CORP.

Engineering · Tools · Dies · Stampings Sub - Assemblies · Bus · Supplies

> 4650 TIEDEMAN ROAD CLEVELAND, OHIO 44144

November 14, 1983

Remington Arms Co., Inc. Ilion, N.Y. 13357

Attention: Messrs. Ferreira and Bosquet

Gentlemen:

FIRST OF ALL I HAVE

NOTHING TO DO WITH

NOTHING TO DO WITH

CURRENT PURCH. PARTS - Q.C.

CURRENT PURCH. PARTS - Q.C.

SECOND - WHY DID HE

SECOND - WHY DID HE

HAVE BOTH

HAVE BOTH

On June 17, 1983, we returned Remington's gage for all operating handles for correction and H & P's gage for updating. We are now manufacturing operating handles and the gage has not been returned.

On July 12, 1983, and previously, we called Remington's attention to the 92256 base gage and the trigger guard gage we have on hand that are not usable, please advise when exchange can be made.

Yours sincerely,

Trank limbos

Frank Ambrose

rn

M/7LWT STEEL PARTS

WE HAVE NO INTENTION OF MAKING ANY CHANGES TO

THESE GAGES

### Bolf action Carlina 1983 Introduction

Tool Design

There are approximately 6000 hours of toolderign involved in this madel. In order to meet the proposed Trial and Pelal schedule I will be necessary to contract with outside design houses for al least 50% of the design. Design to be accomplished in 22 weeks (3 months) 6000 : 40 = 150 man weeks are assigned to this project 5×40×12 = 2400 hours can be completed 6000-2400 - 3600 hours to be "formed and"

3600 +12 +40 = 7.5 n 8 auticle designer.

G-88

#### DON'T SAY IT-WRITE IT

To_3cg	
Do a check	the M/7 Lwi Posembled actions se from the first go mend.
(308 Cal) left on	se from the first go wound.
If they look re	esty (especially the fores) have
someone oil Then	
Spot Chicked acti	my Cub 29 -
OK no 1	11-10-83
	$   \angle $

"SAFETY RULES ARE PERFECT TOOLS"

# PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET • SEQUENCE OF OPERATIONS •

TE 11-23-83 COMPONENT R.J. OFF		PART NO.			
		SHEET 1 OF 1			
.R	OPERATION NAME	MACHINE	DEPT. NO.	HOURS DESIGN	HOUR
BASIS	',				
O NOr	18,000 / ME.			· ··	<del> </del>
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101-11-	SHNDX MACHINE SHND COMP	16/12	72	188	140: B1100.
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## PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET • COMPUTATION •

MODELST 78 COMPONENT STOCK			_PART NO.	
MODEL <u>ST. 78</u> COMPONENT <u>STOCK</u> OPERATION (OPTI-SAND) MACHINE SA	IND COMPLE	ræ	OPER	. NO. <u>100</u>
MACHINE ZUCKERMAN OPTI-SAND			DEPT	. NO OFZ
COMPUTER RIJ DEF DATE	E <u>//·23-8</u> 3	<b>-</b>	SHEET	OF
TOOLING	DRAWING NUMBER	REMARKS	HOURS DESIGN	HOURS BUILD
FORMER FABRICATION:				
WARED ALUMINUM BLANK			10	20)
L) (OPY 1:1 FROM (PRESENT)				140 >
C) ALTERATIONS		<u> </u>	1	140
0) 7727 872 77707		BLANK		#300.
WARED STEEL BLANK		13277	10	25
b) CODY 1:1 From Promisson	<del></del>		10	160
		<u> </u>		
C) ALTERATIONS		72		#800.
		BLANK	<del> </del>	1,800'
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SUB TOTAL			20	395
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RD-6567 1-18-63				-

### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET • COMPUTATION •

MODELSPT 78 COMPONENT STOCK PART NO. ____ OPERATION (OPTI-SAUD) MACHINE SAND COMPLISTIE OPER. NO. 100 MACHINE BUCKERMAN OPTI-SAND) DEPT. NO. __ DATE 11-23-83 SHEET Z OF Z COMPUTER R. J. DRIE HOURS HOURS DRAWING TOOLING REMARKS NUMBER DESIGN BUILD 395 (91100) (SUB TOTAL) 20 PART FABRICATION; FRONT DRIVERS 8 REQ 20 360 O BUTT DRIVERS & CENTERS PRIEQ 15 270 0 CRADLES 16 REG 20 0 100 BASE GAGE POSITION OF ORIP Nizw 50 160 SPEED & FRED CAMS 20 0 25 MACHINE LAYOUT F-75-7039 E-44928 30 TANG GAGE. 100 FOLLOWER ROLLS 4/U TOTAL 188 1405 SKETCH B1100. RD-6567 1-18-63

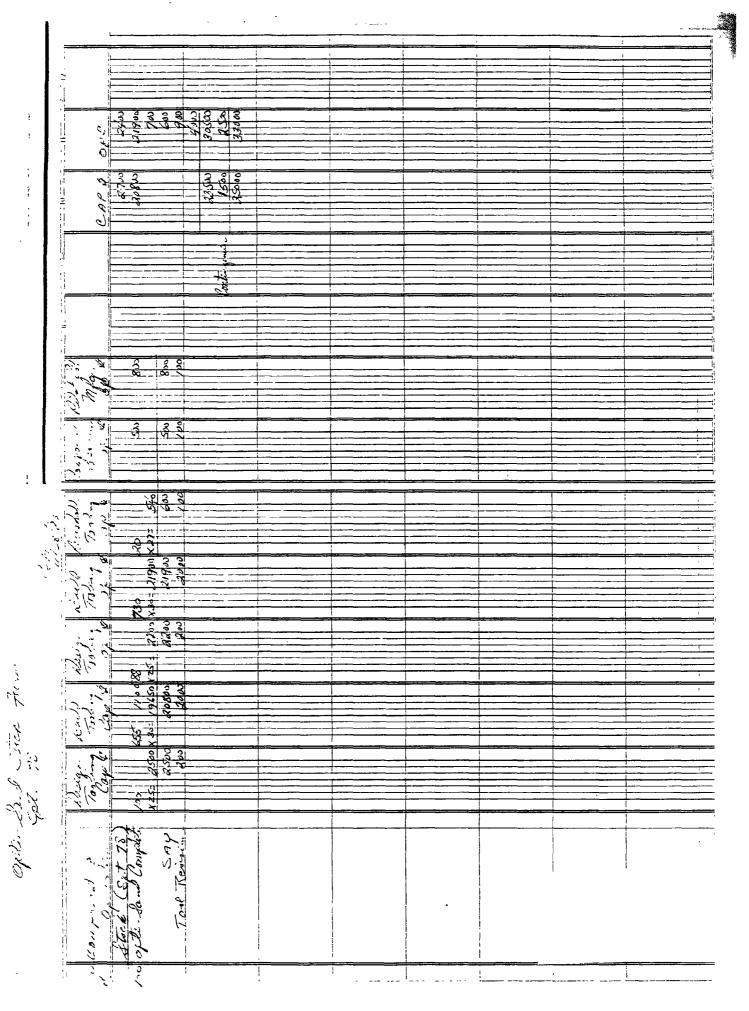
Sportsman 78 on opti-sander.

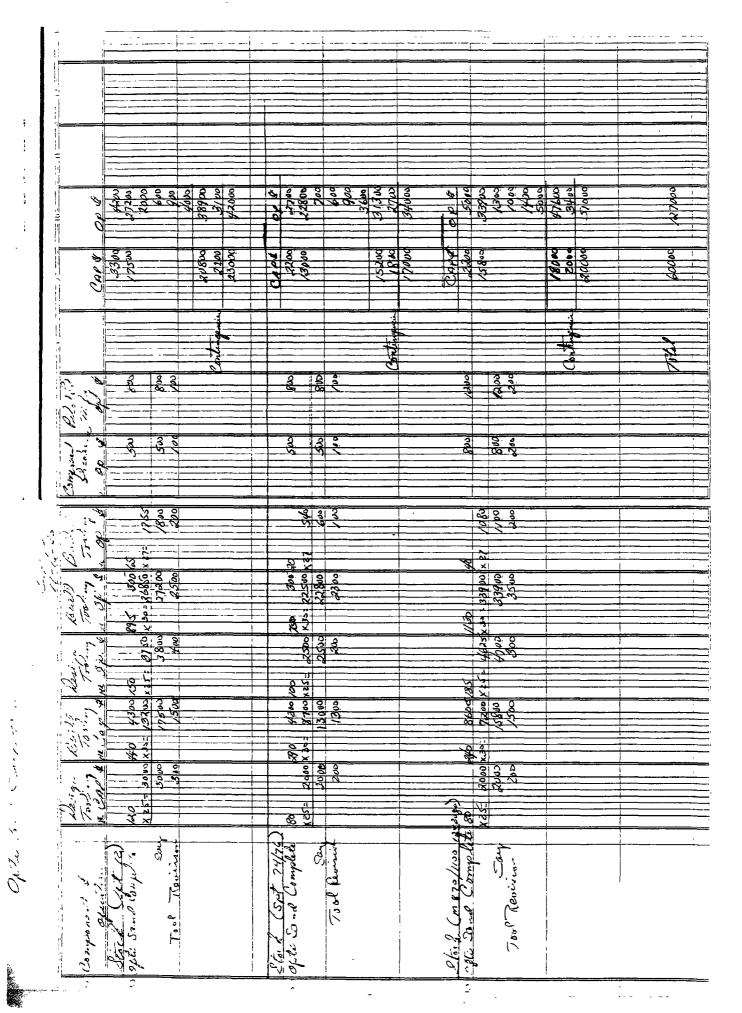
11-23-83 RJO.

Procedure for producing former for opti-sand.

Ollse the Zuckerman carrer former for the classic and run stocks on the Richardson carrer.

- @ Copy the former 1:1 into aluminum for the opti-sander.
- Ilse the aluminum former on the opti-sander and the sand the stocks from the Richardson earner.
- O Alter aluminum former as mudel and try again
- & Copy aluminum former into steel.



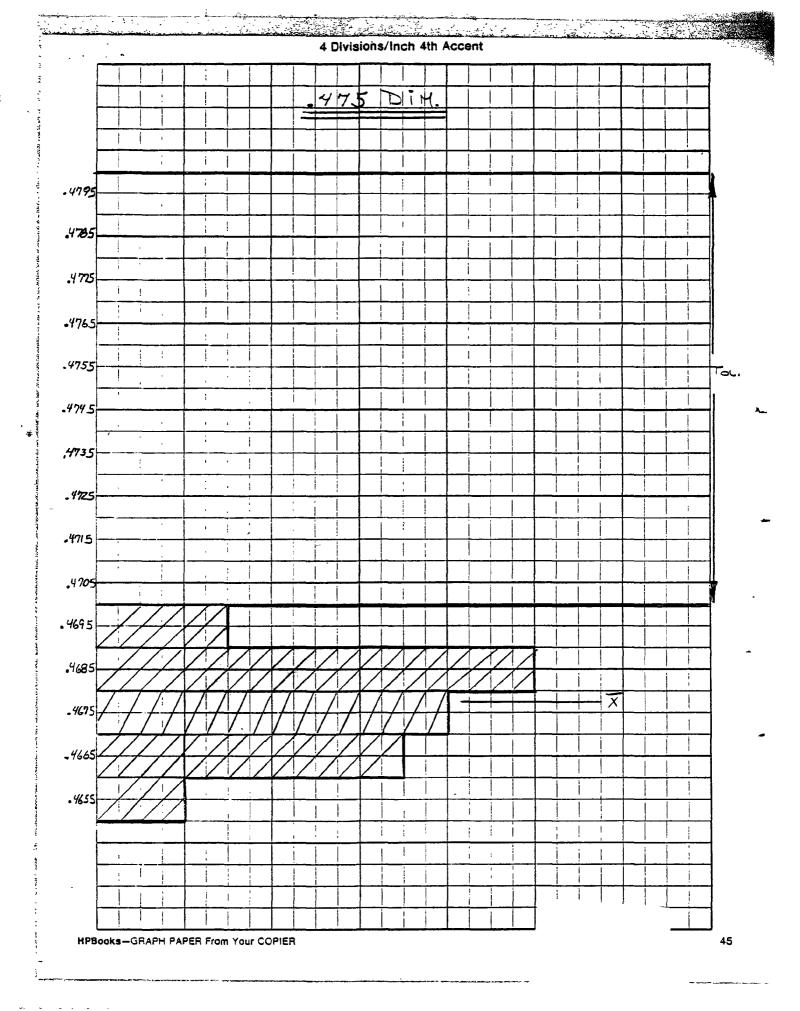


#### MERSUREMENT TASSISTANCE MRO3 1 10.2.84 Measure, 475 Dim. nersured by E. L. Barnes ں حو 10-3-84 REMARKS MEASURED DIMENSIONS JESS. OF CHARACTERISTIC CESC. OF CHARACTERISTIC TIEL. OF CHARACTERISTIC N: 30 X = . 4678 x=.00107 . אוב. פאב SMG.SIM. JKG.JLK. 330.31%. THG.SIN. ING.IIM. CXG.CIM. ,470 . i e su. 21.7-CIN. SIM. MIN. JIM. 8 z m. ,4671 X 4683 - 1 -467 .466 4686 X - 1.4693 X-467 XL . 468 ,4685 X . 4668 X 4672 X 467311 .4691 ·4687 X 4688 111 . 4665TX . 4662 X 4667 1 ,4657 X 4688 4679 X .4669 X , 4676 X 4687 4685TX 4.70 .4684 X 4672 X H687 X 4678 X

#### .475 Dim.

CELL BOUNDRIES	CELL. HIDPOINT	TALLY	F	%
.465				
. 466	.4655	//	2	6.7%
• 160	.4665	1111111	7	30%
. 467				C/ 70
. 468	.4675	////////	8	56.7%
, , , ,	.4685	///////////////////////////////////////	10	90%
. 469	. 4695		3	100%
. 470	. 7670	///	)	75078
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RD-49-8

OR 000581

#### REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

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XC: L. B. Bosquet

J. J. Burns

R. L. Snedeker

K. W. Soucy

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

October 4, 1984

TO:

S. D. BENNETT

FROM: J. B. MROZ  $\mathcal{I} \mathcal{B} \mathcal{M}$ 

#### M/7 LWT. TRIGGER GUARD BLANK D-92836

REQUEST:

Find the range of variation on the .475" + .005" (see

attached letter and model drawing).

METHOD:

Measure 30 trigger guards for .475"  $\pm$  .005" dimension on

the 30" comparator in Q.C. lab.

**RESULTS:** 

Range - .470" - .4657 = .0043" Mean - .4678"

Std. Dev. - .00107" 6 Std. Dev. - .0064"

(See attached data sheets and graph)

CONCLUSION: Vendor is not within control on this dimension.

JBM/cac Attach.

Xc: D.J. Anderson

G.J. Hill

L.B. Bosquet H.K. Boyle

P.G. Johnson J.C. Woudenberg

K.W. Soucy R.J. Long

W.K. Bryant R.W. Farrington G.E. Fletcher

C.H. Kohn A.D. Johnson

ENGINEERING ESTIMATE

M/700 CLASSIC & MODEL SEVEN LWT RECOIL PAD

	PROPOSAL	#1125	_		
PRI	DPOSED START-	UP 10	<b>2</b> Q	<b>3Q</b> 4Q	. 19_85
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R & D Design Confirmation		400	-		
Machine Runoff			┥ ├-		
Trial and Pilot Scrap					
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SUB-TOTAL	5060	<del>                                     </del>	++-		<del> </del>
TOTAL INVESTMENT	5860	300	┥ ├─		1
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SCOPE:

TITLE

DATE

12-7-84 ESTIMATED BY Spencer Bennett

Purchase Recoil Pad and stamping dies to produce larger steel reinforcement.



#### PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET

700 CLASSIC • SEQUENCE OF OPERATIONS •

MOD	EL TEM COMPONENT RECE	PAD	_ PA	RT NO.	7/344
DATE	12/7/84 COMPUTER Spenie	er Brunett	9	SHEET/	_ OF
OPER NO.	OPERATION NAME	MACHINE	DEPT. NO.	HOURS DESIGN	HOURS BUILD
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	PURCHASE RECOIL PAD F	ROM BEEBE			
	RUBBER COMPANY.				<u> </u>
	PURCHASE NEW STAMPING	DIES TO PRODUCE	1		<u> </u>
	LARGER STEEL REINFORCEN	NENT.			
	6				
	TOOL CHARGE : 3500. (5)	TAMPING DIE ONLY)			
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#### DON'T SAY IT-WRITE IT

TO L.B. BOSQUET	Date
From Spencer Bennett	
in re: M/200 Classic Recoil for attached is astundt for went for 700 classic-M/7 LWT/ We tried 18 samples and the tre between ged and stock	1 D91544
attached is astundy for	new larger stul simpose -
ment for 700 classic - M/7 LWT/	recoil part.
We tried 18 samples and	found no opening at
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"YOUR SAFETY ATTENTION MEANS ACCIDENT PREVENTION"

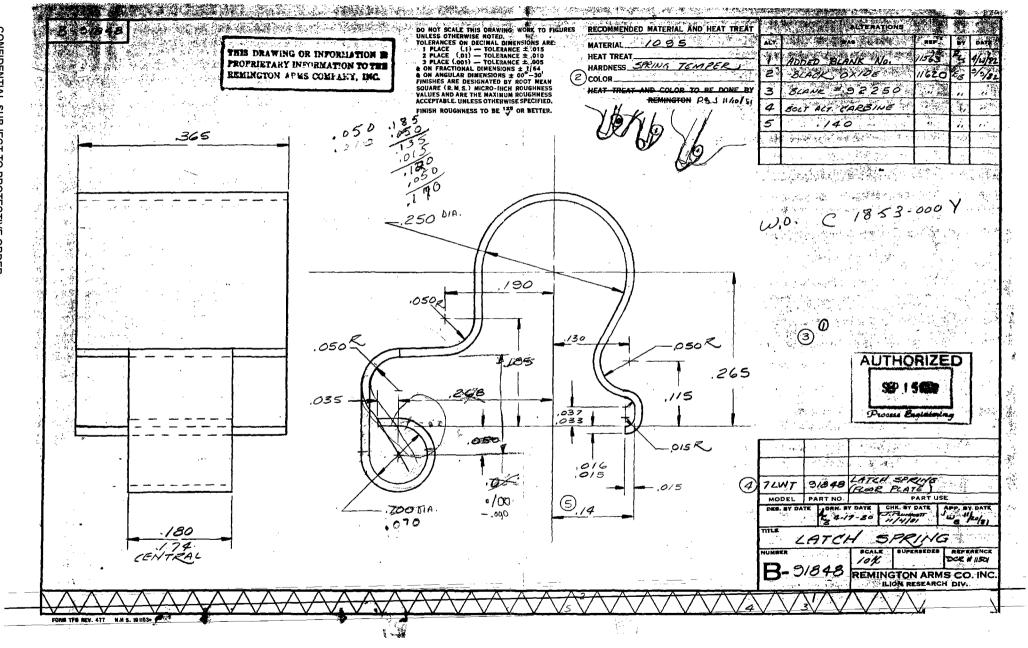
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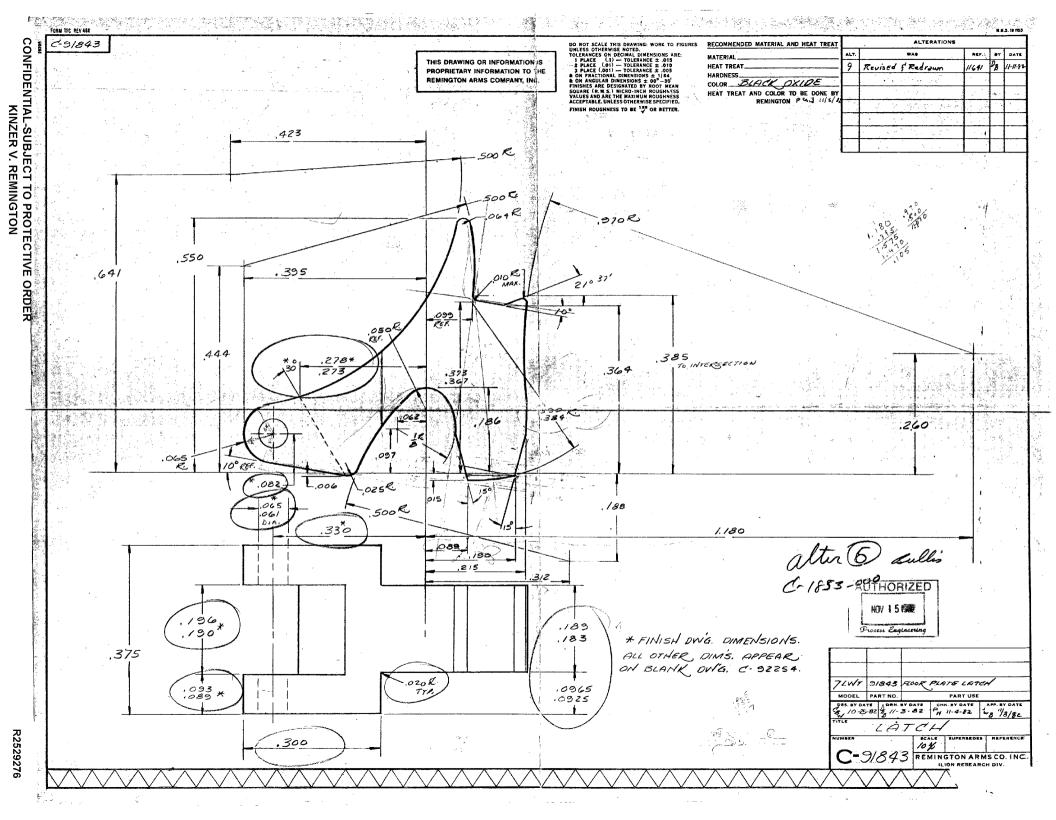
TO: J.W. BROOKS

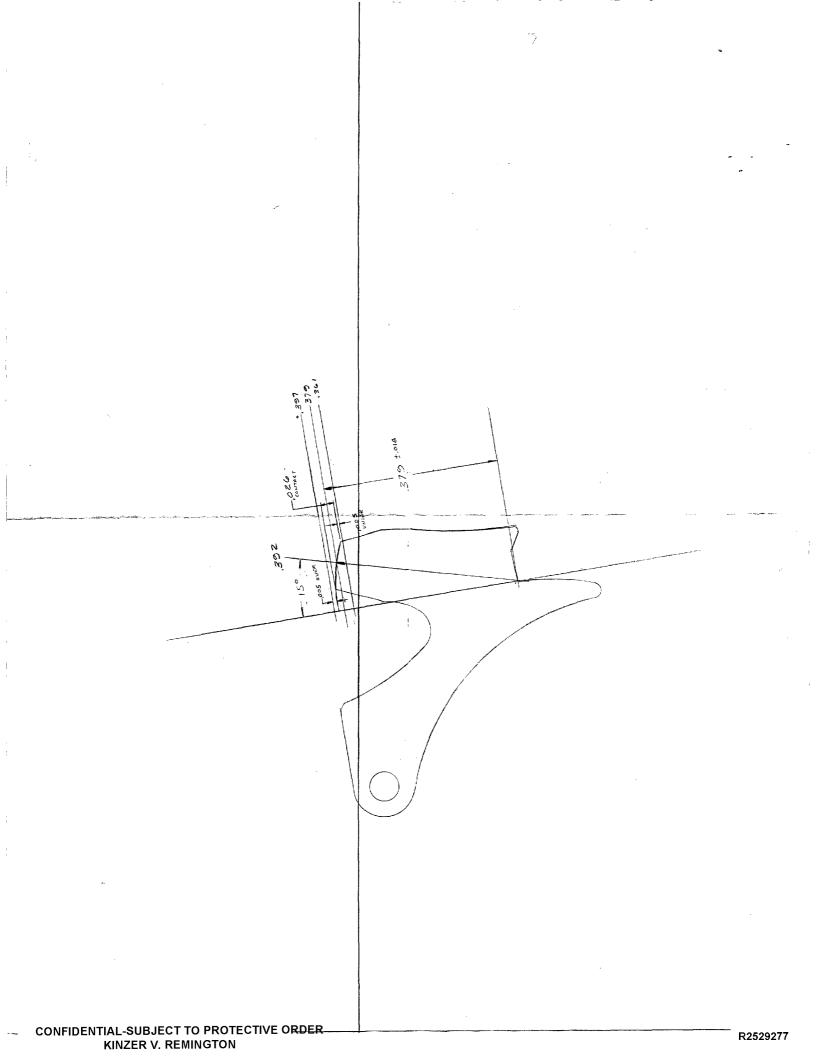
(Received by C.B. Workman - 8/23/83)

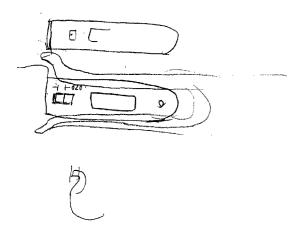
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R2529275







December 17, 1982

F. M. AMES W. W. COOK P. G. JOHNSON L. W. BAUM L. B. FERREIRA W. S. JOHNSON L. B. BOSQUET G. E. FLETCHER M. J. KANTOR G. J. W. BROOKS G. J. HILL C. E. RITCHIE

FROM: G. D. CAMPBELL / D. J. ANDERSON

# ye

#### MODEL SEVEN PRODUCTION STARTUP

A summary of the active programs to resolve startup difficulties with the Model Seven LWT is attached. Program status and anticipated completion dates are as of December 17, 1982. Progress will be monitored and status updated as required.

GDC/DJA:hv Attachment

## MODEL SEVEN PRODUCTION STARTUP

## PROGRAM STATUS

PRO	GRA	M/KEY EVENT	RESPONSIBILITY	COMPLETION		
I.		iminate/Minimize ESCR Rejects 243 Cal.)				
	0	File chamfer on rail to repair finished guns and Barrel assemblies (.243 only)	PRODUCTION	COMPLETE		
	0	File chamfer on rail of all new .243 Receivers prior to assembly to Barrels (Dept. 58)	PRODUCTION	IN PROGRESS		
	0	Revise Receiver design (add angle to rail) and process for all calibers-M/Seven only				
		- Provide samples for test	PE&C/PRODUCTION	1/14/83		
		- Function test	RESEARCH	TBD		
		- Transmit design change	RESEARCH	TBD		
		- Revise process	PE&C/PRODUCTION	TBD		
iı.	٤1	iminate Floor Plate Latch Failure				
	0	Continue M/Seven assembly with available Latches – hold for Latch replacement	PRODUCTION	IN PROGRESS		
	0	Provide correct Latches using EDM process in quantities sufficient to support pro-duction				
		<ul> <li>Start producing 60/day with Research EDM (3 shifts)</li> </ul>	RESEARCH	COMPLETE		
		<ul> <li>Order additional from Fermer Tool &amp; Die (rate TBD)</li> </ul>	PE&C/PURCHASING	12/17/82		
		- Complete straddle mill fixture	TOOL ROOM	12/20/82		
		<ul> <li>Start mill, drill, deburr, and heat treat operation</li> </ul>	PRODUCTION/PE&C	12/20/82		
		- First parts to Final Assembly	PRODUCTION/PE&C	12/21/82		

-2-

12/17/82

PRO	GRA	M/KEY EVENT	RESPONSIBILITY	COMPLETION		
II.		iminate Floor Plate Latch Failure ontinued)				
	0	Provide correct Powder Metal Latches				
		- Revise tooling	POWDER METAL	1/3/83		
		- Production parts	POWDER METAL	1/5/83		
III.		tablish Floor Plate to Stock earance specification				
	0	Continue M/Seven assembly holding maximum clearance at 0.035 inch (nominally same as M/700)	PRODUCTION	IN PROGRESS		
	0	Determine clearance specification required	RESEARCH	TBD Down		
	0	Revise design and/or process so that specification can be met	RESEARCH/PE&C	TBD		

GDC:hv

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE





"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____ December 30, 1982

J. P. LINDE

SUBJECT: MODEL SEVEN LIGHTWEIGHT FLOOR PLATE LATCH - MATERIAL

SUBSTITUTION FOR FIRST PRODUCTION GUNS

In August of this year approximately 1000 pieces of the original design part were received from Powder Metal. These blanks were made of HD 1000 powder metal pressed and coined to a density of 7.2. This lot of parts was accepted and was used in the Trial and Pilot of this model. The balance was to be used in the initial production run.

During the Trial and Pilot testing a functional problem was noted the Floor Plate Cover opened during shooting. Research analysis of the problem resulted in a redesigned Latch. Samples were made from C-1018 wrought steel, tested (in the plant and in the field), and were found acceptable in overcoming the problem.

The revised design was transmitted on November 11 and new Powder Metal tooling was ordered. Blanks were received December 3. Initial testing indicated that they functioned properly. However, as the first production guns were being tested it was noted that the problem was still present.

A meeting was held December 9 with representatives from New Product Process Engineering, Powder Metal, and Research in attendance. It was decided to tighten the dimensions locating the latching surface radius. The powder metal tooling vendor was contacted and instructed to build a new set of pressing and coining tools. Revised model drawings were transmitted December 13 on DCR 11658. The new pressing tools will be shipped to Remington (by air freight) on January 7, 1983 and the coining tools the following week.

Research N/C group was contacted and began producing Latch blanks on their wire EDM equipment. Two additional machining operations were set up and the first Latches processed through to Final Assembly on December 21. Research was originally requested to provide 500 blanks by January 1, 1983. In light of the powder metal tooling delivery this quantity was increased to a total of approximately 1400 blanks by January 21.

1

In order to provide an adequate supply of parts, Fermer Tool and Die was contracted to provide 250 blanks by January 1. This quantity was increased on 12/22 to a total of 1000 pieces by January 21, 1983.

It is anticipated that the new powder metal tooling will provide parts beginning about January 19, 1983. In summary: the original Latch design was a contributor to the "Floor Plate Cover Opens" malfunction; the redesigned Latch has eliminated the problem; new powder metal tooling will be available in mid January; to provide Latches for assembly until then, a total of approximately 2400 pieces is being produced from C-1018 wrought steel.

L. B. Bosquet, Supervisor N. P. Process Engineering

LBB:hf

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> John Brooks

J.P. Linde

C.B. Workman

Clark

(Toolene, Cost?)

January 19, 1983

H.K. Boyle

#### High Spot Cost Comparison M/7 Floor Plate Assembly vs. M/700 Trigger Guard

Estimated cost for the Model Seven Floor Plate Assembly has been determined in respect to the M/700 Trigger Guard Assembly. More specifically, economics reveal a M/7 cost of \$940.998/C versus a M/700 cost of \$756.646/C.

Costs include standard labor, direct expense, and material costs. Variance and industrial relations have been applied to the appropriate accounts.

Cost differential for the two designs disclose a \$184.342/C increase for the M/7 Floor Plate Assembly.

Industrial Engineering Section R.W. Farrington, Jr., Supervisor
RW famington po
D. G. Scram

DGS/kc

REMINOTON ARMS CO. RECTUMD

JAM 2 6 1983

FERTARIAS RESEARCH DIVISION

xc: H.C. Munson
J.P. Linde
C.B. Workman

Est. #4457

January 19, 1983

H.K. Boyle

# High Spot Cost Comparison M/7 Floor Plate Assembly vs. M/700 Trigger Guard

Estimated cost for the Model Seven Floor Plate Assembly has been determined in respect to the M/700 Trigger Guard Assembly. More specifically, economics reveal a M/7 cost of \$940.998/C versus a M/700 cost of \$756.646/C.

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Cost differential for the two designs disclose a \$184.342/C increase for the M/7 Floor Plate Assembly.

Industrial Engineering Section
R.W. Farrington, Jr., Supervisor
RW famington p

D. G. Scram

By: \ D.G. Scram

DGS/kc

RD-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"....

xc: L. B. Ferreira

J. W. Brooks
L. B. Bosquet
R. C. Bottini

R_{il}J. Long

January 20, 1983

TO:

S. D. Bennett

FROM:

D. D. Ricci

REFERENCE:

#92227 Bolt Handle

Per conversations with Vestshell since my 12-27-82 letter, the following revised approach will be taken:

- Additional orders have been issued for the square neck, round ball handles to insure continuity.
- Rather than physically alter any of the new cavities at this time (to reduce the excess costs for prototype work and rebuild once a decision is made), Vestshell will exhaust all possibilities of design improvement to eliminate the 'hot tears'. Waxes will be hand scrapped using parts produced from the old die square neck, round ballidesign.

All options will be produced to metal and forwarded to Remington for review. Estimated time is three (3) weeks.

Vestshell has explored an option to metal form changing the acute angle from 1/16 radius to 3/32" radius. 'Hot tears' were diminished but not eliminated.

Example of option consideration;

- 1. 1/16 acute angle to 1/8 radius
- 2. 1/16 acute angle to 3/32 radius with sections A-A, B-B, C-C .100 radius change to
  - a. .070
  - b. .080

etc.

We hope this meets with your approval, as Vestshell is proceeding most expeditiously to eliminate this condition as well as provide our Production requirements.

DDR/y

RD-69-B

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

XC: S. D. Bennett
Z. J. Kowaslki
J. B. Mroz
J. R. Snedeker
R. L. Snedeker
File

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"____

February 2, 1983

TO: L. B. BOSQUET

FROM: G. E. BARNES

#### MODEL SEVEN LWT FLOOR PLATE ASSEMBLY

PROBLEM:

Final Inspection Rejects - excessive space between Floor Plate Cover and Stock

METHOD:

Sample pieces (30) of floor plate base blank, floor plate cover and floor plate pad taken from Purchase Parts and measured for the following dimensions:

- A.) Floor plate base blank
  - All dimension checks for incoming purchase parts.
  - 2.) Dim..448-.442 before operations.
  - 3.) 90° c'sink
  - 4.) Centerline hinge hole to flat of hinge before mill, ream and deburr.
  - 5.) Width of c'sink (.495)
  - 6.) Orientation of hinge to base.
  - 7.) Dimension .448-.442 after operations.
  - Centerline hinge hole to flat of hinge after mill, ream and deburr.

TO: L. B. BOSQUET - 2 -

FROM: G. E. BARNES

#### MODEL SEVEN LWT FLOOR PLATE ASSEMBLY

#### METHOD: contd.

- B.) Floor plate cover
  - 1.) All dimension checks for incoming purchase parts
  - 2.) Dimension 3.850
  - 3.) Dimension .055
  - 4.) Contour before opeations
  - 5.) Contour after operations
  - 6.) Diameter of reamed hole (.093-.095)
- C.) Floor plate pad
  - 1.) 90° c'sink
  - 2.) Depth of c'sink (.107-.093)
  - 3.) Diameter of hole (.300)

#### OBSERVATIONS: A.) Floor Plate Base

- *1.) Hinge hole undersize
- * Take down hole undersize and eggshape
- * Width of hinge oversize
- All parts out of parallelism from flat of base to hinge.
- 3.) All parts at 90° c'sink
- 4.) Centerline hinge hole to flat ranges from .004-.005 before process.

FROM: G. E. BARNES

#### MODEL SEVEN LWT FLOOR PLATE ASSEMBLY

#### OBSERVATIONS: A.) Floor Plate Base - contd.

- *5.) C'sink oversize all 30 parts.
  - 6.) Hinge not parallel to base
- *7.) Dimension .448-.442 not in tolerance after mill, ream, deburr.
  - 8.) Centerline of hinge hole to flat ranges from -.003 to .003 after mill, ream and deburr. (Note: ranges before and after may vary due to hinge hole being at taper.)

#### B.) Floor Plate Cover

- 1.) Found all 30 parts acceptable
- *2.) Dimension \3850 found parts at low limit or below
  - 3.) Dimension .055 found most parts in tolerance.
- *4.) Contour on comparator showed both ends to be .010 high.
- *5.) Contour after braze showed two variations to a lesser amount with several parts having hinge bent.
- 6.) .093-.095 hole found to be to model drawing.

### C.) Floor Plate Pad

1.) Made 5 castings - found all to be 90°, but not at 4° angle and no .010 step at neck.

TO: L. B. BOSQUET - 4 -

FROM: G. E. BARNES

#### MODEL SEVEN LWT FLOOR PLATE ASSEMBLY

OBSERVATIONS: C.) Floor Plate Pad - contd.

2.) Depth of c'sink in tolerance

Checked pad with the altered c'sink and found to be .114 deep.

NOTE: Thickness varies from .171 to .181 with a .002 to .004 taper which could cause some plates to be higher than others.

- *3.) Diameter hole .280-.281 with large burn at bottom.
- * Denotes parts vary from model drawing.

NOTE: Full report upon request.

GEB/bdm

#### MODEL SEVEN LIGHTWEIGHT

CALIBERS: 222 Rem., 6mm Rem., .243 Win., 7mm-08 Rem., .308 Win.

BOLT BODY: Damascene Finish

BOLT HANDLE: Smooth Knob

EXTRACTOR: Rivetless

SAFETY: Positive thumb type - 2 position - no bolt lock

EJECTOR: Spring loaded in bolt face

STOCK: Schnabel fore-end

Grip-cap - with insert (can be replaced with pewter

Sid Bell design like Model Four)

Recoil Pad

Cut Checkering - 18 lines per inch

Sling Swivel Studs

Walnut Wood

Medium Gloss Finish

Length of Pull - 13 1/2 inches

Drop at comb 19/32 Drop at heel 29/32

FLOOR PLATE: Steel-hinged

TRIGGER GUARD: Steel

RECEIVER: Round

Scope Mounting holes - 2 on front ring and 1 on rear ring

BARREL: Length 18½ inches - 6 grooves

Pressure Pad at front of Stock

SIGHTS: Front sight on base

Rear sight adjustable for windage and evaluation

MODEL SEVEN LIGHTWEIGHT - Contd.

GENERAL

WEIGHT: 6⅓ pounds

LENGTH

OVERALL: 37½ inches

PITCH: 1 13/32 inches (To bbl. center line)

AMMUNITION

CAPACITY: 222 - 5 in Magazine & 1 in chamber

6mm - 4 in Magazine & 1 in chamber 243 - 4 in Magazine & 1 in chamber 7mm-08 - 4 in Magazine & 1 in chamber 308 - 4 in Magazine & 1 in chamber

METAL FINISH: Highly polished and buffed

STRENGTH: Three rings of steel around cartridge head

(Bolt, Barrel and Receiver) same as M/700

2/2/83 JWB:js



# REMINGTON ARMS COMPANY, INC.

SPORTING ARMS-AMMUNITION-TARGETS-TRAPS

#### ILION, NEW YORK 13357

TELEPHONE (315) 894-9961

February 2, 1983

Mr. Nick Harvey
Technical Editor
Sporting Shooter Magazine
Hills End
via Mudgee
North South Wales, Australia 2850

Dear Mr. Harvey:

Clark requested that we send you the enclosed information on the Model Seven Lightweight.

We also have a Model 700 barreled action in .257 Roberts Caliber for you.

The Model Seven Lightweight with a bolt lock will be sent to you this month along with the Model 700 barreled action.

Sincerely yours,

John W. Brooks, Supervisor Current Firearms Design

JWB:js Enc.

Recommendation to conect tolerand for tight flow Plats.

3 latches hayout show this will cover all condition.

File cover to fit latche

. alter Trigger Hand pivot sinfore (at asserby)

xc: H.K. Boyle
H.C. Munson
J.F. Linde
C.B. Workman
L.B. Bosquet
S.D. Bennett
D.G. Scram

Est. #4457

February 8, 1983

G.D. Campbell

#### Model Seven Lwt. Trigger Guard Assembly

The attached evaluation shows the estimated economic impact of the proposed cast aluminum trigger guard assembly for Model Seven Lwt. rifles. This aluminum trigger guard assembly would replace the current Model Seven stamped steel/brazed trigger guard assembly.

This proposal will result in an estimated \$62M net saving in operating cost and 44% net return on investment in the third year of operation (1986). Estimated first year results are a \$56M net savings and a 38% net return on investment.

The major improvement contributing to this estimated savings is elimination of the brazing operations required with the current stamped steel design. The proposed aluminum trigger guard assembly will also result in reduced polishing costs as it utilizes an Almco finishing process compared to manual polishing and buffing of the present trigger guard assembly.

This proposal would require capital investment of \$167M and \$42M in project operation charges.

Industrial Engineering Section R.W. Farrington, Jr., Supervisor

Sic farmingting for.

TRAndrews/kc
Attached

Trogram for Testing different length 1. Set up consition for · Max stock dypth · Max inliting · Max Dig Sward cut for Lateh . Shortest radius on Lateh (.367) Feb 25 · Max come thickness 2. Set up condition for · Min Stock depth · min intelling . Min Jug Guard cut for Latet · Nin comer thickness Feb. 25 · Longest redies on Latch (.387) 3. Set up Mean conditions for Mean Slock Supth inletting · rean corn thekings · M.can rod. on Lateh. (.377) Feb. 25 7et 28 · assemble each condition -March 2. Test fire all conditions from fack & shoulder. Totale

· cover (File)

· Tujger Dund 1

Leslie "Les" Bowman P.O. Box 88 Ocate, New Mexico 87734

505 666-2444

John W.brooks Current Rirearms Supervisor. Remington

Dear John:

I would like to ask you a question if you do not mind. When Mike Walker and Wayne leek were there I wrote to either for all info that I needed and knew which one would have the answer I required. But since they left I do not know the divisions of dapartments and who is head of them well enough to address any one but Clark. Will you bring me up to daye on that. Also I use to get back there fair often and stay with Mike or Wayne and get thru the factory. I sure do miss that.

I did get the new Model 7 that was sent me but we have had the damndest run of weather you ever saw here That has kept me from doing any shooting to amount to much. IN fact for four days we had to walk the 5/8th mile to the gate to our place here on the hardtop to get the mail from the box or to catch a ride to Larnie's (my daughter) store thats down the road 3 miles. Even UES did not deliver out this way. Our trouble was not caused by the depth of the snow but by the drifts. I had no chains for the tractor either and it just would not move on that icy hard snow. Thats what you get some times by living in the country. Then too the chores pile up and take so muck of ones time in such weather.

I just recieved one of Bill Rugers latest .357 Maximum Black-hawks with its  $10\frac{1}{2}$  "barrel for test and evaluation.Also Dick had sent me 300 rounds of ammo for it and I have some more £mmo coming from Federal for it. I also have one of the new Mequan rests coming to try it out on.

But just as ssoon as things clear up I want to get at that Model 7 first to findout how well it can shoot. First thing was I could not get enough adjustment on the 1½ x 5 Leupole scope to clear it up for my right eye /SO changed to to a 12X Leupold and that one just would not shoot for me . Might have been in the mount but I di d not try to run the trouble down but installed a new Weaver T 10. And since then I have no time to do any thing about shooting it. (Oh yes, Weaver & sending me a mount for the Blackhawk handgun and also a 4 X extended eye relief scope ) I just am not a rabid handgun man. Have several and use some for special purposes but just do not care greatly for handgun shooting.)

I am also NCT a short rifle barrel fan.I just cannot see building a good rifle and adopting a good cartridge and then sawing to barrel off to 18 inches and slowing the thing down so much. A close friend gunsmoith just made me up a Custom RugerNO 1 in 7MM Exxpress caliber with a 27" BR quality Shilen barrel .First loads tried give inch groups at just 3,000 FPS using 150 gr Noslers. I wanted a ruger with 28" barrel to match my Colt Sharps.270 that does so well. I get 3275 FPS from 130 gr Win.Silver tip 130 gr factory oads in that sharps.And I get just at 3500 FPS with max loads and

FIREARMS EDITOR - - - OUTDOORS WRITER

no undue pressure signs. However I use the gun on my Yukon and such hunts several times for single head of game such as sheep or goat. For those trips I load my own using 130 gr Nosler bullets to 3360 FPS as I want that shilen BR quality parrel to last me my lifetime. But I had never owned a rugerNo 1 tho I had shot many. None too accurate. I mean really accurate. SO I got this one to try.

I suggested to Dick Dietz after the seminar that made Rem.should chamber a few of the model 7s to the .350 Rem.Mag for those who like a light gun for safety in Dangerous game country such as Alaska's brown and grizzly areas. People that work there, not so muc h hunters. That is the only small cartridge that has sufficient energy and bullet weight (250 gr) for such. I know as I kiled the first one of the Browns with the first out 350 Rem.Mag 600. I chose to shoot t what I had figured was that cartridges max limit to do a presentable job on Brown bear. I had set that at 150 yards max. And my kill measured 146 yards. Bullet hit dead on the shoulder point, broke bothm shoulders. The bear fell for ward, grabbed amouthful of driftwood and was dead. A caliber such as the .358 Win. just will not get the job done as well.

BUT one thing I would want in such a chambering is a barrel at least 22" long. That would add gust a wee bit moreFPE.

Anyway , that's heaps for your letter and the inflormation.

Best regards/

Les Bowman

P.S. The barrel length on the .350 chambering would also cut down on muzzle blast.



Jobs Brooks -Current design Super.

Remington Arms CO

Leslie "Les" Bowman
P.O. Box 88
Ocate, New Mexico 87734

xc: J. P. Linde
S. D. Bennett
J. B. Mroz
R. D. Polley

February 16, 1983

A meeting was held this date to discuss problems involving the Model Seven Floor Plate Base Assembly - Floor Plate Cover Assembly and their related components. Present were:

L. B. Bosquet

W. L. Ganey

J. W. Brooks

D. E. Bullis

G. E. Barnes

P. C. Earl ) IN

W. Roark ) TURN

The purpose of the meeting was to generate as complete a list as possible of problems being encountered with these components. This initial meeting concentrated mainly on the components as they are received from the vendors and are processed through to final assembly. Noted were:

- Floor Plate Base Blank

  See attached Quality Control report.
- Floor Plate Base Machining Operations

  Mill slot in hinge production has no problems with this operation. Fixturing and gaging appears to be adequate.
  - Ream Front Take Down Screw Hole and Hinge Pin Hole

    Fixturing and gaging appears to be adequate. Quality
    Control study indicates that all hinge pin holes are
    angled relative to the rest of the part.
- Trigger Guard Plate

  Parts are not flat as received from the vendor. Model drawing calls for parts to be flat within .010. Purchase Parts Inspection procedure to be reviewed and vendor will be contacted.
- Floor Plate Base Assembly Brazing Operation

  The brazing of this assembly is yielding approx. 25-30% scrap.
  - assembled FPBA difficult to remove from fixture after braze. A TDR has been issued (ZK-199) to provide a means of removing assembly without damage.

- poor and/or inconsistent braze flatness and/or straightness of parts could be a contributor. power supplied to TOCCO unit appears to vary during the shift.
- difficult to flux and load parts and position brazing preform.

### • Floor Plate Cover Blank

As received from the vendor, the blank is dimensionally good. The only problem appears to be that the ends are approximately .010 higher than the center. One Purchase Inspection gage appears to mar the surface.

- Floor Plate Cover Machining Operations

  3.850 +005 dims is running slightly undersize. It
  was found that a clamp at the milling operation was
  marring the surface. This will be taken care of by
  changing the clamp surface from steel to nylon.
- Floor Plate Cover Assembly Brazing Operation

  This brazing operation runs better than the Floor
  Plate Base Assembly. It produces approximately 5% scrap.

The main problem noted at this operation is a slight warpage in two areas. This may be the result of hot spots developed in the heating cycle. Work is in progress on the redesign of the induction coil.

A TDR will be issued to revise the fixture to provide additional support for the part during braze. This work will have to be coordinated with any change to the coil.

A question was raised concerning the efficiency of the sand tumble in removing sharp edges which cut into the Stock finish. It was also pointed out that some deformation of the Magazine Spring Retainer may be caused by this operation. An operation will be added to check for warpage 100% until coil and fixture design is finalized.

#### Final Assembly Problems

The main problem mentioned was the binding of the hinge. It is felt that this is caused by improper deburring of the mill cuts. This operation will be reviewed by the engineer and the filers will be reinstructed.

Another cause for binding is covered on the attached study done by Quality Control. The hinge as formed by the vendors runs at an angle. This condition will be corrected.

Steps have been taken to eliminate poor coloring on the Cover and Base Assemblies. New racks have been designed - one in use for Floor Plate Cover (approx. 120/rack), one for Floor Plate Base due by 2/18.

#### Functional Problems

The single most critical functional problem is the unlatching of the Floor Plate Cover when the gun is fired. This problem is being actively worked on by another group, but if any solutions come out of this committee, they will be implemented. Bending of Floor Plate Covers - thicker material samples are being machined and will be tested to see if any improvement is noted. Thicker Trigger Guard Plates are available and a request has been issued to obtain thicker Floor Plate Base Blanks from the vendor.

LBB:hf Attach.

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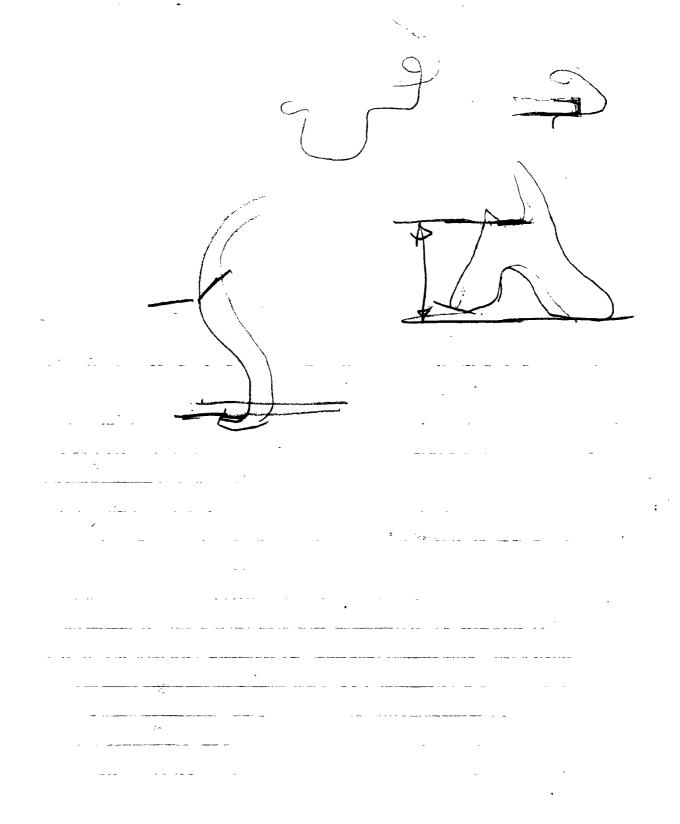
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REMINISTON ARMS COMPANY, INC. Distribution: C. B. Workman J. W. Brooks C. E. Ritchie Remineton T. J. Plunkett "CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_ RESEARCH TEST and MEASUREMENT REPORT - Report No. 930041 M/SEVEN LWT. .308 CALIBER - NEW MACHINED 6061 ALUMINUM FLOOR PLATE DESIGN EVALUATION (SPRING LOADED BALL TYPE LATCH DESIGN) Prepared by: ____J. Baggetta Date Prepared: ____2-1-83 Prociread and Cleared By:

Signature

C.E. Ritthis.

Sr. Supervisor - Testing,

Meas. & Mech. Analysis Lab

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	830241
REPORT TITLE:	M/Seven LWT308 Caliber - New Machined 6061 Aluminum Floor Plate Design Evaluation (Spring Loaded Ball Type Latch Design)
MODEL(S):	M/Seven LW:T.
gauge or caliber:	.308
DATE:	1-24-83
work order no.:	C-1856-000
PART NAME:	Latch
DESIGNER/ENGINEER	g: T. J. Plunkett
TEST TYPE:	
1.	PHOTO LAB
2.	STRENGTH TEST - NO. OF GUNS TESTED
3.	Function test - no. of guns tested3
4.	ACCURACY TEST - NO. OF GUNS TESTED
5.	MEASUREMENTS - TYPE: Headspace
6.	ENVIRONMENTAL TEST
7.	AMMUNITION TESTING & EVALUATION - TYPE:
8.	VISUAL EVALUATIONOUT OFGUN SAMPLE
9.	ENDURANCE - NO. OF GUNS TESTED:3
	NO. OF ROUNDS FER GUN: 30
	TOTAL ROUNDS FIRED IN TEST: 90
	AMMO TYPE: MAGS. : TARGET:

RIM FIRE CENTER FIRE X

February 1, 1983

TO:

R. NIGHTINGALE

FROM:

J. BAGGETTA

REPORT TITLE:

M/SEVEN LWT. .308 CALIBER - NEW MACHINED 6061 ALUMINUM FLOOR PLATE

**EVALUATION (SPRING LOADED BALL TYPE LATCH DESIGN)** 

## ABSTRACT

A request was received from T. Plunkett, Current Firearms Design, to evaluate the M/Seven LWT., redesigned Floor Plate Latching System. (Spring Loaded Ball Type Design.)

## SCOPE OF TEST

To evaluate the performance of the redesigned M/Seven LWT. - .308 Caliber Floor Plate Latching System checking the floor plate latch opening on recoil.

## TEST RESULTS

## A. Jack Live Round Fire Function Test

Three M/Seven LWT. .308 caliber rifles were fired a total of 45 rounds (15 rounds each) experiencing no malfunctions.

## B. Field Function Test

 Three M/Seven LWT. .308 caliber rifles were fired a total of 90 rounds (30 rounds each) experiencing no malfunctions.

Report No. 830241 Page 2

## REPORT TEXT

Three (3) M/Seven LWT. .308 caliber rifles with the redesign latch (spring loaded ball-type design) were fired a total of 90 rounds (30 rounds each) experiencing no malfunctions.

## TEST PROCEDURE

## A. Measurements

o Headspace - (Refer to Appendix "A" Data Sheet No. 1.

#### B. Test Conditions

## Condition No. 1 - Indoor Jack Shooting

- O The test was run using the Test Lab shooting room jacks.
- O The rifles were loaded with 4 rounds in the magazine and one in the chamber.
- o Various speed feeds were used such as: Slow, Medium and Fast.

#### Condition No. 2 - Ilion Fish & Game Club Outdoor Range

- o The test was run using the Ilion Fish & Game Club Rifle Range.
- o The weather was overcast, 320 and windy.
- o The rifles were loaded with 4 rounds in the magazine and 1 in the chamber.
- Various speed feeds were used such as: Slow, Medium and Fast.
- o Four shooters were used incorporating the round robin system.

#### C. Ammunition

#### Indoor Jack Shooting

o Winchester - 200 gr. Silver Tip

#### Field Function Test

- o Remington 180 gr. Soft Point
- o Winchester 200 gr. Silver Tip

#### D. Rifles Used In Test

## M/Seven LWT. .308 Caliber

7600139 B6226256

7600050

Report No. 830241 Page 3

#### REPORT TEXT - cont'd.

## E. Hi-Speed Movies

- Hi-Speed movies were previously taken of this design showing latch motion by Test Lab personnel in the Photo Lab Room.
- o Hi-Speed movies can be reviewed in the Photo Lab Room.

#### F. Photos

- o Pictures were taken of the redesigned M/Seven LWT. .308 caliber rifle. (Refer to Appendix "A" Data Sheet No. 2.)
- o Pictures were taken of the old style latch M/Seven LWT. .222 caliber rifle. (Refer to Appendix "A" Data Sheet No. 2.)

Report No. 830241

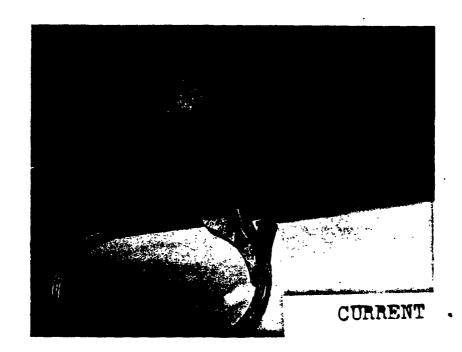
APPENDIX "A"

DATA SHEETS

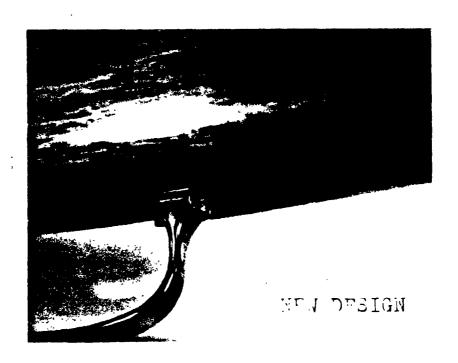
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# M-7 Lut , 222 caliber



M-7 Lut 308 chliber



.065 P E G.

2/32/83

FROM: T.J. PLUIKETT

MISS FLOOR TURTE CATELL STRINGS. MERS.

147 RDNESS OF FOUR SPRINGS. Two ERRORT

PARTS FROM GUNS No'S 2600025 . 2600116 AND

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laslier guns are seminar guns. Refores are simles to those in

REDINGS: report no. 823191

# 7600075 = R15-1-83 = Re 45-# 7600116 = R15-1-84 = Re 48/49 CURRENT SPG = R15-1-83 = Re 48/49 CURRENT SPG = R15-1-84 = Re 48/49

MOTES

1-RISTARS IS TO LOW

RISTARY/SS IS IMPRESIMAL

2-RE 48/52 IS THE TORING SPRINGS

SHOULD BE IN.

Writers remain gams

7600/25- 8-9#5

116 9/2#5

051 9/2#5

124 9/2#5

7603321 4/2-5-#5 Production from - Hi styled movid gam

140 8/2-9#5



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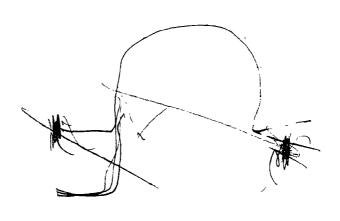
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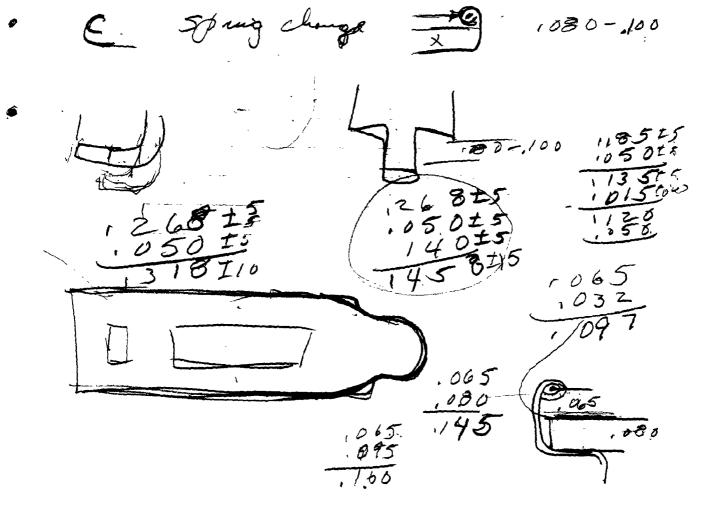
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Have thinks + what mall : up to . 100 clock with wendor on noteto in place of blank for jointening holes for Fin Plate base.

Braying? no change to got. same part.



Xc: S. D. Bennett P. C. Earl Z. J. Kowalski J. W. Brooks W. L. Ganey J. B. Mroz D. E. Bullis J. A. Harter R. D. Polley G. E. Barnes J. W. Kelly

February 23, 1983

J. P. LINDE

RE: MODEL SEVEN FLOOR PLATE BASE, ETC. - PRODUCTION PROBLEMS

Attached is a list of items requiring follow up which came out of the meeting held 2/16. Responsibilies have been assigned for each item.

L. B. Bosquet

LBB:hf Attach.

#### FLOOR PLATE BASE BLANK

Review Purchase Inspection procedure. Is it adequate based on experience gained to date?

Bennett Quality 2.

- Send marked print to vendor indicating the results of Quality Control's study. Work up a program to resolve problem areas.

Bennett Purchasing

- Marked prints have been sent to vendor requesting samples from thicker material (.062).1 244

Bennett Purchasing

#### FLOOR PLATE BASE (MACHINING OPERATIONS)

- Review the .100 + .005 slot in the hinge. Engineering layouts indicate a potential bind condition at assembly. Engineering recommends that this dimension be changed to  $.115 \pm .005$ .

Research Bennett

Bennett

- Review reaming operation to verify that part is located correctly.

Bennett

- Review filing operation - is it adequate? Is it being done correctly?

Bennett

## TRIGGER GUARD PLATE

- Quality Control study shows these parts are bent as much as .035. The model drawing calls for parts to be flat w/in .010. Review gaging of incoming parts.

Bennett

 Samples of Trigger Guard Plates have been received made from .062 material. They were assembled and turned over to Research for testing 2/22. Testing complete

Kowalski Research ___

## FLOOR PLATE BASE ASSEMBLY

Brazing operation

Bent Trigger Guard Plates may be a contributor to the brazing problems. Run a controlled study for one (1) shift using screened or straightened Trigger Guard Plates (approx. 250). Monitor the output to determine effect of flatness on yield. This study should also indicate whether or not there is a relationship between poor braze and specific times during the shift.

Kowalski Polley Production Quality Control

#### FLOOR PLATE BASE ASSEMBLY - Contd.

3.

TDR (ZK-199) has been issued to make removal of assemblies from the brazing fixture easier.

Kowalski Tool Design

- TDR's (ZK-197 and 198) have been issued to alter the drill jig and pinning gage for positioning and sizing the rear take-down screw hole.

Kowalski Tool Design

## FLOOR PLATE COVER BLANK

review gaging of hinge pin hole as formed by vendor. We should check to be sure this is 90° to long axis of part and parallel to the flat portion of the tab.

Bennett

## FLOOR PLATE COVER - PROCESSING

- review reaming operation (Production has no problems with this operation) to verify that drill jig is orienting part correctly.

Bennett

- sharp edges at Latch end of part are cutting into the finish on the Stock. Run a sample of parts through sand tumble prior to brazing operation.

Bennett Production Research

- review deburring operation - is it adequate? Is it being done properly?

Bennett

obtain quotation and lead times to go to thicker material (.062 or possibly .078). Bennett Purchasing

## FLOOR PLATE COVER ASSEMBLY - BRAZING

- continue work already in progress to redesign induction coil for better heat. Redesign of brazing fixture to add additional support (if possible) will be investigated when coil design is finalized.

Polley Kowalski

- Thicker Floor Plate Covers (.062 material) have been processed and are ready for braze. They will be turned over to Research for testing by 2/28.

Production Kowalski Research

- poug

LBB:hf

## ESTIMATE # 4457

#### ESTIMATED SAVINGS & RETURN ON INVESTMENT

PIGINEER: T. R Andrews				
DATE: February 4, 1983	1 ST YEAR O	# OPERATION	3 HO YEAR OF	OPERATION
	Present	Proposed	-	
	Stamped Steel Trigger 6d Assy.	Cast Alummium	Present	Proposed
Forecast Year	1984	10.23	1986	17000360
Quantity Forecast (Model seven Lut)	31600		39,755	
•				
OPERATING COSTS				
Purchased Parts	\$ 92,900	\$ 99,000	\$128,200	\$136,600
Raw Material	***			
Standard Labor Labor Variance 3	<u>81.500</u>	28,500	78,700	<u>65,700</u> 39,300
Industrial Relations @ 41.67.	000.00	34.200	91,000	50,000
Supplies				
Tool Replacement				
Cutter Grind Tool Maintenance	18,900	14.400	26,500	20,200
Maintenance				
Zoerzy	14.700	5,900	21,900	9,900
Equipment Depreciation 37.57.		12,500		12,500
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Sub Totals	\$331,100	A \$ 244.100	\$ 456,800	4 \$ 333,100
Gross Savings Before Admin. Exp. Admin. Exp. 84.3% Gross Savings		\$ 87.000 B \$ 3.700		\$ 125,700 \$ 5,400
	A		<b>.</b>	
Sub Totals	5 331 100 A	+8 \$ 247.800	2 → 58.800 A	\$ 338.500
SAVINGS IN OPERATING COST		\$ 53 300		\$ 120,300
Less: Income Tax \$48.5 \$		(\$ 40,400)		
	Credit	\$ 13,400		( <u>\$ 58,300</u> \$ -
Plus: Amortization of Investment Tax				*
321 3447303		5 56,300		\$ 62,000
LHVESTMENT				
Project Expenditures		\$ 167,000		\$167,000
Manufacturing & Working Facilities		\$ <u>-</u>		\$ <u> </u>
Net Change in Working Capital		(\$ 17,700)		\$ 25,800
Total Capital Required for this Pro	<u>iect</u>	\$ 149,300	_	\$ 141,200
	<del></del>			
RETURN ON INVESTMENT - THIS PROJECT		37.7 \$		43.97
Net Savings - After Amortization of Op	eration Charges			\$ 60,400
Project Operation Charges Less: Administration Expense 94.3	d 2	\$ 42.000	_ <del></del>	\$ 42,000
Income Taxes @48.5 % (Facto		(\$ 21,300)		(\$ 21,300
Total Capital Required Including Re	* * *	`		`
Development & Other Charges		\$ 170,000		\$ 161,900
			· <del></del>	
RETURN ON TOTAL CAPITAL REQUIRED	·	32.2 8		37.3%
Equipment to be Released				
Increased Space Requirements (Decrease	)			
Production Capacity Forecast Burdening		\$		
· or acres c Dollanians	<del></del>	. 31		<del></del>

#### MODEL SEVEN LWT.

#### MEETING OF 2-28-83

#### PRESENT:

C.B.	WORKMAN	E.W.	YETTER,	JR
T.G.	BAUMAN	S.R.	FRANZ	
A.A.	HUGICK	D.E.	BULLIS	
C.E.	RITCHIE	J.W.	BROOKS	

The following items are scheduled to be done and followed by people designated:

#### o Bob Orf, Doug Bullis

200 Stocks ready for sand are to be drilled and a reinforcing screw added in the Model Shop 3-1. Production will furnish the Stocks 3-2 and 3-3.

#### o Tom Bauman, Adam Hugick

Pick up 250 Model Seven Trigger Guards and have Model Shop alter rear tab to positive  $4^{\circ}$  -  $5^{\circ}$  downward bend. (Opposite present bend) Mark parts, measure parts, carburize and heat treat parts. Remeasure parts. Complete by 3-3.

#### o Evan Ritchie, Ed Yetter, Scott Franz, Doug Bullis .

Production assemble pinned Stocks to 180 actions in 308 Caliber with help of R&D. Use special heat treated Trigger Guards. Send thru Gallery 3-3 and 3-4. R&D will select 10 guns to field test and at least three for endurance to 3000 rounds. 3-5 and 3-7. Inspect parts.

## o Doug Bullis

Have 25 latches heat treated. Use in above rifles. Use in two (2) endurance rifles if field tests are satisfactory.

#### o Doug Bullis

Floor Plate base machined to take .080 Trigger Guard Plate. Ready from Model Shop 3-1.

## o Doug Bullis

Trigger Guard Plate .080 material in inspection. Ready for half to be carburized 3-1.

## o Doug Bullis and Ziggy Kowalski

Braze Floor Plate base to Trigger Guard. Plate 3-2 or 3-3.

## o Doug Bullis

Inlet 10 Stocks .030 deeper to be used with floor plate bases assembly with .080 Trigger Guard plates.

## o Doug Bullis

Mark latch spring print for vendor. Spring to fit .080 Trigger Guard Plate and 1/16 pin in latch. Order samples 3-2.

#### o Doug Bullis

Mark prints of Trigger Guard 3-1 for Brad Bosquet to give to F. Ambrose 3-2 when he visits him.

## o Doug Bullis

Check fit of .060 floor plate cover on present floor plate base assembly. Check strength of .060 cover.

Model ? Up dato on meeting of 2-28-83 200 stocks completed in Model slop I returned & production. 250 Trym Hund hove been head the near tab altered to 4 30! They have all been heathered. The last 150 are being meaned, The first ADD we being used to assable. 308 cal rifly with puned alabothet one commy there the live. Philyden in classif anyle of the first 20, the second 1004 to lost 150. The are as fallows; necessed warmed for RC61 We will endume test somple

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the two different heat thented Trigger Grands

5 pine t or D. wagne (Hour march 15.) . Thick volume of 222 cal followers required in may. M.7 + 750 · I present prototype is satisfactory in texts how many more would be reguned for graduation, . Can vendor make the required amount on 1 who temporary tooling. If not how many comes 5000 he make on present temporary tooling, · when is latest date he has to start to lower was facts for may lamble, heart that & glats by Dan.

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J. M. Brooks

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



DETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"___

March 4, 1983

XC: S. Franz

File

R. L. Snedeker E. W. Yetter, Jr.

TO: J. R. SNEDEKER

FROM: E. L. BARNES

PROBLEM: M/7 LWT Latch Spring

30 - guns from different assemblers. METHOD:

> Latch spring disassembled and measured for .4705/.5075 dimension. (Could not get same

size sample from each assembler.)

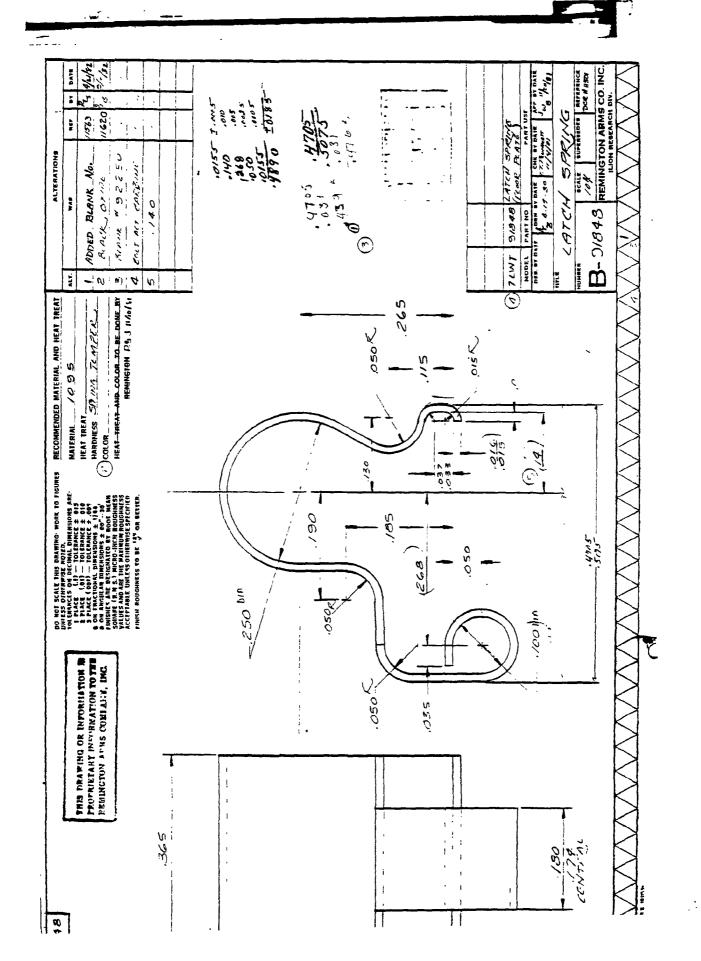
Assembler 83 sample of 17 - 5 out of tol. = 29% OBSERVATIONS:

Assembler 93 sample of 6 - 2 out of tol. = 33% Assembler 91 sample of 3 - 1 out of tol. = 33% Assembler 30 sample of 3 - 0.K. Assembler 22 sample of 1 - 0.K.

ELB/bdm Attachs.

# REQUEST FOR MERSUREMENT ASSISTANCE REQUEST :

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EHARKS.	L. Barnes	3-2-83	1
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Assem 83	Assem. 93	Assem 91	Assem. 30 Assem. 22
N= 17 Z= .5053 X= .0072	N = 6 V = .5052 X = .0065	N= 3 = ,499 L = .0084	N= 3 x = .4997 L = .0066
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RD-49-B

## REMINGTON ARMS COMPANY. INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PETERS

xc: C.E. Ritchie
D.D. Ricci
D.E. Bullis
P. Nasypany
S.D. Bennett

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

Ilion, New York March 7, 1983

TO:

C.B. WORKMAN

FROM:

J.W. BROOKS JUE

SUBJECT:

MODEL SEVEN AND 700 222 CALIBER

NO-BIND FOLLOWERS

The Model 700 and Seven rifles in 222 Caliber are scheduled by Production for assembly the last week of April and May. Volumes are 1700 for the Model 700 and 4,000 for the Model Seven.

We have 650 prototype stamped no-bind 222 Caliber Followers on hand. They were reformed by the vendor from Model 600 stamped Followers. They are to be used for two purposes.

- o Check to see that the no-bind Follower performs as well as the standard stamped Follower.
- o Investigate new magazine springs to improve feeding over present production spring.

Testing has been delayed because the Followers had to be recorded as the first sample was under size. The testing was to be completed by March 15 which is the latest date Production can order parts to be delivered in time for May 1 assembly. The date has been confirmed with the Follower vendor as he needs to make new dies. The spring vendor has not been contacted as yet to see if his date can be changed. The Test Lab cannot finish the first phase of their spring testing for two weeks. The second phase will be completed when more production rifles are available in May.

To: C.B. Workman -2- 3-7-83

Testing of the no-bind Followers will begin this week with current production springs vs. standard Followers and production spring.

If testing is satisfactory and a decision can be made to release the Follower drawings to Production by March 15, this will be done.

If this is not possible and more time is needed and the prototype Followers look promising the vendor stated that he can furnish us approximately 5,000 prototype Followers a week. He can alter all we have on hand if we wish to go this way before going to permanent tooling.

If we decide to notify the vendor by March 15 to commence the permanent tooling, he stated that in approximately two weeks he would have approximately a \$1500 tooling charge toward the final charge in case we need to stop the tooling for another design. The final tooling charge total will be under \$4,000 for complete new tooling.

If Phase One does not give enough of a confidence level to order new springs we will use current production springs until testing is completed. Feeding should be no different than present.

JWB: js

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	-			The second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of th	
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DON'T SAY IT - WRITE IT

From John W 13 00060 5 abject; M722 Parts 6 16 793 4 6 1705 6

Plan do not sing thise outs

at this aime, Please re walnute with us in 6 months or so.

5 Touged followers

### DON'T SAY IT-WRITE IT CC : J.W. 5 BOOKS

TO JIM SWEDEKER	Location	
From D. BULLIS	Location	Phone No
Subject M/7 LW7 STOCKS	(POINTS TO CHECK)	Date <u>3 - 9 - 8 3</u>

- . RECEIVER HOLE SPACING IN STOCK.
- . FRONT TAKE DOWN SCREW HOLE TO BBL. BRACKET SURFALE.
- · POSITION OF HOLES IN RELATION TO INLETTING (SIDE TO SIDE).
- POSITION OF RECEIVER & MAGAZINE INLETTING IN RELATION TO
  FLOOR PLATE BASE INLETTING.
- POSITION OF TRIGGER HOUSING OPENING IN RELATION TO TRIGGER GUARD PLATE INLETTING.
- · AMOUNT OF FILL OR CHIPS COVERED WITH FINISH IN INLETTING.

G-88 REV. 10-62

SECURITY IS EVERYONE'S RESPONSIBILITY

Per Desayon	3-9-83
. Trugger Hand Peak	
o Flor PB, 3-4	26h 3875 250 pe.
5 Tayer Duard \$230 Just	1 book, mitrest week
. Spring , 300	je \$465 zwbs.
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MUNTE OM I IN THIS P.

To	D YETTE	Location	
From	T. BAUMAN	Phone Location No	···
Subject	M/7 TRI	GG 57 GUARO Date	3-/0-83
	GUN #	37 05 AT 3165 ROS GUARO # D3	CHANGE
		(2179 LENGTH 2,486 )	.007
		37 05 AT 3165 ROS GUARO # D3  TART {2.479 LENGTH 2.486 } 3165 RDS  .230 OFFSET .232 } 3165 RDS	.002
1	GUNT	37 65 AT 3/65 RUS GOARDS	CHANGE
		(2.460 LENGTH 2.474 7 3/65 RDS	, 014
		3765 AT 3/65 RDS GUARD# JO \$2.460 LENGTH 2.474 7 START 230 OFFSET . 224 5 3/65 RDS	-, 006
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SECURITY IS EVERYONE'S RESPONSIBILITY

2.430 M/D 45 GUALDS Rec'D 6 M/D MEASURED, FROM VENDOR HEAT TREATED & RE-MEMSURE (NO PRIOR BEHPING DONE BY PEMINGTON IS TO DETERMINE CHANGED THIS STAMPED & FINAL FORMED PARTS AS REC'D WITH TO HIT, VENDOR VENDOR GHANGE AFTER HEAT TREAT AFTER REDIGN AT GO M/D # PART 2.430 2.430 2.410 1 2.443 . 113 X A 2,436 .115 2.422 .113 .014 . 001 2.435 *B 112 2,430 2,430 .116 .125 1009 , 0 2, 466 2.459 * c . 157 . 1:41 2.440 .112 .019 .035 *D 2.426 2.426 .104 2,422 . lod .113 . . . 7 *E 2.406 2.400 2.423 .112 .098 . 692 . . 23 . 020 2,435 2.425 ,133 Z. 43. . 1,3 1 * F .130 .005 . 00 8 2.462 2.461 * G .113 168 2. H22 ,/65 .052 2.435 XH 2. 422 .137 .145 Z. 432 .144 ,007 2.430 2.427 * T 2.425 .125 .135 . 133 .002 , 008 2.430 122 2.421 * J 2.424 .119 .115 - .004 * K 2,425 2,452 2,445 . 13 6 .127 .135 . oZo ,008 2.422 2. 4 63 .153 2, 456 *L .1/8 .150 . 034 ,032 2.446 .120 2.440 * M 2.415 .118 . 133. . . 15 ,015 2.427 .1/8 2.438 .124 Z. 432 .005 * N .121 ,003 2,443 * 0 2.425 ./28 .125 z. 43G ,134 . 0 11 .006 1045 mm

2.430

M/7	TRIGGE	R Gui	ر) کھی	T HEAT TR	(	PARTS C	OMPLETELY	
•	START		i l	AFTER	HIT,	•	HED T COLURG	b
PART#	2.430 Before Bend	.295	2.430 AFTER BEND	(.295	2.430	. 295	2.430	
Ao	2.430		2.414			.251	2,448	
AI	2,423		2410			. 247	2.446	
A 2	2.427		2.462			.315	2.783	
A3 ¥	Z.435		2.412	1295	2.426	.285	2.420	<b>+</b>
A4 *	2,424		2416	.253	2,438	.256	2.443	
A5 *	2,439		2.4/2	.231	Z.466	.220	2.4.75	
A6	2,435		2.413			. 305	2.401	
A7 *	2.439		2.468	.245	2,434	.244	2.440	
A8	2,440		2.417			.253	2.43/	
A 9	2.433		2.413			.230	2.451	
<u> 30 </u> ★	2.439		2.420	,263	2.446	.256	2,441	
81	2,435		2.400			. 280	2.399	
B2 +	7.425		2.390	.256	2.414	.254	2.4.17	٥
B3	Z. 435		2.412			.282	2.405	
B4	2.435		2.404			.289	2.400	
B5	2.435		2.418			.257	2.440	
B6 *	2,431		2.419	.271	2,446	.273	2.447	
B7	2.428		2.411			.275	2.421	
Вв	2.440		2.400			, 225	2.458	
B9 *	2,425		2.416	.280	2,441	.272	2.454	
<u></u>	2.440		2.412			,260	2.438	
101 ×	2.423		2.403	BROKEN	2,461			
<u>c2</u>	2.427		2.417		T	.260	2.425	
<u>c3</u>	2.432		2.400			.270	2.412	
C4 ×	2.432		2.415	, 230	2.465	.23/	2.465	
C5	2,427		2.416		į.	. 2/2	2.457	
<u> </u>	2,437		2.416			.264	2.425	<del>-</del> -
		a second contract						

<del></del> 2.4	30-4	
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/ -				7		A . 254	COMPLETELY	
M/7	TRIGGE	R GUI	42D (1	AFTWE	EATED)	FINISH	ED & COLORGO	
PART#	2.430 Bend Bend	.295	2.430 AFTER BEND	(,295	2.430	.295	2.430	
~ C7 ×	2.427		2.410	,261	2.436	.253	2.445	
C 8	2.422		2,420	·	÷	. 233	2.452	
C 9	2.435		2.409			. 265	9.444	·
Do	2.426		2.407			.279	2.402	
DI	z. 435		2.400			. 240	2.431	
D2 *	2.436		2.415	.257	z. 435	.261	2.4 44	
D3 *	2.437		2.427	. 255	2.474	.230	2.479	
D4 *	2.435		2.420	. 245	Z.459	.245	2,462	
D5	2.437		2.406			.245	2,427	
D6 *	2.429		2.406	.277	2,416	.275	2.419	0
D7 *	2.430		2.419	, 244	₹2.483	. 246	z,494	<u> </u>
D8 *	2.435		2.420	.247	2.450	.237	2.458	
D9 *	2.438		2.414	.287	2.436	.28/	2,430	
E O *	2,434		2.420	.213	¥2.475	.214	2.48/	8
EI	2.435		2.404			. 240	2.448	···
E2 *	2,437		2.416	.283	2.425	.286	2.428	<del>-</del>
E3_	2.435		2.404			. 263	2.431	
-E4 ×	2,435		2.426	.220	2,488	. 225	2.491	ø
E5 *	2.439		2.408	.267	2.453	.265	2,452	<del></del>
EG ¥	2.435		2.413	.210	2.480	.202	2,486	
" E 7 *	2.427		2.409	.232	2,460	,226	2.464	<del></del>
	2.421		2,410	.245	2.458	,240	2,457	
	2.438		2.418	. 220	2.475	.217	2.475	
_ Fo			2.412			. 288	2,418	····
FI			2.401			.285	2,400	
F 2			2.417			, 258	2,422	· · · · · · · · · · · · · · · · · · ·
<u>F3</u>		<u> </u>	2.410			.235	2.441	

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,		Jj.	- // .	A		OARTS	COMPLETELY	
/ 1	TRIGGE	R GUA	ARD (I	HEAT TR	EATED)	FINISH	SO I COLORS	0
PART#	2.430 Before Bend	.295	2.430 AFTER Bend	.295	2.430	,295	2.430)	
F4	·	-	2.402			.275	9.422	
F5			2.408			.27/	9.423	
F6	<del></del>		2.401			. 282	2,433	
F 7	·		2.402			,260	2.431	
Fg	·		2.407	·		.275	2.4//	
F 9			2.400			, 268	2.420	
GOX			2.403	, Z 7 5	2.420	,270	2,428	
GI *			2.403	.242	2,411	.265	2.420	
G2			2.405			. 270	2.422	
<u>63</u>			2.413	<del></del>		. Zo5	2.456	
<u>G4</u>			2.407			,276	2.403	
<u>G5</u>			2.408			, 268	2.430	
G6 *			2.405	.258	2.425	.255	2.415	<u> </u>
<u>67</u>			2.402			.255	2.441	<del></del>
<u> 68</u>			2.410			.287	2,423	
<u>G9</u>			2.418			.290	2.425	
110			2.404			. 270	2.411	
141			2.411			.260	2 440	
H2			2.410			.247	2.436	
<u> H3 ×</u>			2.392	.249	2.422	.246	2.434	
<u> H4</u>			2.424			. 225	2,438	····
<u> </u>			2.412			, 273	2,415	
H6 *			2.392	.249	2.444	.240	2. 4 43	
H 7			2.406			.287	2,408	
148*			2.404	.268	2.444	.279	2.445	
H 9			2.406			.293	2.403	<del></del>
<u>'Io*</u>			2401	.270	2.432	.263	2.434	-

		2.4	<u> </u>	1295				3 -/- <b>83</b> SH.#4
M/7 PART#	TRIGGE START 2.430 BEFORE BEND			AFTER 1295	2.430	PARTS FINISHE 1295	COMPLETELY D & COLORED 2,430	
II		-	2.404			, 305°	2.394	
I.S			2.405			,262	2.428	
I3 *		·	2.402	. 280	2,419	. 276	2,418	0
<u> I4 *</u>			2.404	.257	2.430	.264	2.427	
I5			2.405			.265	2.407	
I G			2.406			,270	2.422	
I7 *			2.401	, Z 3 17	2.453	,230	2.460	
IS		<u></u> .	2.411			.240	2.442	<b></b>
I 9		<del></del>	2.413			.295	2.460	
. Jo ¥			2.40	.227	×2.464	.230	2460	
JI			2.425			.257	2,444	
J2			2.401			.280	2.401	
<u>J3</u>			2.417			. 245	2.463	
<u>J4</u>			2.407			.267	2.431	
_ J 5 *			2.404	. 275	2.426	.270	2.428	
16			2.405			,3/0	2.402	
<u>J7</u>	·		2.407			.277	2,406	
Ja 🔻			2417	.283	2.472	.282	2.424	

2430-	1
100	.295
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,				A S		TARTS 6	MALETELY	
/ 1	TRIGGE	BEND 4º30'	ARD (1	HEAT TR	EATED)	FINISHE	\$ 2000250	
PART#	2.430 Before Bend	.295	2.430 AFTER Bend	.295	2.430	.295	2.430	
Kg			2.4/3			. 278	2.415	
K.9			2.403			,287	2.404	
Lo *	····		2.468	.264	2,435	. 256	2,431	
<u>L</u> 2 *			2.408			. 245	2.442	
L2 *			2.419	. 750	2.439	.251	2.439	
_L3 *			2.410	.239	2.468	.227	2.466	
<u>L4</u>			2.404			. 273	2,43/	
L5			2.402			. 286	9.411	
3 L 6 *			2.408	.233	2.451	.224	2.456	
L7 *	*,· · · · · · · · · · · · · · · · · · ·		2.405	. 250	7,453	. 245	2.460	
L8 ×	•		2.402			.275	2.417	
L9 *			2.402	.250	2,424	. 2.43	2.430	
Mo *	·· <u>··········</u>		2.413	.270	2.443	. 265	2.450	
MI	·		2.401	,		. 225	2.450	<u> </u>
M2			2.405			. 280	2.414	
M3 *	: 		2.407	,280	2,416	.277	2.430	
M 4			2.408			,260	2.429	
M5			2.403	<u> </u>		.257	2.431	
MG *			2.407	.221	2.461	.215	2.465	<u> </u>
M 7			2.403			.297	2.410	
мв			2.413			,265	2.412	
M9 *			2.409	.240	2.469	.235	2.473	
No *	1		2.404	.277	2.423	.266	2,430	
NI			2.404			.283	2.4/3	· · ·
N2 *			2.163	.267	2,418	.268	2,425	
N3			2403			, 300	2.393	
N4			2.413			.282	2.407	

<del></del>	2430-4	
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,				A		PARTS	COMPLETELY	
/	TRIGGE	BEND 4º70'	ARD (	HEAT TR	LEATED)	FINISHE	TO & COLORED	
PART#	2.430 BEFORE BEND	.295	2.430 AFTER BEND	(,295	2.430	,295	2,430	
N 5			2.409			. 275	2.421	
NG	· · · · · · · · · · · · · · · · · · ·		2,410			.245	2. 436	
N7 *			2.412	.778	2.416	.268	2.422	
N8 *			2.41	. 235	2,463	.228	2, 468	
N9 *			2.403	.240	2:450	.233	z.471	
00	·		2408			, 230	2,443	
101 +			2.410	.215	2,484	.205	2.485	8
02			2.421			, 257	2.403	
03 *			2402	. 260	2.426	.242	2,439	
04 *			2.415	. 275	2.422	, 270	2,431	
05 *			2.409	. 242	2,455	.242	2.466	
06 *			2400	. 2 42	2.428	.255	2.442	
07 *			2.400	.217	2.457	.217	2.456	
08 *			2.403	. 247	2,43/	.244	2, 434	
09 *			2.400	. 225	2,476	.227	2482	
Po			2.403			.250	2. 4.38	
P1 *			2401	.261	2.430	.260	2, 437	
_ P2 *			2394	.220	2.465	.217	2.480	
P3			2.405			.264	2.407	•
P4			2.402			.251	2.421	
_P5			2.404			.262	2. 437	
PG			2.419			,268	2.435	
P7	-		2410			.276	2.417	
P8 ×			2.40	. 233	2.466	.233	2.478	
P9 *			2.408	.269	2,418	. 268	2,425	
Q0 *			2.391	.250	2.434	.245	2.440	
Q1 *			2.409	.270	2.422	.269	2.426	
	***************************************							

£ 2,430	•
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. /				A.		PARTS	COMPLETELY EO ÉCOLORES	
/	TRIGGE START	R GUA	ard (i	AFTER AFTER	EATED)	FINISH	11	
PART#	2.430 Befole Bend	.295	2.430 AFTER BEND	(.295	2.430	7.295	2,430	
92			2.405			. 2 93	2.425	
0.3			2.403			.237	2.453	
Q4 ×			2.412	.279	2.457	.277	2.437	
05 ×			2.413	. 232	2.452	.234	2.451	***************************************
Q6 *			2.42	. 258	2,458	, z <i>s</i> z	2.460	
Q7 *			2.394	. 275	2,422	.266	2.423	
Q8			2.411			,285	2.404	
09 *	·····		2.414	. 233	×2.474	.234	2,470	
Ro *			2.405	.253	2,456	.251	2.455	
PI *			2.413	.263	7,428	.265	2.439	
R2 *			2.413	.250	×2.467	.240	2,467	·
R3 *			2.466	.233	2.490	. 221	2.482	
_R4			2.408			,230	2.400	
P.5 *			2.408	. 295	2.427	. 289	2.43/	
RG *			2.416	.245	2.423	.250	2.431	
P7 *			2.417	.230	2.477	.225	2.478	
_ R8 *	,		2.402	.261	2.436	.259	2, 435	
× R9 *		,	2.40	. 2 2 3	2.481	.221	2,490	
50 *			2.405	. 239	2,433	.253	2.446	
× 51 ×			2.415	.237	2.465	. 235	2,474	
52 *			2.412	, z 55	2.482	.233	2.475	
53			2.410			.260	2.414	
54 *			2.414	.232	2,474	. 226	2.474	
155 ×			2.408	.210	2.485	. 203	2.493	φ <b>6</b> 0
56			2.405			.255	2,438	
× 57 *			2.415	. 277	2,428	, 274	2.432	
58 *			2.4/0	. 247	2,453	.245	2.456	

2.430

4				A-		PARTS (	OMPLETELY	
M/7	TRIGGE START	BEND 4º30'	42D (	TEAT TE	EATED)	FINISHE	O & COLORED ,	
PART#	2.430 Befole Bend	.295	2.430 AFTER BEND	(.295	2.430	,295	2,430	
59			2,401			,280	2.401	
To x			2.403	. 258	2,435	.260	2.439	
TIX	··· <del>·</del>		2.410	. 254	2.474	. 247	2.474	
TZX	· 		2.390	. 263	2.423	.261	2,428	
T3			2.401			.277	2.406	
T 4 ×			2.403	. 263	2.424	. 262	2,427	
T5 *			2.408	, 228	2.456	.224	2, 468	<del></del>
T6 *			2.405	. 289	2,428	.285	2.438	<u> </u>
T7 *	<u> </u>		2.468	.272	2.417	.262	2,434	,
T8 *			2.420	.247	芝.464	.249	7,465	
Y-9 *			2.403	. 250	2.427	.245	2.421	<del></del>
UO			2.403		31 rue	,272	2.423	:
וט			2.425		125 out of	.245	2.431	
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## ROUTE:

B. F. Bullis

P. J. Hagen

meanue

# REMINGTON ARM\$ COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

Ilion, New York March 8, 1983

TO:

C.B. WORKMAN

FROM:

J.W. BROOKS

SUBJECT:

MODEL SEVEN 308 CALIBER STOCK CRACKING

AND FLOOR PLATE INVESTIGATION

#### Stock

o Testing of ten (10) Stocks, with reinforcing screws have been completed. Drawings have been transmitted and the plant is producing Stocks with reinforcing screws.

#### Trigger Guard

- o 250 Trigger Guards with rear tab altered and heat treat have been given to Production to put on 308 Caliber rifles with pinned Stocks. We will field test sixteen (16) of these rifles and endurance test four (4).
- o 250 Trigger Guards are on order from the vendor with an altered front hook. They will be shipped to us by March 16. They will be ready for testing by approximately March 23. They will be used to test rifles with thicker Trigger Guard Plates and Floor Plate bases.

### Trigger Guard Plate

- o We have eighteen (18) parts made from .080 material. They will be brazed to current floor plate bases and tested. They will be ready for testing March 11.
- o 250 parts from .080 material will be available by March 11. These parts will be used with the thicker floor plate base samples.

#### Floor Plate Base

o 250 parts from .062 material will be available in three to four and a half weeks or by April 8. They will have to be Model Shop machined and brazed by Production. They will be available approximately April 22 for testing.

### Floor Plate Cover

o 250 parts from .062 material will be available by March
15. They will be available for testing approximately March
25.

#### Latch Spring

o 300 new latch springs will be available by March 23.

The above five items will be used together to test the Model Seven in 308 caliber for floor plate opening conditions. When these parts are ready for testing we will have results from present endurance testing so that we will know if a heat treated latch is required. If it is required, we will use them when testing these five items.

JWB: js

G-88

#### DON'T SAY IT-WRITE IT

To J. Burks	
D. R.	
From N. June	

Date_____3-9

#9225\$ Hon Plate Bose

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"DON'T TAKE A CHANCE, THINK SAFETY IN ADVANCE"

G-88				
To			Date	
From				
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"DON'T TAKE A CHANCE, THINK SAFETY IN ADVANCE"

"DON'T TAKE A CHANCE, THINK SAFETY IN ADVANCE"

Meeting of 3-10-83 John Peters

Barry Rocks

Month

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CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

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· Floor Plate Cose

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Frank will call backs tomorrow

3-11 Dwayne said fant will shoot for 3-31 for jette to us, He will going info on what is regal for thether math, REMINGTON ARMS COMPANY Model Seven Rifle ads

March 11, 1983

THAT'S 1004 REMINGTON,
BUT 20% LESS SIZE AND WEIGHT.

a proof

A COMPARED to the AMERICAN BROKELLENGTH HURSHIT OF MODEL TORS,

FEEL THE DIFFERENCE.

(LOGO) MODEL SEVEN LIGHTWEIGHT

The new Model Seven is the lightest, fastest, most compact Remington bolt action rifle ever. And, like every firearm we've made in American since 1816, it has quality written all over it.

Once you see and shoulder the Model Seven, you'll know it's tailored for day-long duty in the toughest terrain, from steep hills to knee-deep bogs.

Every Model Seven is only 15" longer than a yardstick. And, weighing an honest 4 oz. above the magic 6 lbs., it's one of the lightest big game bolt actions you can buy. At any price.

And check these hard-hitting calibers, ideally suited to the Seven's compact dimensions: 308, 6mm Rem., 7mm-08 Rem., 243, and 222 Rem.

Sure, there are other so-called "lightweight" rifles out there. But most got that way by turning down their barrels, lopping off an inch here and there, or by using lightweight materials. Not so with Remington, we designed a completely new rifle.

Long man-hours in research and on the range helped us develop a lightweight rifle that's all new — from the ground up. Yet its action and specially tapered barrel are built to be as strong and dependable as those Remington barreled actions that have been preferred by target champions and custom gunmakers for decades.

The Model Seven's American walnut stock is cut checkered, satinfinished, and sports a distinctive Schnabel fore-end. Every part of this rifle, right down to its crisp trigger and steel/ways.

floor plate is made here in America. To the quality and accuracy standards shooters expect — and get — from Remington. The result is a high value lightweight rifle that's not 1" longer, I oz. heavier, or \$1 more expensive than it should be.

Try the Seven for size at your nearby Remington or read more about it in our free catalog. The Model Seven Lightweight, just one more way we're doing our best to keep you "First in the Field."

(Remington logo, Du Pont oval)

(small type at bottom of ad):

Remington is a trademark registered in the U.S. Patent & Trademark. Office by Remington Arms Company, Inc., Bridgeport, CT 06601.

PD-59-H

# REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington. **QUPOND** 

DETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

J.P. Linde S.W. Johnson

J.J. Burns

W.W. Cook H.C. Munson

D.E. Bullis

C.E. Ritchie

E.W. Yetter

S.R. Franz

D. Jackson

н. Roark W.L. Ganey

J.R. Snedeker

Ilion, New York March 14, 1983

TO:

C.B. WORKMAN

FROM:

J. W. BROOKS

SUBJECT: MODEL SEVEN LIGHTWEIGHT

The following items were discussed and agreed upon for future production rifles in .222, 6 mm, and .243 Caliber.

- Pinned Stocks (reinforcing screw) for all . future Stocks.
- o Production would use approximately 2,000 finished Stocks without reinforcing screws for .222 rifles.
- o Research will transmit trigger guard drawing with rear tab bent in opposite direction than it is now and also add heat treat specifications.
- o Research will furnish marked drawing of Model Seven trigger with extra relief cut on each side.

JWB∶js

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

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JWB:js

.308 CALIBER				
RIFLE - SN	Report Dated		Report No.	Report No.
	3-15-8 <b>Z</b>		82-0491	82331
	_		150-200 gr	300 C~
	Acc.	7 7 01	12 Types Ammo.	200 Gr. 12-17-82
	7-7-81	7-15-81	3-12-82	12-17-62
B 6226264	15 rds.	500 rds. 7 F.P.O.	180 rds.	20 rds.
256	15 rds.	500 rds. 1 F.P.O.	180 rds.	20 rds.
265	15 rds.	500 rds.		
237	15 rds.	500 rds.	180 rds.	20 rds.
276	15 rds.	500 rds.	180 rds.	
	Report #	Report #	Report #	Report #
	822811	822811	822811	828331
	10-18-82	10-28-82	10-29-82	200 Gr.
			No. 5 Design	
	10-25-82	50 rds. 200 Gr.	50 rds. 200 gr.	12-14-82
7600003	165 rds. 79 F.P.O.	No. 5 design ok		
08	165 rds. 59 F.P.O.			
13		(?) ok	ok	
16		(?) ok	ok	
22	165 rds. 22 F.P.O.	No. 5 design ok		
28		ok	ok	
34		ok	ok	
36	165 rds. ok	(?) ok	ok	
40	165 rds. 76 F.P.O.	5 F.P.O.	ok	
43	165 rds. ok	No. 5 design ok	_	
50		11 F.P.O.	ok	20 rds.
52		(?) ok	ok	
58	165 rds. ok	(?) ok	ok	
62		(?) ok	ok	
63		(?) ok	ok	
65		1 F.P.O.	0 K	
67				20 rds.
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88				20 rds.
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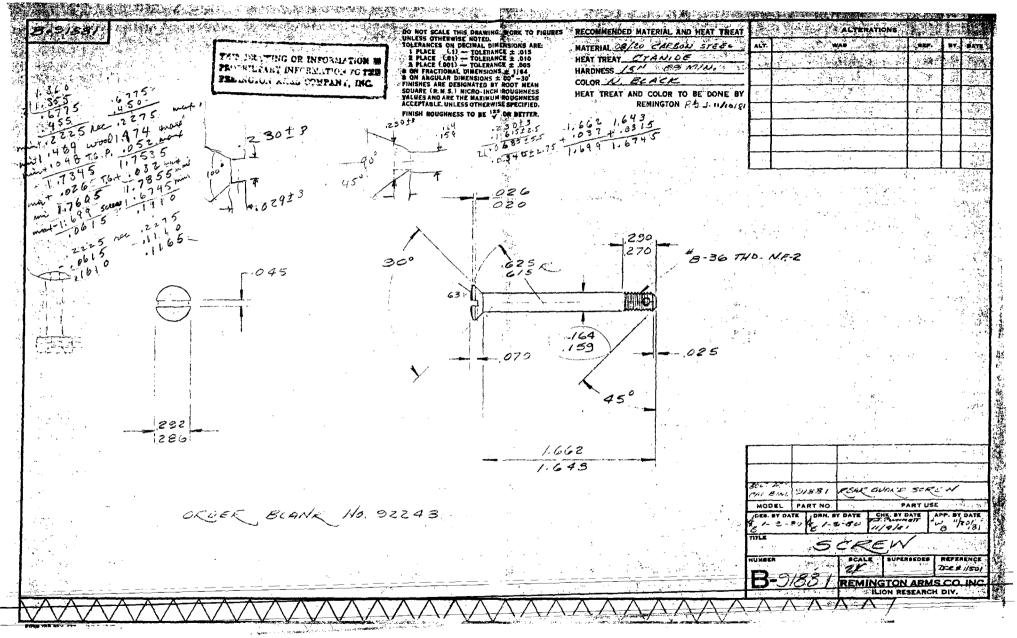
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139	165 rds. 52 F.P.O.	No. 5 design ok	OK .	Zordy
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.243 CALIBER	11-15-82	7-15-81		
B 6226266	75 rds.	160 rds.		
225	75 rds.	160 rds.		
234	75 rds.	160 rds.		
262	75 rds.	160 rds.		
272	75 rds.			•
271	·	160 rds.		
6 <u>MM</u>	,			
B 6226233	75 rds.	140 rds.		
263	75 rds.	140 rds.		
255	75 rds.	140 rds.		
230	75 rds.	140 rds.		
258	75 rds.	140 rds.		
7mm-08 CALIBER				1
B 622 <b>6249</b>		140 rds.		
232		140 rds.		
252		140 rds.		
220		140 rds.		
251		140 rds. F.P.O.		
.222 CALIBER				•
B 6364418		100 rds.		,
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421		100 rds.		
422		100 rds.		
417		100 rds.		JWB:js 2-23-83

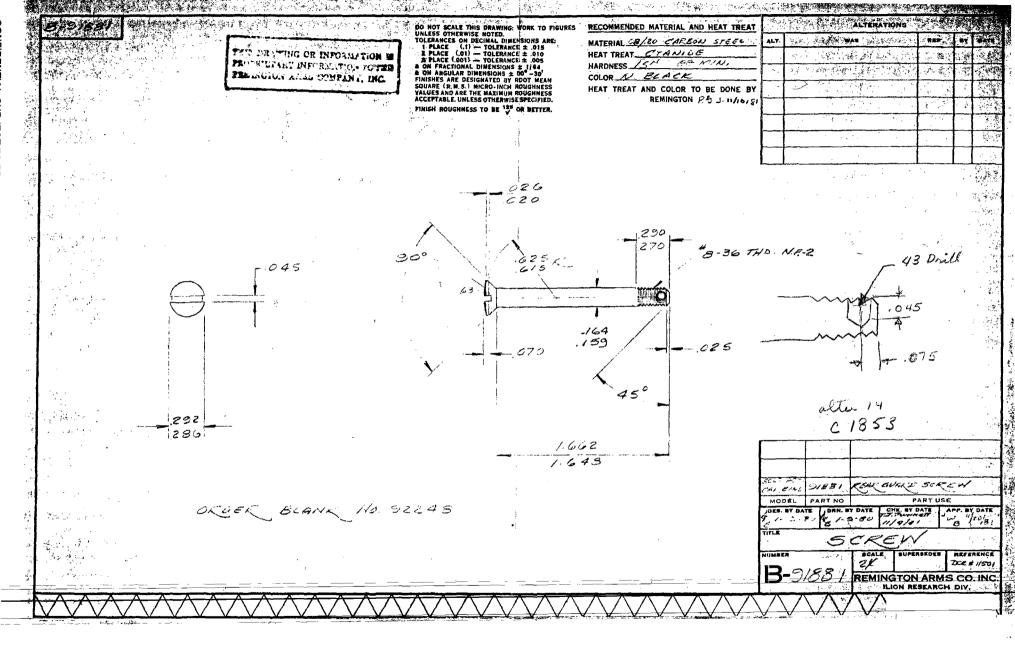
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_	75 nd	160 Nde
	25 No	160 pola
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271		160 rds
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	Still State State Comment	
B 6226233	75.0	·140 Ms
263	25 nds	THE HOLD THE
255	25 Ale	140
230	25 Nd4	140
258	75 MM	140
7 mm v 8 cal		
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J. L. P. P. S. S. S. S. S. S. S. S. S. S. S. S. S.
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as if we furnish xerews,
, 4-6-83
Furnile for Joets for plug + patch
(14 earle) for samples from my Tock



2529379



TO: J.W. BROOKS

FROM: D.E. BULLIS

SUBJ: M/TLWT FLOOR PLATE UNLATCHING.

TEN SCRAP STOCKS WEBE INLETTED . 030 SEEPER IN THETRIGGER GUARD PLATE AREA TO ALCEPT A GUARD THAT IS, 030 THICKER. 5 WERE PUT UP WITH . OBO THICK JUBO. PLATES WHICH WERE CARBURIZED & S WERE PUT UP USING REGULAR (UN-HEAT TREATED) PLATES! ALL RIFLES HAD . 3.050 THICK FLOOR PLATE COVERS. STANDARD LATCH & SPRING. · HEAT TREATED, BROWNER SOME THIS GREWATING A-830 LOTTEN CUT INTO NOTCH FOR DES THICKER GUARD PLATE. ALL WERE FIRED FROM HEAVY JACK WITH 308 CAL. - 180 P.S.P. FORTY ROUNDS WERE FIRED THRU EACH RIFLE WITH NO OPENINGS. TEN STANDED TRICKER GUARAS HAD , 030 CUT INTO NOTCH TO FIT PLATESIE RE-SHOT ABOVE TEST. TWO GUARAS FAILED. (LATCH OPENED) HEAT TREATED BENT GUARDS WERE PUT BACK ON THESE TWO GUNS & RE-SHOP, WITH NO COVER OPENINGS.

RD-6738 Rev.	380	-		J.A.	Broom	ke DCR		169	
DESIGN C	HANGE REG	DUEST (DO	!R)				<del></del>	<del></del>	
	OR	(	,			Sheet _		- 10 -	
TRANSMI'		RAWINGS /	PARTS EST		Request	ed By	Changed	Ву	Date
					REA	ı.	D.E.	3.	3-23-83
					Originat	ing Date	Tran	smittal	Date
					3-2	23-83	3	-23	-83
Model		Part 1	Name / Sat			Drawing			No.
FLWT	TRIC	GER				C-15	280	152	280
10	TRIG	GER	BLAN	K		d-91			3/2
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	n of Change	<del> </del>				· ·			·
	onal Change Mechanism l rance	Revision		-				-	
C	Committee ar	d approval	nanges to curre of DCR by Div	. Manager. O	n models N			ion,	
( ) Other	the above cha	nges require	approval of D	iv. Manager O	nly. —	Loug	_ (	ull	lis .
			4 :			Designer S	ignature	)	
Reason for	Change:	Toll	low for	mare	ele	non		مده	علميد
- of he	green for		1 0 0 CL	esemble	1				

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

Disposition of Parts on Hand: (check below)

( ) Use inventory

( ) RD 6589 Attached

( ) Scrap

# MICRO DCR # 11694 Sheet Z of 2

#### DESIGN CHANGE REQUEST and TRANSMITTAL OF DRAWINGS

Dwg. No.	Rev. No.	Recommended Design Change - Reason - Di sposition of Parts
£9/9/2	,	REMOVE .025 AS SHOWN
	2	320 " "
		RE DIMENSION 1.179/1.175 TO 1.129/1.125 AS SHOWN
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-	4	
	5	ADD 1.433 AS SHOWN
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DESIGN C	HANGE RE	QUEST (DCR)			Sheet	/_ of/_
	OR					
TR <del>ANSMIT</del>	TAL OF D	RAWINGS / PARTS-LIST		Request		anged By Date
				7 8		S.B. 3/27/pa
					ing Date	Transmittal Date
		<b>-</b>		13-2	3-83	3-25-83
Model		Part Name / List			Drawing No	
KWT.	BOLT	HANDLE BLANK			0-922	27 52227
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Dwg. No.	Rev. No.	DC104 : = 000 : =	Design			
92227	4	REDRAW & REVISE	A.S	540	WD.	· · · · · · · · · · · · · · · · · · ·
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Classification ( ) Function ( ) Safety ( ) Appears	mal Change Mechanism ance	Revision the above changes to current mo	dels requ	ire approv	val of Operati	ons
C	ommittee ar	nd approval of DCR by Div. Mana	ager. On	models N		
tl ( ) Other	ne above cha	nges require approval of Div. Ma: .	nager ON	ILY. 	Long 6	Sullis
( ) • • • • • • • • • • • • • • • • • •					Designer Sig	nature
Reason for	Change :	change in nece	t ar	ia	are	required
by 1	Lendon	so be can	mak	e Bolt	Handle	without
cra	ckins	•				
Disposition	of Parts on	Hand: (check below)				
( ) Scrap	( ) Alt	er () Use inventory	(	) RD 65	89 Attache	d
APPROVEI	, I.	112 Bearl.			(P.E.&C: if p	part is either scrapped or al
AFFROVEL	<del></del>	-24-83			<del></del>	
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J. M. Broake MICRO

DESIGN CHANGE REQUEST (DCR)				Sheet		_ of	
TO AMENIE	OR TRANSMITTAL OF DRAWINGS / PARTS LIST			ted By	Change	d Bu	Date
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			<del></del>	ting Date			al Date
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Model		Part Name /	<del></del>	Drawing	No.		art No.
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RD-6738 Rev. 380

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#### PARTS LIST CHANGE NOTICE (PLCN)

#### TRANSMITTAL OF DRAWINGS / PARTS LIST

Requested By	Requested By Cha		Date
RED	A	EB	3-17
Originating Da	te	Transmi	ttal Date
3-17-83		3 - 1	8-83

(PLCN) Use form below if part number is changed / add - used, or superseded.

	Drawing No.	Part No.	Part Name	Qty.
Current Listing	C- 31305	91905	MAGAZINE SPRING 222	1
New Listing	C-91133	91133	MAGAZINE SPRING 222	1
Current Listing				
New Listing				
Current Listing				
New Listing				
Current Listing				
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Current Listing				
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New Listing				
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Current Listing				
New Listing				
	NOTE: Please m	ark your Parts Li	st to agree.	
(V) Superseded P	art is Obsolete (ch	eck disposition b	elow)	
( ) Use Up		) Service Repai		
( ) New Part is:	(V) Steel ( ) I	Powder Metal (	) Assembly ( ) Wood Purchased (	) Othe
APPROVED:				

J. A. Brooks RD-6738 Rev. 380 DESIGN CHANGE REQUEST (DCR) OR TRANSMITTAL OF DRAWINGS / PARTS LIST Requested By Changed By Date T.W. BROOKS TT. PLUNKSIT 3/25/8 Originating Date Transmittal Date 3-19-83 3-25-53 Model Part Name / Drawing No. Part No. 2W7 RIGGER GUARD - BLANK C-92249 92249 Dwg. No. Rev. No. Design Change ?*92249* CHRNGE OF BEND. 30 1 10 201 // 40 300 13 11 Classification of Change ( ) Functional Change ( ) Safety Mechanism Revision ( ) Appearance NOTE: Any or all of the above changes to current models require approval of Operations Committee and approval of DCR by Div. Manager. On models NOT IN PRODUCTION the above changes require approval of Div. Manager ONLY. (2) Other Designer Signature TO PUT POSITIUE PRESSURE Reason for Change: SLOOR PLATE RASE

Designer Signature

Reason for Change: To PUT POSITIUE PRESSURE

Disposition of Parts on Hand: (check below)

( ) Scrap ( ) After ( ) Use inventory ( ) RD 6589 Attached

APPROVED: Appendix GM. 3/14/23

3-24-83

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TRANSMIT	TAL OF D	RAWINGS / PARTS LIST		Request	ed By	Changed		Date
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				Originat	ing Date	Trar	ısmittal	Date
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Model		Part Name / List			Drawing	No.	Par	t No.
LWT	RE	CEIVER			492	470	92	470
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92470		OBSOLETE		WG.				
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DCR #	116	91		
Sheet	2	of	2	

#### PARTS LIST CHANGE NOTICE (PLCN)

#### TRANSMITTAL OF DRAWINGS / PARTS LIST

Requested By	Cha	inged By	Date
Originating Da	te	Transmitt	al Date

(PLCN) Use form below if part number is changed / add - used, or superseded.

	Drawing No.	Part No.	Part Name	Qty.
Current Listing	£92470	92470	RECEIVER (243 CAL.)	1
New Listing	D-91876	9/876	٤,	1
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( ) Superseded Pa	rt is Obsolete (che	eck disposition be	elow)	
( ) Use Up	( ) Scrap (	) Service Repair		<del></del>
( ) New Part is:	( ) Steel ( ) F	Powder Metal (	) Assembly ( ) Wood ( ) Purchased (	) Oth

SALES

DEPARTMENT

### Remington Remington Remington

Quick Facts About REMINGTON PRODUCTS

10 01 1.W. BROOKS 1LION

cc: House Force

Bridgeport, Connecticut March 24, 1983

#### TO THE FIELD FORCE:

You have already received a request to contact your jobber customers, instructing them to hold further delivery of any Model Seven rifles on hand and to supply you with a list of dealers who have received delivery of Model Seven rifles.

Our ultimate intention is to update all Model Seven rifles shipped to date by means of a return to the nearest Remington warranty gunsmith service location or to Arms Service in Ilion.

We have discovered that if a Model Seven rifle is disassembled after it leaves the factory, it is possible for the rifle to be reassembled incorrectly, producing off-center trigger alignment that might cause subsequent malfunction of the trigger and accidental firing of the rifle. The updating service on the rifle will eliminate the possibility of such incorrect reassembly.

To accomplish this, you are requested to obtain:

- 1. A list of all Model Seven rifles and matching serial numbers still in an individual jobber's inventory.
- 2. A list from the jobber of the names and addresses of dealers to whom Model Seven rifles have been shipped, including serial numbers.

Both jobbers and dealers will then be contacted by Product Service with instructions on how to have the rifles updated. Consumer purchasers of Model Seven rifles will also be contacted by Product Service with a request and instructions to have the rifles updated.

#### REMINGTON ARMS COMPANY, INC., BRIDGEPORT 2, CONN.

Form No. RD 451

Printed In U.S.A.

Field Force Page 2 March 24, 1983

In all contact with jobbers, dealers, and retail customers on this subject, it is important to emphasize that the potential malfunction is remote, can occur only on a Model Seven rifle that has been disassembled and subsequently reassembled outside the factory, and that the update applies only to Model Seven rifles and not to any other Remington models.

This update is being incorporated into all Model Seven rifles to be shipped in the future.

Sincerely,

E. J. Conroy Director of Sales

EJC/dr

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B6226241

7600142

7600141

B6226252

B6226249

7 MM - 08 rifler To But Jay Bunded actions G-88

#### DON'T SAY IT-WRITE IT

То	C. B. WORKMAN J. Brooks	Date April 4, 1983
	J. P. LINDE J/L	

This is a file copy of deviations we made on the Model Seven LWT. The letter was written to describe the changes and the reasons for the changes at the time.

This is a copy for your files.

JPL:hv

"YOUR SAFETY ATTENTION MEANS ACCIDENT PREVENTION"

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#### REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.



xc: R.E. Fielitz

H.K. Boyle

H.C. Munson J.P. Linde

J.W. Brooks

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

Ilion, New York April 7, 1983

TO:

C.B. WORKMAN

FROM:

C.E. RITCHIE

SUBJECT:

MODEL SEVEN NEW STYLE TRIGGER EVALUATION

The purpose of the evaluation was to analyze the effect of removing material from both sides of the trigger to allow additional trigger clearance. Three analyses were performed as follows:

- John Brooks, Supervisor Current Firearms Design evaluated the effects of stack-up of dimensional tolerances;
- 2. Scott Franz and Ed Yetter, Jr. Basic Systems Research Group evaluated the theoretical aspects of the new trigger compared to old style trigger during a drop jar-off test and
- 3. The Research Test Lab performed a physical drop/jar-off test on both the old and new style triggers.

Results of these analyses are as follows:

 With the new style trigger cuts an additional .0135" per side is achieved. To: C.B. Workman -2-4-8-83

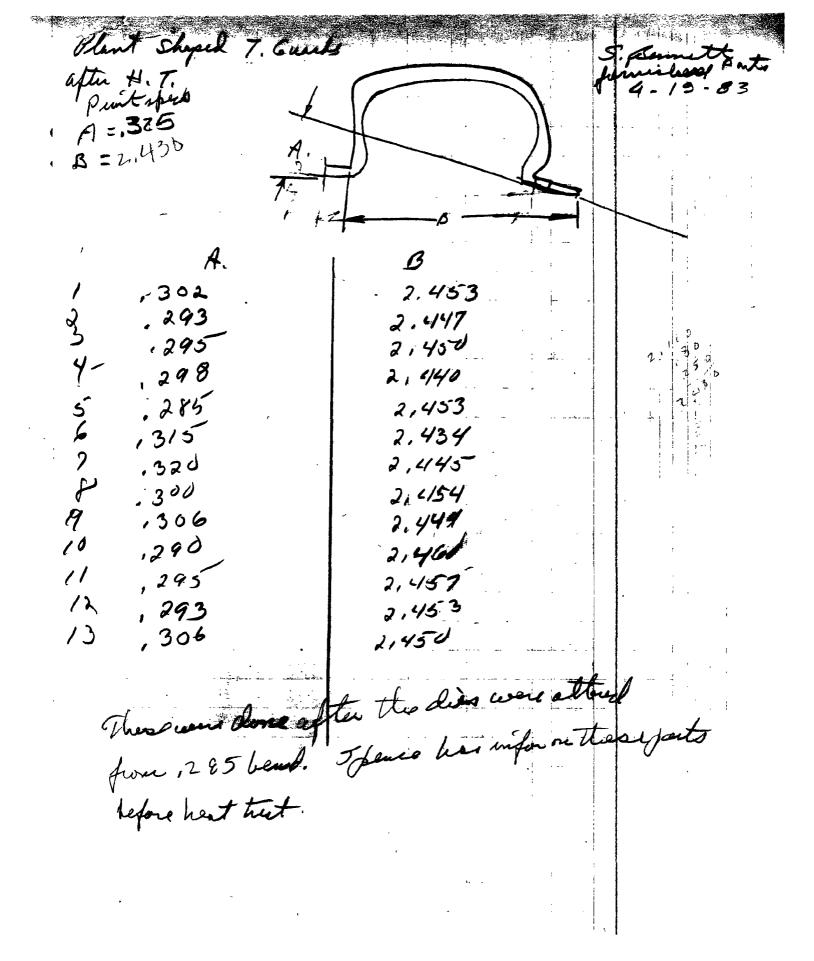
2. The theoretical calculations indicated there is a 10% greater moment of inertia with the new style trigger over the old style trigger.

3. Drop and jar-off tests indicate the new style trigger to be as good "as the old style". The new style trigger also meets or surpasses SAAMI jar-off test requirements.

Overall results indicate the new style trigger should be a satisfactory replacement for the old style trigger.

If additional information is needed of test or evaluation reports, please contact me.

CER: js



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Summary of Testing 4/15/83 Model Sev-N

- 12 / 1-1-1-1

Heavy makerial Floor Plate assemblies.

110

Assembly: Rear hole drilled out on all guns Riled magazine box hole in stock on 2 guns All guns weeded latch coverage adjustment

adjustment was difficult due to thick material majazine box bends whin adjustment is made. Bguns worded mag, box repairafter latch coverage adjustment.

hab Shooting: 9 gone shot: 10 ands with old grands 10 rads with new guards

5 guns F.P.O. with old guards I gun F.P.O: with new goord Zguns took zonds in Bix.

Field Shooting: Field Function Test 135 ruds total assorted ammo types.

> 8 guns, 10 FP.O. 3 guns took only 3 rad, in mag. 2 guns had I stem high each I gun had 1 bolt override Replaced Trigger quard to vendor port on 4 guns half way through tof -No problems.

GUN#

3489 - Assembly: rear stock hole drilled out Magazine box hole in stock filed hab shooting: No floor plate openings in 4th round into magazine loads hard. 10 rads with old Trigger Guard No Floor plate openings in 10 rads with New Trigger award Field Shooting 135 rnds. No mal suretions 3136 Assembly: rear stocle hole drilled out. hab shooting: 5 F, P.O. in 10 ruds with old Trigger Guard. No F. P.O. in 10 mads with New trigger guard - magazine took only 3 rads Field Shooting: Only 3 rads fit in mag during entire test. I stem high 3748 Assembly: rear stock tole drilled out 4th round in magazine loads hard hab shooting: No F.P.O. in 10 ruds with old trigger guards. NO F.P.O. in 10 rads with New Trigger guard. Field shooting: 135 mods - No. malfunctions 3429 Assembly: Rear hole in stock drilled out Magazine box hole is stock filed 4th round in magazine loads hand. hab Shooting: 2 F.P.O. in 10 rads with old Trigger Good No F.P.O. in 10 ands with New Trigger Guar Field Shooting: 3 rnds only in magazine entire test

GON# Assembly: Drilled rear hole in stock 2905 hab Shooting: NO F. P.O. 10 rnds old Trigger guard. No F. P.O. 10 rads New Trigger goard. With rad. in magatine loads hard. Drilled out rear hele in stock Ass-mbly: シィクク hab shooting: No F.P.O. lorads old Trigger goord. No F.P.O. 10 ands New Trigger grand. Only took 3 ruds in magazine Sield Shooting: No malfunctions Assembly: Drilled rear hole in stock 3319 Lab shooting: 7 F.P.O. in 10 ruds old Trigger Good NO F.P.O. in 10-NUS New Trager Guard Field Shooting! No malfunctions 2962 Assembly: Drilled rear hole in stock tatch opening too hard - opening spring Bolt hundle would not close - in to-Grence with stock - filed stock Lab Schooting: 4 F.P.O. of 10 rads old Trigger Good 4 F.P.O. of 10 rnds New trigger Good, Field Shooting: Did not include in field test. further work will be done with this gun. Problem lies with bad Trigger guard

causing poor latch coverage.

Model 7 - Magazine Capacity Investigation

Test Description: Magazins springs were altered as listed below to determine if these changes would eliminate the follower catching on the magazins box floorplate base edge caused by misalignment of the assembly.

1. Shortened .100" - follower side

2. "" - floorplate side

3. Shortened .100" on both sides

cut ./00

2. cut .100" + 1 =

3. - cut.100"

f rifle from the field test on 4-15-83 was used for the test sing this nifle would only take 3 rds in the magazine. All 3 spring configurations were assembled in this rifle and dumny rds were loaded to determine the magazine capacity.

iesults: None of the three spring configurations about improved the loading of the magazine. In some instances four new could be loaded with were difficulty with the whaltered springs, but this was also the case with the unaltered spring.

SRF 4-18-83

Drach

#### REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PETERS

xc: C.B. Workman L.B. Bosquet D.E. Bullis S.R. Franz

E. Yetter, Jr.

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

Ilion, New York April 19, 1983

TO:

J.W. BROOKS

FROM:

C.E. RITCHIE

SUBJECT:

MODEL SEVEN THICK FLOORPLATE ASSEMBLIES

A mismatch exists between the Model Seven floorplate base and the magazine box. This mismatch can cause difficulty in loading a fourth round in the magazine. Testing to date indicates the thicker base assemblies greatly aggravate this condition.

Eighty Six (86) guns were built by Production for Research with the thinner assemblies and no magazine loading problems were found. Recently, Research built eight (8) guns with the thicker assemblies and three (3) guns would take only three rounds in the magazine and one other had occasional loading problems. It is, therefore, the Test Lab's recommendation to stop the order for the thick floor plate bases until this condition can be rectified.

CER:js

Action on Existing recentles.

(2) Action on permanent fix
Schedule for completion

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

3D-69-B

#### REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington OPOND



xc: C.B. Workman

L.B. Bosquet D.E. Bullis S.R. Franz

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

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Ilion, New York April 19, 1983

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CER: js

John

4-20-83

Special 70% Stocks

are at white wood sand.

Should be nearly complete

mid to Sate next week. We'll

probably have to "feed" them to

you, Like 30-50 per day.

Que .

## Model Seven TO: J.W. Brooks Notes and recommendations FROM: EW Yother S.R. Franz

- · If the following are encountered, replace the Trigger Guard:
  - 1. In the pushing through trigger guard 2. in adequate coverage (150%)
- Do Not adjust coverage by prying between box and Floorplate base.

  Use this adjustment for Cover to stock clearance Only

Caution: It is easy to distort the magazine box when mating this adjustment with the thick Floor Plate assemblies. It is possible to dimple the box (at the very least). This dimple can cause magazine loading problems.

- The Old style latch springs are recommended.

  New springs make latches more difficult to

  work (aug. force 8.2165). Old springs work

  much better (aug. force 5.0165). No floor plate

  openings were found during fining with the old

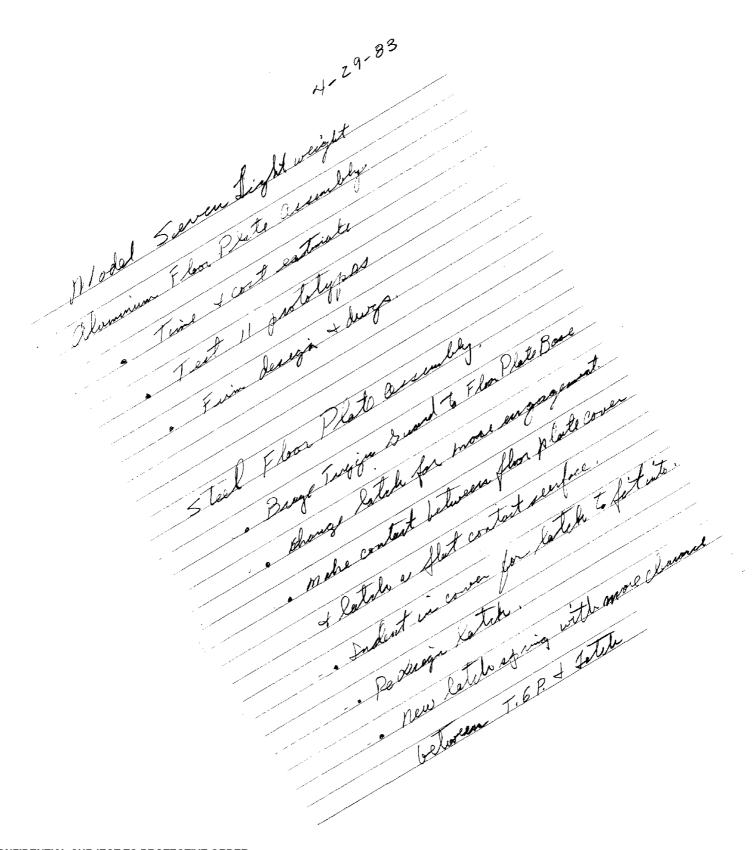
  springs:
- hatch coverage and therefore possibility of floor plate openings are very sensitive to the shape of the trigger guard. This shape cannot be governmented due to heat treatment. This senset with can be greatly reduced by a clearance cut in the back of the floor plate latch. It is recommended that dies be changed to accommodate this cut.

Floor Plate base to Magazine box mismatch left to right must be corrected to reduce loading problems. This can be done by filing the magazine box hole in the stock.

Floor Plate base to Magazine box mismatch front to rear will cause loading problems.

Redesigning the floor plate base to eliminate the mismatch is the only good solution to this.

Floo Plate Baro (250)
, 250 David 3-31-83
· To Production for machining
, 50 to model slep 4-6
· 200 to model slag 4-7, Finished 4-13
· 10 To Brogs 4-11-use current fisterse.
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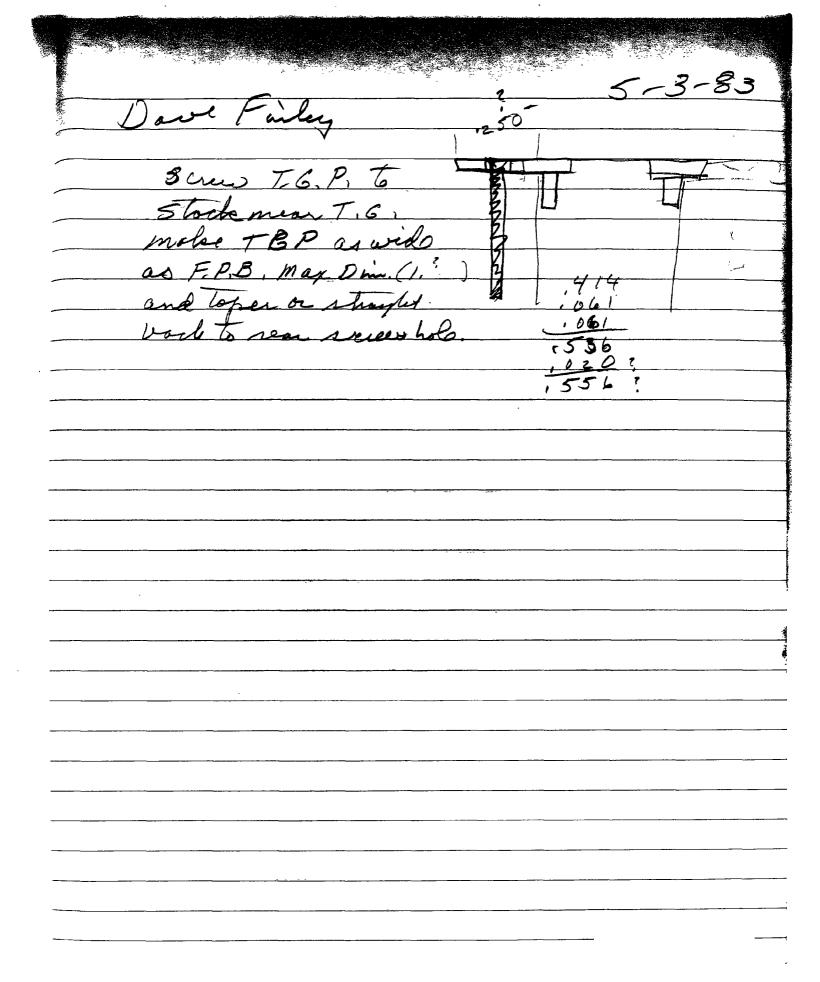
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7/7-	Floor Plate Base	brazed to T.G.	Tab

Tab Biased	to Rear + Brazed	ž.
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3433 10 3366 20 3493: 20 3676 20	0 .0301 Y 0 .0280 Y 0 .0301 Y	4.0 5.2 3.8 4.6
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RD-69-B

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE





Doug XC: Y

XC: J. W. Brooks
R. A. Jackson
J. B. Mroz
R. L. Snedeker
C. B. Workman

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"____

May 6, 1983

TO: J. R. SNEDEKER

FROM: G. E. BARNES Day Som 3

#### - M/7 LATCH SPRING MEASUREMENTS

DIMENSIONS MEASURED:

.100 Diameter

.250 Diameter

.015 - .016 Mat'l. Thickness

.393 - .423 Dimension (See attached marked print)

PROCEDURE:

- 1. Take 30 pieces randomly from a lot size of 8,700, the only lot of M/7 latch springs on the plant. (Marked with Pen, 1-30)
- Fit ".250" diameter with pin (Snug fit to check actual dia.)
- Fit ".100" diameter with pin (Snug fit to check actual dia.) (This fit is dia. "A")
- Square the spring to optical comparator (20X) and measure distance from inside of .100 dia. to inside of hook (See marked drawing dimension "B")
- 5. Add ½ diameter "A" to dimension "B" to obtain dimension "C" which is the distance from the center of the ".100 dia.", as the hinge pin sees it, to the inner hook surface.
- 6. Measure material thickness (20X Optical Comparator).

#### M/7 LATCH SPRING MEASUREMENTS - Cont.

QR - 000059

RESULTS: All dimensions checked were within model drawing specifications on all thirty pieces.

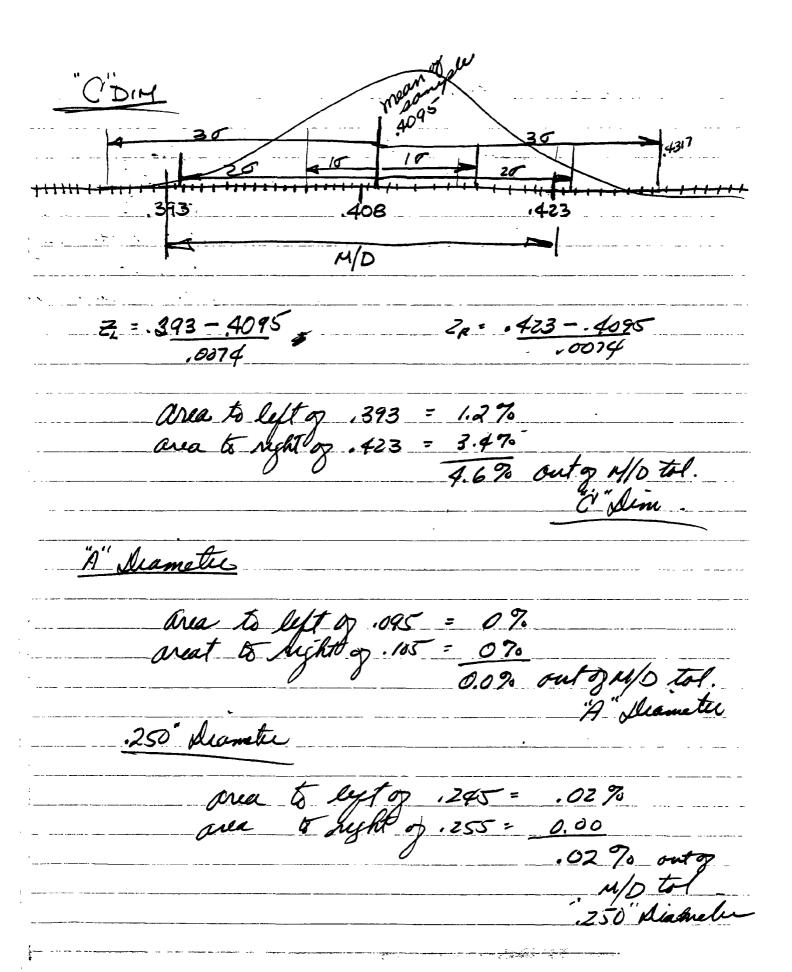
DIMENSION "C": Model Drawing = .408  $\pm$  .015 Mean = .4095 Sample Std. Deviation= .0074 Range = .393 - .422

DIAMETER "A": Model Drawing = .095 - .105 Mean = .1003 Sample Std. Veviation = .0007 Range = .099 - .102

".250" DIAMETER: Model Drawing = .245 - .255
Mean = .2495
Sample Std. Deviation = .0013
Range = .247 - .252

MATERIAL THICKNESS: Model Drawing = .015 - .016
Mean = .0152
Sample Std. Deviation = .0004
Range = .015 - .016

GEB/cac JRS JRS



M/4	LA	TCH	T	RING	M	EASUREME	2TM
						DRAWING	

05 May 83

DIECE Jumber	.250 DIA.	.100 DIA "A"	.393423 DIMENSION "C"	,015016 MATERIAL THICKNESS	
UMBER	(.001 INCH)	(+001 INCH)	(1001 INCH)	(*001 INCH)	
1	252	100.5	422	16	1
2	248	99.5	405	16	2
3	251	99.5	415	15	3
4	250	100.5	413	16	4
5	<u>25</u> 0	100.0	410	15	 5
6	251	101.0	416	15	6
7	247	99.5	397	15	7
8	249	99.0	414	15	8
9	248	101-0	404	15	9
10	250	102-0	415	15	10
11	249	101-0	412	16	11
12	250	99.5	405	15	12
13	250	100-0	404	15	13
14	251	100.0	413	15	 14
15	250	100.0	399	15	15
16	250	101.0	393	16	 16
17	249	101.0	410	15	17
18	248	100-0	414	15	18
19	248	101.0	408	15	19
20	248	100.0	394	15	20
21	250	(01.0	416	16	21
22	250	99.5	412	15	22
23	252	100.5	422	15	23
24	248	101.0	414	15	24
25	248	100.0	410	15	25
26	247	100-0	402	5	26
27	250	100.5	4/2	15	27
28	250	101-0	409	15	28
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## QUOTATION

Aerospace

NYLOK @ SELF-LOCKING THREADED FASTENERS 11 THOMAS ROAD

HAWTHORNE, NEW JERSEY 07507

TO Remington Arms Co Inc

Ilion NY 13357

TWX: (710) 988-4140

DATE 6-3-83

YOUR REFERENCE Request

ATTN: Louis B Ferreira

Thank you for your inquiry dated 6-2-83

We are pleased to quote you the following prices:

QUANTITY	DESCRIPTION	PRICE	DELIVERY
10000	P/N 92248 8-36 x 31/32 St1 Slot Oval	77.50/M	1-2 Wks to Dril
	Pellet	L nd	2-3 Wks Insert the Pelle
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#### THE ABOVE PRICES WERE QUOTED FOR PROCESSING ONLY!

We appreciate this opportunity to quote you and look forward to receiving your order for our prompt attention.

Both prices and delivery dates quoted above are subject to confirmation and are not binding on the Seller until confirmed by written acceptance of Buyer's order. The Buyer in placing any order on this quotation shall be understood as accepting the conditions of the Seller's standard terms of sale printed on reverse side hereof.

Prices quoted are based on bulk packaged shipments, and are firm for 90 days, unless otherwise noted.

No product shall be returned without prior written approval

TERMS Net 30 days;

F.O.B. POINT: HAWTHORNE, N. J. WJL/pn

AEROSPACE NYLOK

FASTENER RELIABILITY 700BDLR A 26359 154 A 91988

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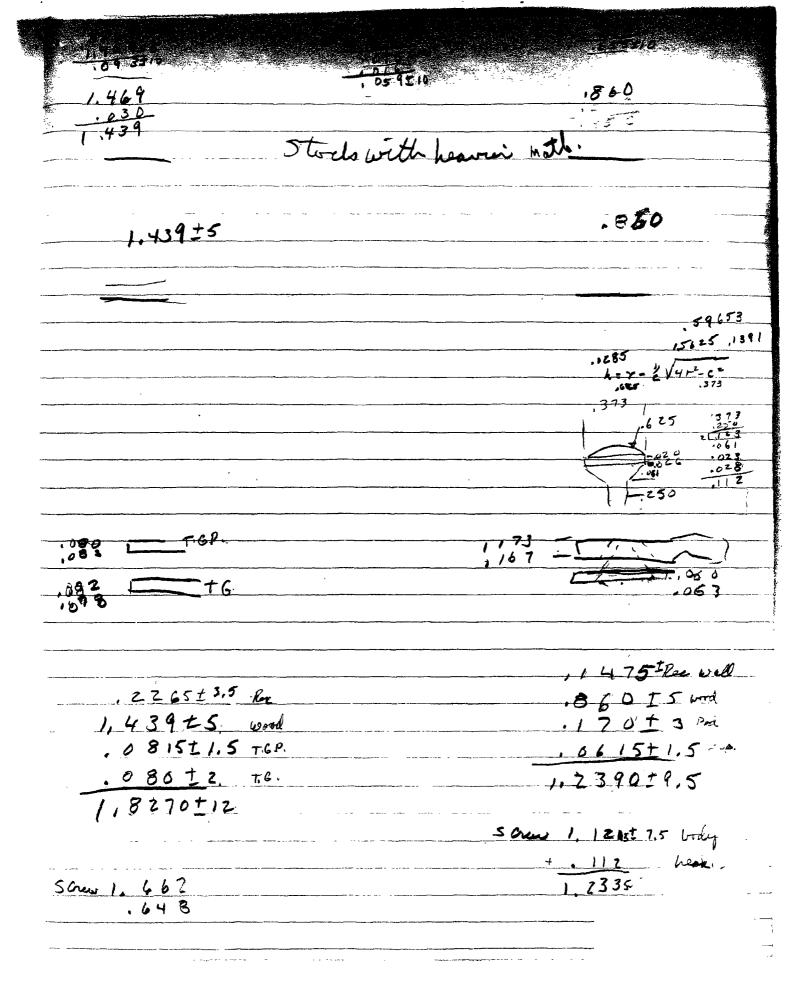
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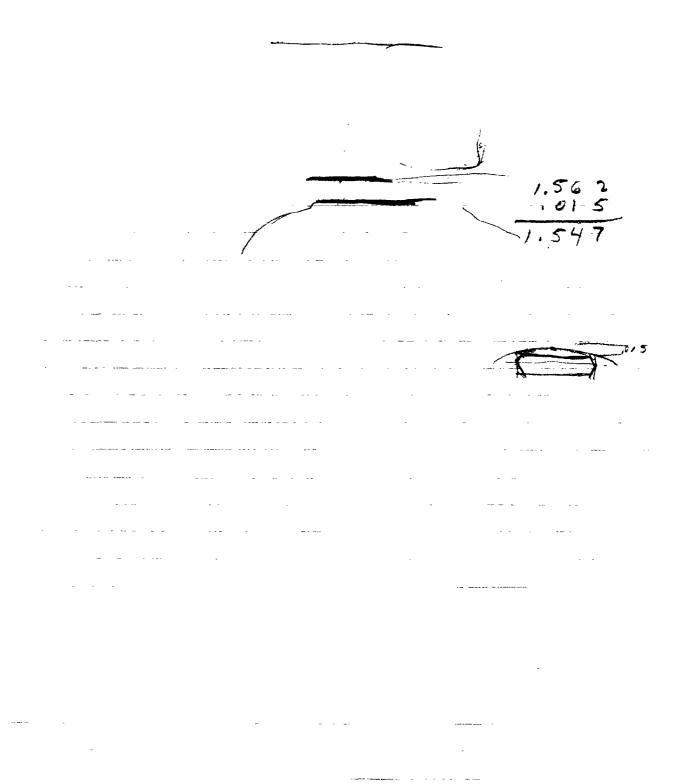
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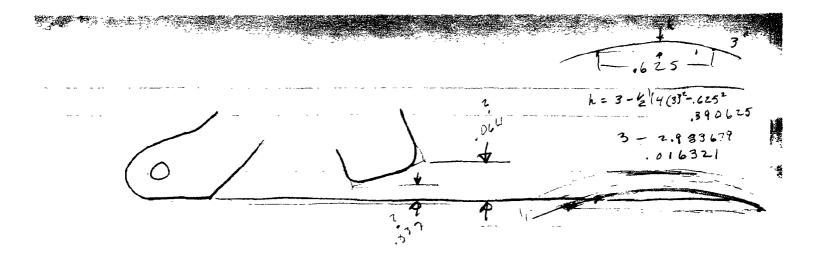
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"DON'T TAKE A CHANCE, THINK SAFETY IN ADVANCE"

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DEPARTMENT

## Remington Rem-O-Gram

Quick Facts About REMINGTON PRODUCTS

1C D1 1.W. BROOKS 1L10M

cc: House Force

June 22, 1983

TO THE FIELD FORCE

#### REVISED AVAILABILITY - MODEL SEVEN & MODEL 1100 SPECIAL FIELD

#### MODEL SEVEN 7mm-08 AND 308

We have been unable to meet our previous committment to have all Model Seven rifles in production early in 1983. Demand for our bolt action center fire rifles has been much stronger than expected resulting in heavy back orders on key calibers. Our efforts to clear up Model 700 back orders have delayed work on production of the Model Seven 7mm-08 and 308 calibers. At this point, it appears that product will be available in the first quarter 1984.

In consideration of this delay, we will alter our Early Order-Early Ship Program to enable distributors to replace their 7mm-08 and 308 orders. Distributors may place a single order prior to September 1 for immediate delivery for any specification in the Model 700 or 222, 243, and 6mm calibers in the Model Seven. The total number of rifles ordered may not exceed their total order for Model Seven 7mm-08 and 308. This additional order will qualify for the 4% Early Order-Early Ship discount and current anticipation terms.

#### MODEL 1100 SPECIAL FIELD 12 GAUGE

Endurance testing of the Model 1100 Special Field 12 Gauge has revealed a tendancy for fore-ends to crack after extensive shooting. We are not satisfied with this condition and have re-designed the fore-end retention system. Tooling required for the improved design will delay production until early 1984.

Twenty gauge guns are not affected and will be delivered on schedule. As with the Model Seven, we will extend the Early Order-Early Ship Program so that distributors may replace their Model 1100 Special Field 12 gauge guns with any other Model 1100 specification including the 20 gauge Special Field. They may

## REMINGTON ARMS COMPANY, INC., BRIDGEPORT 2, CONN.

Ferm No. RD 451

Printed In U.S.A.

#### MODEL 1100 SPECIAL FIELD 12 GAUGE (Cont'd.)

order up to the total quantity of 12 gauge Special Field shotguns previously ordered. This single order will qualify for the 4% discount and current anticipation terms if received by September 1 for immediate delivery.

Please review Model Seven and Model 1100 Special Field 12 gauge order positions with your distributors. Make certain they understand the one-time option available to them to replace the delayed product at Early Order-Early Ship Program prices.

Every effort is being made to expedite delivery of these products. We will keep you posted of further developments.

E. J. Conroy Director of Sales

EJC:WHF:daf

pp-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remineton **QUPOND** 

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"___

July 29, 1983

XC: L. Ferreira S. Johnson

R. Long

File

J. Brooks

TO:

J. Linde

FROM: D. Riccinf

REFERENCE: M/7 Steel Purchase Parts Components for Fire Control Area

The Steering minutes and other verbal communications say that all involved vendors should have been notified of the steel design obsolescence and that Purchasing should refrain from ordering additional parts.

It is my understanding that the die cast design will be released for build approximately 9-1-83, with first samples due in December '83. Upon approval, trial & pilot and production build leadtimes, the earliest phase-in would be late first quarter or early 2nd quarter 1984.

Therefore, in absence of any further communication, Purchasing will continue to order the steel components per the MRP schedule, but minimum quantities to facilitate the transition next year. We'll begin advising our vendor of the possibility of a new design (since it is not a proven one) in order to keep them from running any shelf stock or ordering excess raw materials.

Also, previous orders had been issued for certain thicker design components, but were placed on hold. Again, if not advised otherwise, all outstanding orders for tools, components or raw materials will be cancelled and invoiced according to all work performed prior to the hold notification.

Based on current inventories, it appears that additional orders will have to be placed toward the end of August for MRP requirements in December '83. We will proceed with the program outlined unless otherwise advised.

DDR/sjk

### ROUTE:

J. W. Brooks
D. F. Bullis
R. M. Frany
L. J. Hagen
T. J. Plunkett

Make Mark y representation of Proceedings	LISTENING To american consumers in history!
	Thank You,
	M. V. Jones
±	of these musels
	P.S. I'm a salesman, and would happily take-le responsibility for maning 10K as so These myself.

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## RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

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Stringth Test Ammunition Test Dry Cycle Test Photo/Video  Function Test Environmental Test Measurements Citier  Accuracy Test Customer Complaint Enquance Test  EXPLAIN 'N DETAIL THE REASON FOR THIS TEST:  MEASURE FORCE REQUIRED TO RELEASE LATEM USING  C.B. WORKMANS NEW DESIGN LATEM WITH REGULAR PINNED  SPRING YS. HALF WIDE SPRING.  OUTS RECUIRED:  3 - TEST GUNS  3 - REG PINNED SPRING & LATEM  MOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Requests are  DATE COMPLETED:  TEST COMPLETED BY: A TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED BY: A TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST COMPLETED:  TEST C		, _	
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# REMINGTON ARMS COMPANY, INC.

Distribution: J. W. Brooks C. E. Ritchie

D. E. Bullis

Remineton 

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

## "TEST RESULTS ONLY"

RESEARCH TEST and MEASUREMENT REPORT - Report No. 823191

M/SEVEN LWT. WIDE LATCH SPRING VS. NARROW LATCH SPRING POUND FORCE TO OPEN FLOOR PLATE COMPARISON

> R. Howe Prepared by:

Date Prepared: 11-15-82

Proofread and Cleared By:

J.H. Hennings ,

C.E. Ritchie.

Sr. Supervisor - Testing. Meas. & Mech. Analysis Lab

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	823191					
REPORT TITLE:	M/SEVEN LWT WIDE LATCH SPRING VS. NARROW LATCH SPRING POUND FORCE TO OPEN FLOOR PLATE COMPARISON					
MODEL(S):	M/SEVEN LWT.					
GAUGE OR CALIBER						
DATE:	11-15-82					
WORK ORDER NO.:	C-1856-000					
PART NAME:	Latch Spring					
DESIGNER/ENGINE	ER:					
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: Pound Force To Open Floor Plate					
6.	ENVIRONMENTAL TEST					
7.	AMMUNITION TESTING & EVALUATION - TYPE:					
8.	VISUAL EVALUATION - OUT OF GUN SAMPLE					
9.	ENDURANCE - NO. OF GUNS TESTED: 3					
	NO. OF ROUNDS PER GUN:					
	TOTAL ROUNDS FIRED IN TEST:					
	AMMO TYPE: MAGS; TARGET:					

RIM FIRE ____CENTER FIRE ____

November 16, 1982

'RESULTS ONLY"

TO:

J. H. Hennings

FROM:

R. Howe

REPORT TITLE:

M/SEVEN LWT. WIDE LATCH SPRING VS. NARROW LATCH SPRING

POUND FORCE TO OPEN FLOOR PLATE COMPARISON

### REASON FOR TEST

To measure pound force difference required to open floor using "Regular" wide pinned latch spring vs. narrow "Half Wide" pinned latch spring.

#### TEST PROCEDURE

Three (3) M/Seven LWT. from R. & D. Gun Room were set up with C. B. Workman's New Design No. 5 Latch and "Regular" pinned wide latch spring. Then pound forces were checked with Chatillon Spring Scale (three readings for each). The three wide springs were then replaced with narrow "Half Wide" springs and Lb. force to open, taken again (3 each) for comparison.

#### TEST RESULTS

		No. 1 Lb. Reading	No. 2 Lb. <u>Reading</u>	No. 3 <u>Lb. Reading</u>	Average Of 3 Lb. Readings
"Regular"	No. 1	7.25	7.75	7.50	7.50
Wide Spring	No. 2	8.75	9.00	8.00	8.58
	No. 3	11.50	11.50	12.00	11.66
"Half Wide"	No. 1	4.50	4.75	4.75	4.66
Narrow Spring	No. 2	4.00	4.25	4.00	4.08
	No. 3	4.25	4.50	4.25	4.33

Supplement Comparison Test On M/700 on the following page.

November 16, 1982

#### REPORT TITLE

Supplement: M/700 Trial & Pilot Classic 300 H & H Mag. Pound Force To Open Floor Plate For

Comparison To M/Seven LWT. Using Wide and Narrow Latch Springs.

## TEST PROCEDURE

Eight (8) M/700 Trial & Pilot "Classic" 300 H & H Mag.from Engineering were checked for pound forces to open Floor Plate (average of three readings each) with Chatillon Spring scale (0 to 10 lbs.) for a comparison with M/Seven LWT. w/"Regular" and "Half Wide" Springs on previous page.

#### TEST RESULTS

	Lb. Reading No. 1	Lb. Reading No. 2	Lb. Reading No. 3	Average of 3
Gun No. 1	6.50	7.00	6.25	6.58
2	7.00	7.50	7.75	7.41
3	8.50	9.00	9.25	8.91
4	8.25	8.75	8.50	8.50
5	5.75	6.25	6.00	6.00
6	6.75	7.00	6.75	6.83
7	7.50	7.75	7.50	7.58
8	6.00	6.25	6.00	6.08

Report# 8228//

TEMES OF M-7 -X-19

7 LATCH DESIGNS 1 to 5 B.K.
A WEB IN 11-5 PEED
A MOVIES ROMET #823811

# REMINGTON ARMS COMPANY, INC.

Remington

Distribution: C. B. Workman

J. W. Brooks

C. E. Ritchie

D. E. Bullis

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

RESEARCH TEST and MEASUREMENT REPORT - Report No. 822811

M/SEVEN "TRIAL & PILOT" FUNCTION TEST FOR FLOOR PLATE COMING OPEN ON FIRING - 308 CAL. & 7MM-08 CAL.

Prepared by: R. Howe

Date Prepared: 10-25-82

Proofread and Cleared By:

C.E. Ritchie.

Sr. Supervisor - Testing,

Meas. & Mech. Analysis Lab

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	822811
REPORT TITLE:  MODEL(S):	M/SEVEN LWT. "TRIAL & PILOT" FUNCTION TEST FOR FLOOR PLATE COMING OPEN ON FIRING. M/SEVEN LWT.
GAUGE OR CALIBER:	.308 & 7MM-08
DATE:	10-25-82
WORK ORDER NO.:	C-1856-000
PART NAME:	Floor Plate
DESIGNER/ENGINEER:	D. Bullis
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: Lbs. Pressure to Open Floor Plate
6.	ENVIRONMENTAL TEST
7.	AMMUNITION TESTING & EVALUATION - TYPE:
8.	VISUAL EVALUATIONOUT OF GUN SAMPLE
9.	ENDURANCE - NO. OF GUNS TESTED:
	NO. OF ROUNDS PER GUN: 165/20 Guns
	TOTAL ROUNDS FIRED IN TEST: 3,300
	AMMO TYPE: MAGS; TARGET:
	RIM FIRE CENTER FIRE X

October 25, 1982

TO:

J. H. Hennings

FROM:

R. Howe

REPORT TITLE:

M/SEVEN LWT. "TRIAL & PILOT" FUNCTION TEST FOR FLOOR PLATE

COMING OPEN ON FIRING

#### **ABSTRACT**

Ten M/Seven LWT. .308 cal. and Ten M/Seven LWT. 7MM-08 "Trial & Pilot" line guns were received from D. Bullis for evaluation. All twenty were "Live Fire" field function tested by R. & D. Test Lab.

## SCOPE OF TEST

To check for Floor Plate coming open on firing of live rounds.

## TEST RESULTS:

Of the twenty guns tested 50% showed low to high frequency of the Floor Plate openings when fired with 140 gr. and larger bullet weights.

### REPORT TEXT

Of the twenty guns tested, six of the ten .308 cal. and four of the ten 7MM-08 cal. (or 50%) had from one to very high occurrence of the Floor Plate falling open when fired (off the shoulder) using 140 gr. and larger bullets.

All occurrences are broken down as to gun number, shooter and bullet weight in Appendix "A". All other data and measurements in Appendix "B".

NOTE: High speed films of "Floor Plate Opening When Fired" are available in the R. & D. Photo Lab Library.

#### TEST PROCEDURE

#### A. Measurements

The following measurements were taken on all twenty guns tested:

Headspace "After Proof" - .000 inch.

Floor Plate Latch Release Force - .lbs.

#### B. Test Conditions

All twenty guns were checked in the Test Lab for Headspace after proof and Floor Plate Latch release forces (in pounds) were taken for each gun as follows:

Three readings each with 0 - 1 - 2 - 3 & 4 "Dummy" rounds in the magazine. Results in Appendix "B".

They were then taken to the Rifle Range at the Ilion Fish and Game Club to be live fired (from the shoulder) to a total of 165 rds each. (For a test total of 3,300 rds. for twenty guns.)

To check for Floor Plate falling open on firing. Results in Appendix "A".

"TEST RESULTS"

"APPENDIX "A"

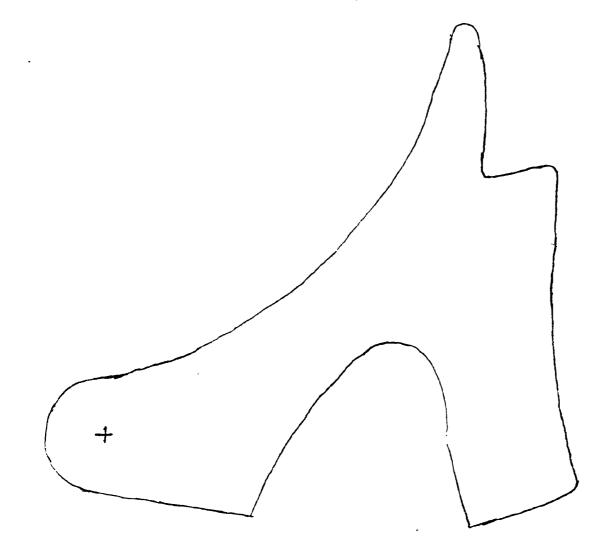
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ες † Šεγ		GUN # 1 * TIMESFLOOR	#2*		# Ý *	# 5" *	# 6	# 7	# 8	# 9	# /0	TOTAL PER SHOOTER	TOTAL FOR TEST 1650 RDS.	% FOR TUTALT
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10-20-82		(#TIME	S FLOOR	PLATE.	FELL OPE	N ONLY	· )- · · _ · ·				w.o.	# C-1856	-000
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3. H. WEAVER					2	27					30		
4, C DICKENSON					1	30	<i>1</i>				32		
S. D. JENNINGS					- 1 - 1	25					26		
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MY LWT. LATCH DESIGN #

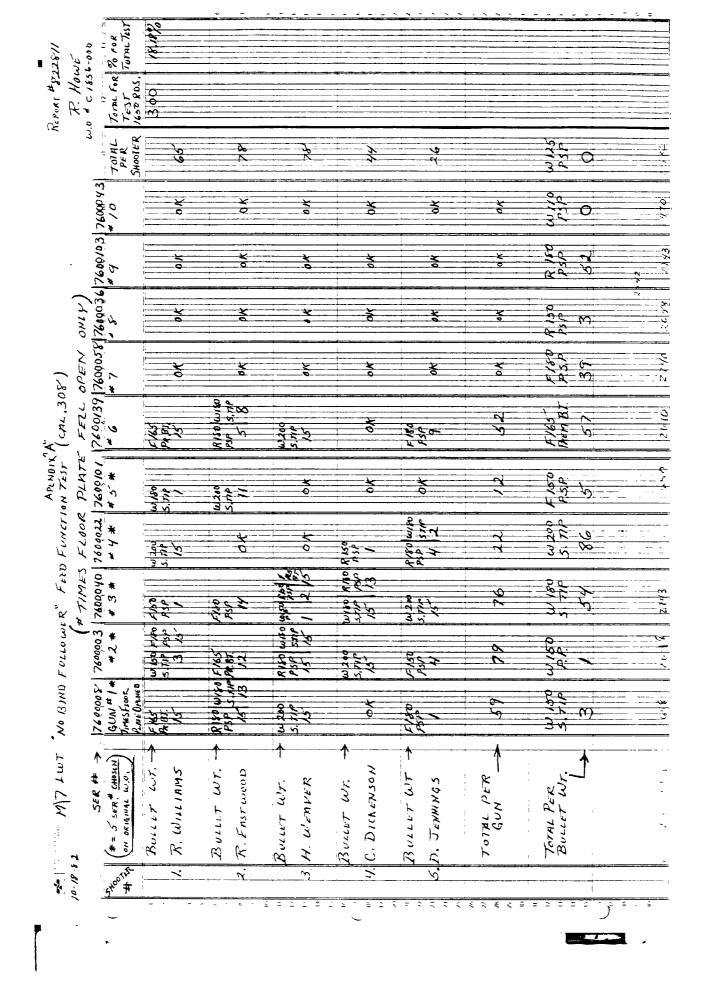
NOTE
- ALTERATIONS SHOWN BY DOTTED LINES -----

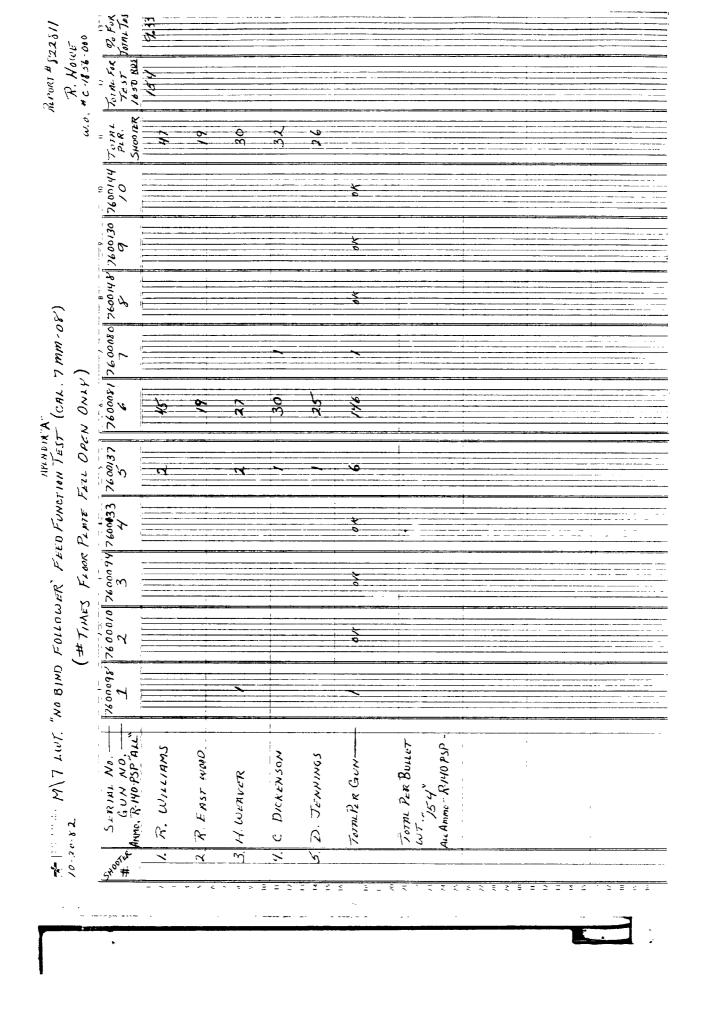


Report No.	52251	1

## RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	AR	EA OF TESTING
Developmental	Safety Related	Lingation
Design Acceptance	Competitive Eval	uation Warenouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STATS.  MODEL: 7 407  CAL **GACE: 23 4  BARREL TYPE: 7 A P 3.  PROOFED: YESNO	REPORT REQ'D.  FORMAL  TEST RESULTS CNLY  TEST TYPE	DATE REQUESTED: 10-2-2-1  DATE NEEDED BY: 10-132  REQUESTED BY: 2 200015  WORK ORDER NO: 01273
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EXPLAIN IN DETAIL THE REASON FOR TO		
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NOTE: NO firearms or parts will be tested in accompanied by a Work Request, an the Labs by the designer or engineer, to be filled out in detail. No Exception	d both are delivered to All Work Requests are	DATE COMPLETED: 11-3パン TEST COMPLETED BY: 12 パランペ REPORT DATE: 11-3-パン





10-25	~82. 	UT. TRIA					ASE FOR			ON FIRIT	<b>~ %</b>	HOWE -0	
.NO	M/7 LWT. (N) .308 SLR #	WEND SPACE MINT	O ROS III MAG.	ROS 14	ROS IN MAG.	ROS IN	Ros IN	AVG.	AVG FOR 10 GUNS				
1234567890	7600008 7600003 7600040 7600022 7600101 7600139 7600058 7600036 7600/03	1.005 004 004 005 405 004 004	3 3 5 7 3 3 5 7 5 3 4 6 7 3 7 5 6 7 5 7 5 6 7 6 7 6 7 6 7 6 7 6 7 6	MAG 2.15 2.00 2.33 4.66 3.75 3.75 3.75	2 16 18 18 18 18 18 18 18 18 18 18 18 18 18	MAG 2 33 2 33 2 50 3 76 3 76 3 83 3 86	MAG 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2 1/2 2	12.90 2.27 2.00 2.33 3.33 3.33 3.33	<b>&gt;.12.8</b> 5				
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"APPENDIX "B"

"CONTENTS"

All Data, Malfunctions and Measurements Not Contained
In Appendix "A"

PREVIOUS

MTE: 10-19-82

MODEL: 7 LWT

822811

BERIAL NO. X

CAL 7 MM-08

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FIELD	CYCLE	TEST	- CENTERFIRE
-			- ODMINIC IND

	FIELD CYCLE TEST - CENTERFIRE													REPROT NO.1 8228//								PAGE NO.									
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RO-48-B

# REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington /

Distribution: C. B. Workman

J. W. Brooks C. E. Ritchie

D. E. Bullis

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"____

"Supplement"

RESEARCH TEST and MEASUREMENT REPORT - Report No. 822811

M/7 LWT. "TRIAL & PILOT" FUNCTION TEST FOR FLOOR PLATE COMING OPEN ON FIRING. .308 CAL. AND 7MM-08 CAL.

Prepared by: R. Howe

Date Prepared: 11-3-82

Proofread and Cleared By:

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

> C.E. Ritchie, Sc. Supervisor - Testing, Meas. & Mech. Analysis Lab

Thean Detilue 11/16

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	822811 "Supplement"										
REPORT TITLE:	M/7LWT. "Trial & Pilot" Function Test For Floor Plate Coming Open on Firing308 Cal. and 7MM-08 Cal.										
MODEL(S):	M/7LWT.										
GAUGE OR CALIBER:	.308 & 7MM-08 Cal.										
DATE:	11-3-82										
WORK ORDER NO.:	C-1856-000										
PART NAME:	Floor Plate										
DESIGNER/ENGINEER:	D. Bullis										
TEST TYPE:											
1.	PHOTO LAB										
2.	STRENGTH TEST - NO. OF GUNS TESTED										
3.	FUNCTION TEST - NO. OF GUNS TESTED 20										
4.	ACCURACY TEST - NO. OF GUNS TESTED										
5.	MEASUREMENTS - TYPE: Lbs. Pressure to Open Floor Plate										
6.	ENVIRONMENTAL TEST										
7.	AMMUNITION TESTING & EVALUATION - TYPE:										
8.	VISUAL EVALUATIONOUT OFGUN SAMPLE										
9.	ENDURANCE - NO. OF GUNS TESTED:										
	NO.,OF ROUNDS PER GUN:										
	TOTAL ROUNDS FIRED IN TEST:										
	AMMO TYPE: MAGS,; TARGET:X										
	RIM FIRE CENTER FIRE										

November 5, 1982

TO:

J. Hennings

FROM:

R. Howe

REPORT TITLE:

M/SEVEN LWT. TRIAL & PILOT FUNCTION TEST FOR FLOOR PLATE

COMING OPEN ON FIRING.

(SUPPLEMENT TO REPORT No. 822811 SHOT ON OCT. 12th & 19th, 1982)

#### REASON FOR SUPPLEMENT TEST:

After the Field Test of 10-12-82 and 10-19-82 that showed 50% malfunction rate it was decided to change the design of the Floor Plate Latch on the M/Seven LWT.

Changes were made as follows:

Design No. O. Standard Current Production Latch

- 1. Standard Current Pinned
- 2. Standard Current Pinned and Clipped
- 3. Standard Current Pinned, Chambered and Clipped
- 4. Pinned, Chambered, Clipped and Extended Square
- 5. Pinned, Chambered, Clipped and Extended Angle
- 6. "Standard" Design of Aluminum

NOTE: All above Designs were placed in guns and shot in Photo Lab with the following ammo types; Cal. –  $\overline{.308}$  – W-200 – Silver Tip, Cal. – 7MM-08 – R-140-PSP. High Speed Movies of the above latch designs showing their respective success or failure are available in the Photo Lab Library. See Appendix "A".

Drawings of above designs in Supplement Appendix "A".

After observing the above movies, it was decided to Field Test, "on 10-28-82" Design No. 5 using both a wide standard production latch spring and a narrow "altered" production latch spring. Five of each spring type for a total of ten guns, to be fired 50 rounds each. Guns were numbered 1 through 10.

It was also decided to use ten M/Seven LWTs from production with the "current" standard (Design No. 0.) production latch and spring as a control group for this test. These were numbered 11 through 20 and also fired 50 rounds each.

Guns 1 through 10 with new Design No. 5 latch were set up as follows:

Numbers 1 - 3 - 7 - 8 - 9 with narrow "Altered" Spring Numbers 2 - 4 - 5 - 6 - 10 with wide standard spring

Results (of test on 10-28-82)

50 rounds W-200-S. Tip. shot in each gun.

Guns No. 1 through 10 with New Design No. 5 latch showed little or no movement of latch and only gun No. 3. using "Altered" narrow spring had any problem with Floor Plate falling open, while guns No. 11 through 20 (Control Group) had considerable problems with Floor Plate falling open and latch movement.

All Floor Plate openings and Latch Movement listed in Supplement Appendix "B".

## Follow-up Test for Design No. 5

On 10-29-82, guns No. 1 - 3 - 7 - 8 - 9 and guns No. 11 through 20 were equipped with Latch Design No. 5 and "Standard" Wide Spring. Then taken back to the Ilion Fish and Game Rifle Range and shot 50 rounds each with W-200 S. Tip.

## Results (Of Field Test On 10-29-82)

All 15 of the above guns with New Design No. 5 Latch and Wide Spring had no occurance of latch moving or Floor Plate falling open shooting 50 rounds each of W-200 - S. Tip.

Results of above Test in Supplement Appendix "C".

NOTE: "Opinion": All Take Down "Floor Plate" screws on M/Seven LWT. should be tightened at least 30 inch pounds to prevent flexing of Floor Plate on recoil.

M/Seven LWT. Latch Evaluation High Speed Film List (Available in Photo Lab Library)

			nal Gun ''	_	Ourrent'' .058 .022 .040	_	ld L. atch	Stayed (	Closed	Film 3D-1
Design No.	O.									
1 Shot		7MN	<i>I</i> -08		.140 gr	Bullet	(	Opened		Film 3D-2
Design No.	<u>Q</u> .									
5 Shots	1.	Ser :	No.		.003		(	Opened		Film 3D-3
	2.	"	• •		.010			,,		
	J.		,,		.103			Stayed		
	4.	"	"		.139			Opened		
	5.	"	,,		.028		ç	Stayed		
Design No. J. W. Bro I Shot	oks				l Latch v	w/.020 S	Sprin	g.		Film 3D-4
Design No.	2	Old	Late	h Pini	red & C	ipped				
		7M1	30-IV	1	40 Gr.					Film 3D-5
5 Shots	ì.	Ser.	No.		.003		;	Stayed		
	2.	"	"		.101			"		
	3.	,,	,,		.043			"		
	4.	"	"		.139			"		
	5.	"	"		.103		1	Opened		
Design No.	3	Mod	dified	Pinn	ed Latel	1				
		Pin	ned &	Chai	nbered (	& Clippe				Film 3D-6
4 Shots	1.		No.		.101		1	Opened		
	2.	**	"		.139					
	3.	"	"		.103			_		
	4.	"	"		.003 W	I/Protot	yped	Guard S	Shot No. 4 Only	7
Design No.	_ :	Fred	Mart	in La	tch "W/	Ball End	**			Film 3D-7
1 Shot			. No.			20-82				

Design No. 5	"Approved & N	iow In Use'' (W/Wi	de Sprir	ng)		Film 3D-8
3 Shots 1.	Design No. 5	Reg. Wide Spring,	Ser. N	o040	Stayed	
2.	Design No. 0	Reg. Wide Spring,	" "	.050	Opened	
3.	Design No. 5	Narrow Spring	" "	.040	Stayed	
	– Aluminum La ''' Seven Films V	tch V/Prototype Guard				Film 3D-9 " 10 " 11 " 12 " 13 " 14 " 15

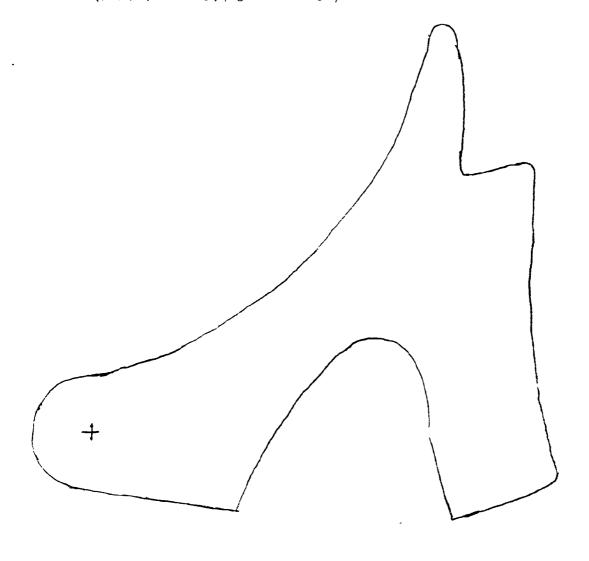
Supplement

"APPENDIX "A"

MY LW.T. LATCH DESIGN # O

CURRENT" STANDARD LATCH (FROM PRODUCTION)

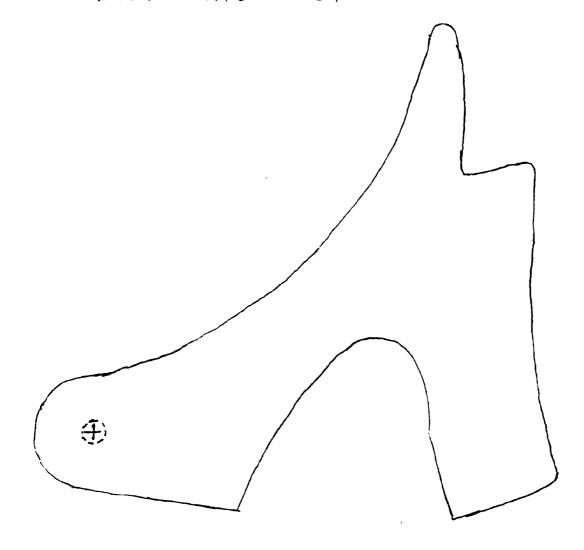
GLIERATIONS SHOWN BY DOTTED LINES -----



MY LWT. LATCH DESIGN # 1

"CURRENT" PINNED

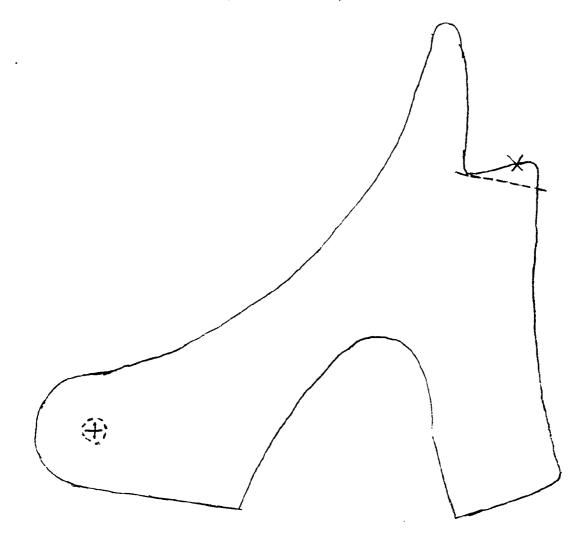
ALTERATIONS SHOWN BY DOTTED LINES -----



MY LWT. LATCH DESIGN#2

NOTE CURRENT PINNED + CLIPPED

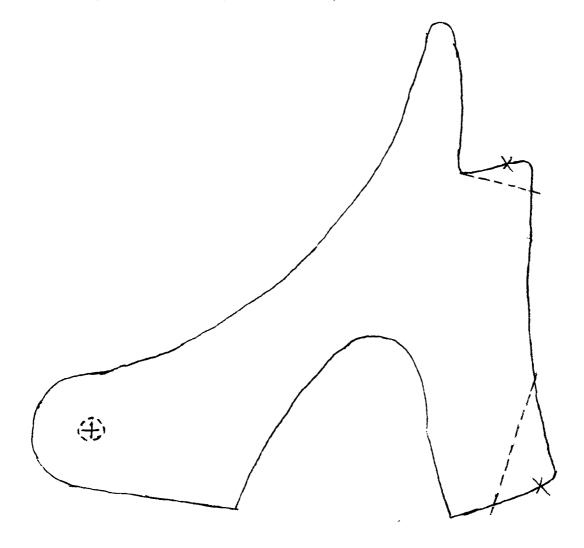
ALTERATIONS SHOWN BY DOTTED LINES -----



MY LW.T. LATCH DESIGN #3

NOTE CURRENT" PINNED + CHAMFERED + CLIPPED

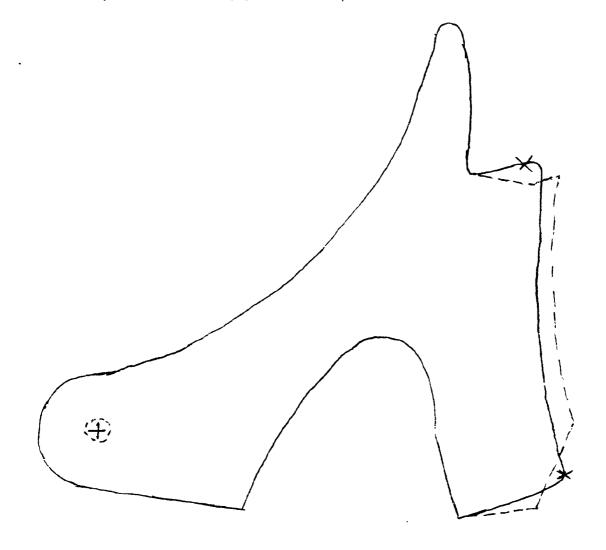
- ALTERATIONS SHOWN BY DOTTED LINES -----



MY LW.T. LATCH DESIGN # 4

NOTE PINNED, CHAMFERED, CLIPPED + EXTENDED SQUARE

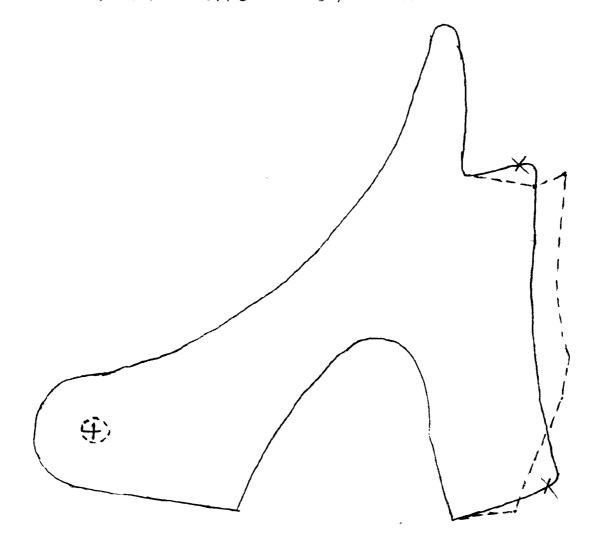
ALTERATIONS SHOWN BY DOTTED LINES -----



MY LW.T. LATCH DESIGN #5

NOTE PINNED, CHAMFERED, CLIPPED + FXTENDED ANGLE

- GLIERATIONS SHOWN BY DOTTED LINES -----



Supplement

"APPENDIX "B"

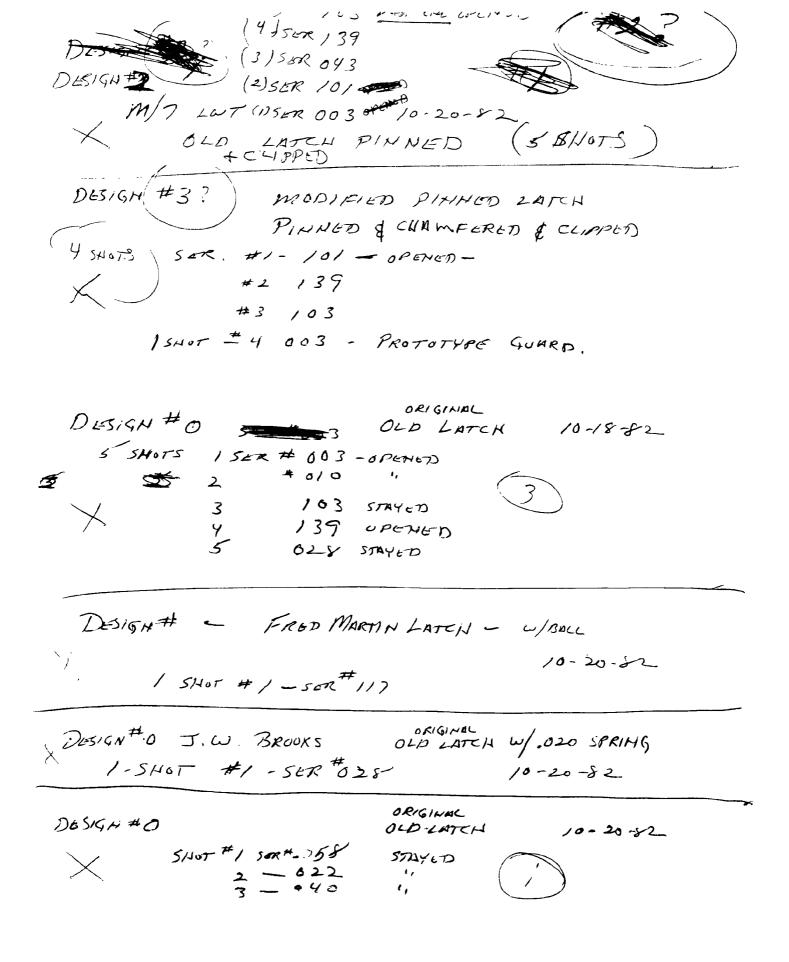
Test of 10 - 28 - 82

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Supplement

APPENDIX "C"

Test of 10-29-82



M-) LLUT LATEH EVAL

DESIGN-1 ALUM LATEH - 308 200 GR.

5 SHOT SHIP OPENED ONLE

JESIGH # ALUM LATCH - 308-200GR SHOTS 1- STAYED SER 081

DESIGN# 5 REG STG

SHOT # 1 #5 SER # O'LD REG STG 308-200 GR 10-28-82

#0 CURRENT - 050 GPENED

#5 040 - NAR, SPG,

SHOT# / - LATCH #5 - SER # 040 REG SPG STAYED 308-200GR
#2 - OLD LATCH #0 SER 050 - " " OPENED

#3 - LATCH #5 SER # 040 MARROW SPG STAYED

DESIGNA-PINNED ALUM, LATEH

PROTOTUPE GUARD. (MOVED)

SEX- M-7-003

(movers)

DESIGN #O OXIGIADE DMM-08

OCD LATELL 140GR.

1-SHOT OPENED #2

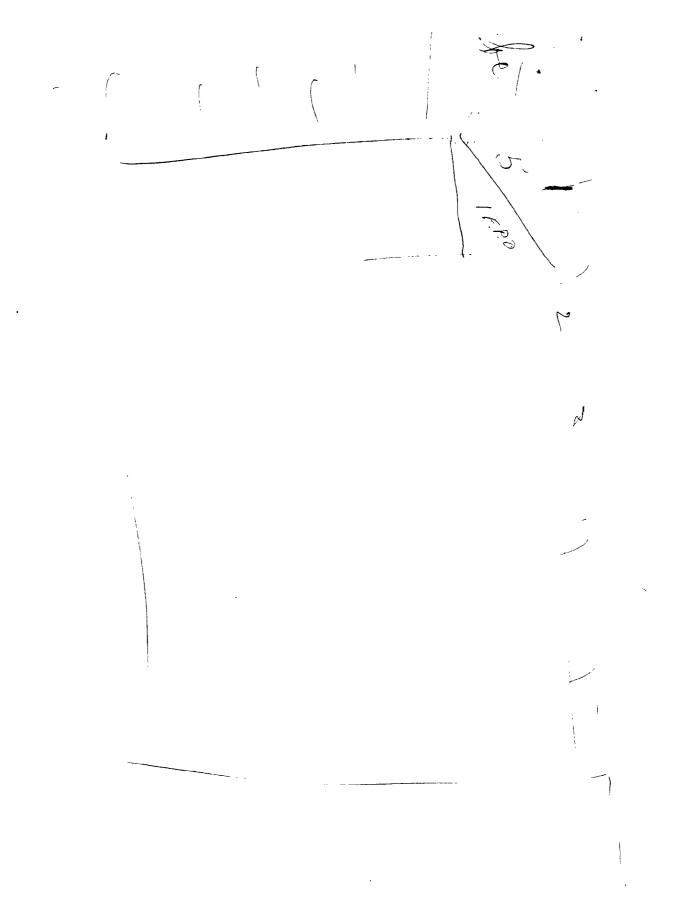
2 1. std Latch Pinned & Clipped

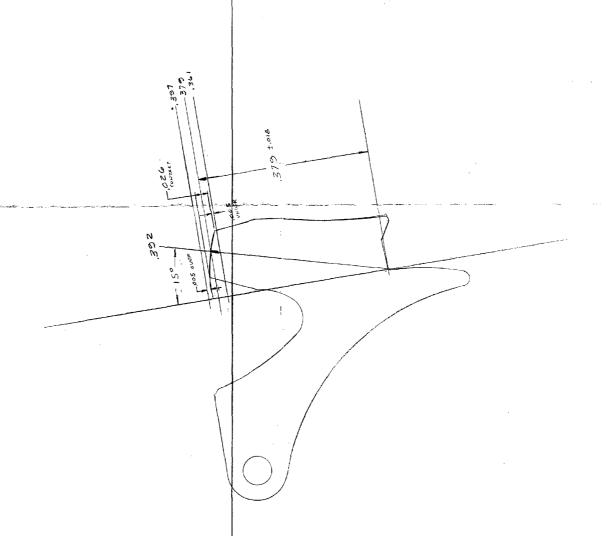
2 3. Pinned & CHAMfortered & clipped

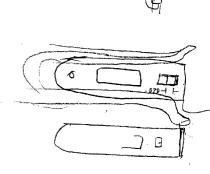
14. Pinned, CHAMfortered, clipped & extended square-III.

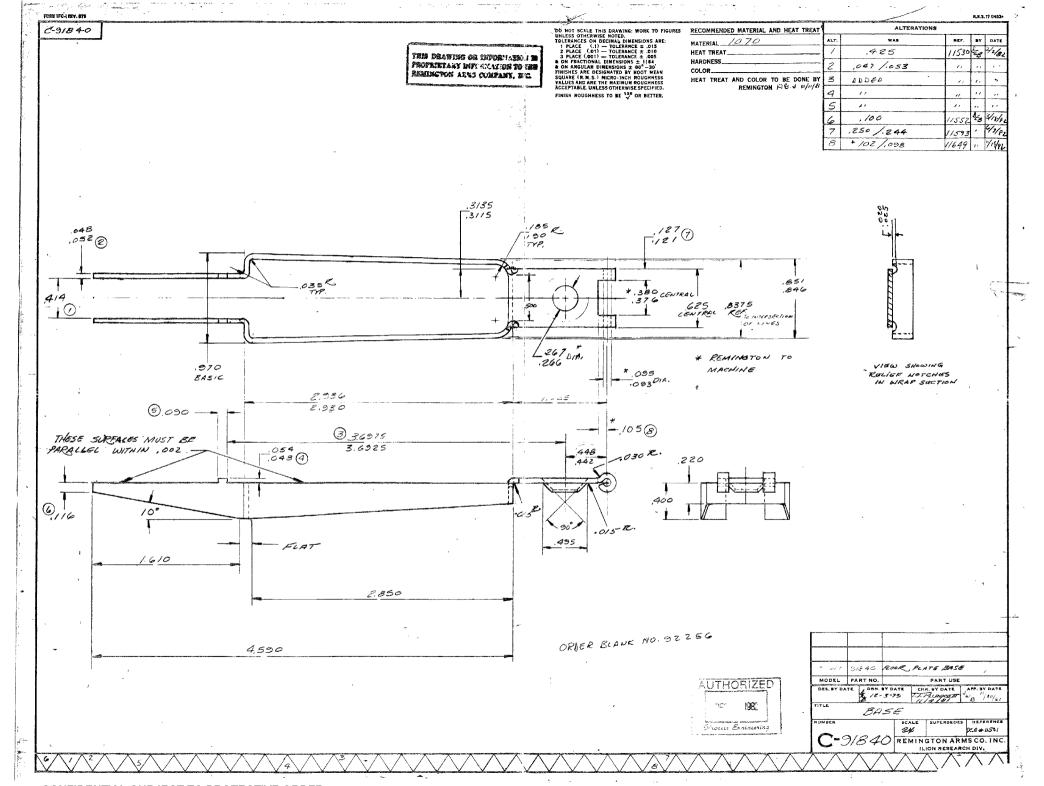
5. Pinned Chimhard Clipped & extended nagle.

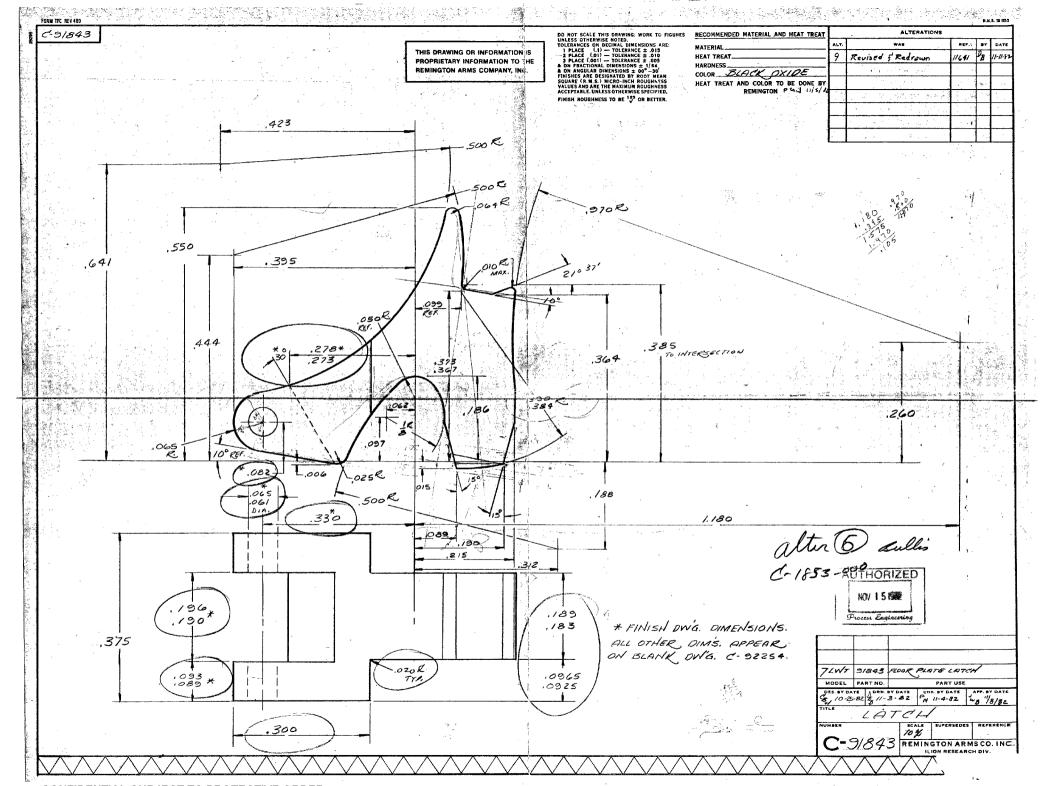
16. ALUMINUM STd-PINNED.

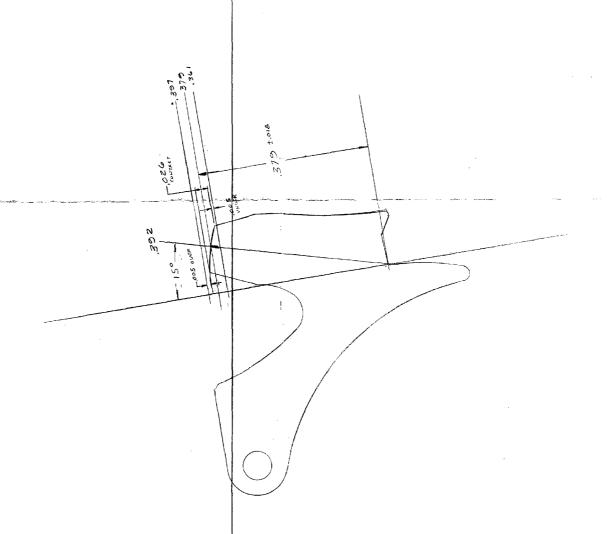


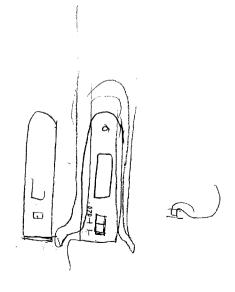


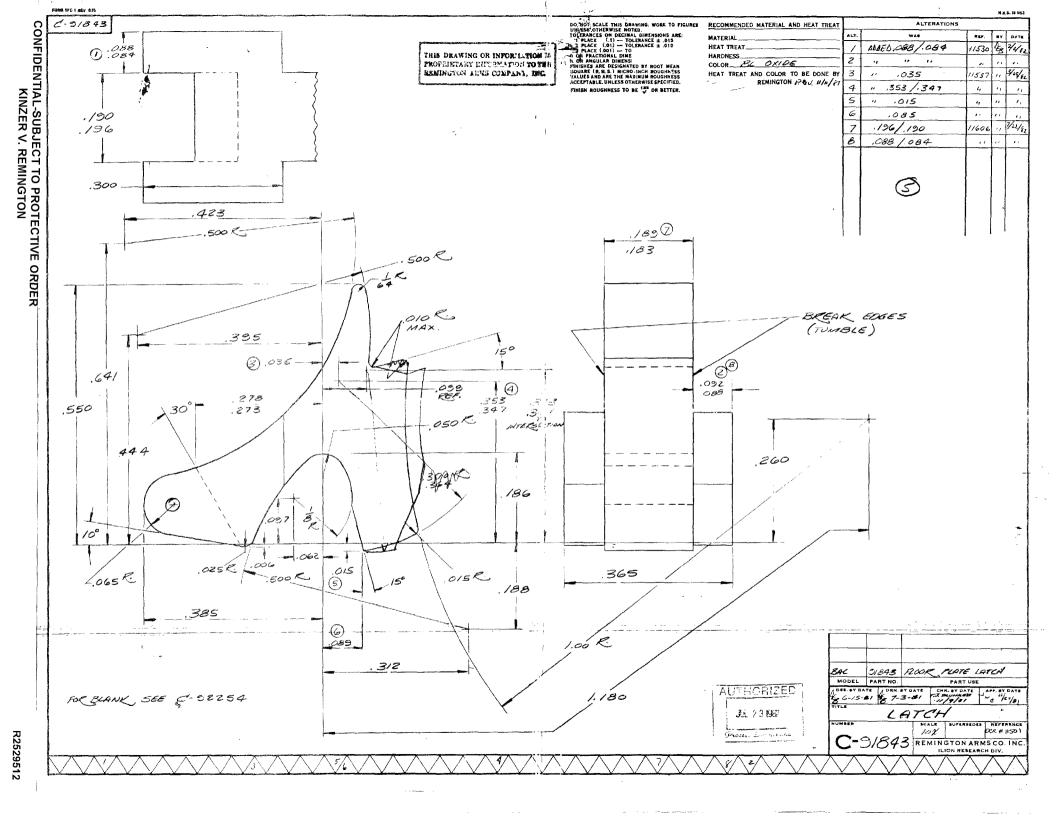


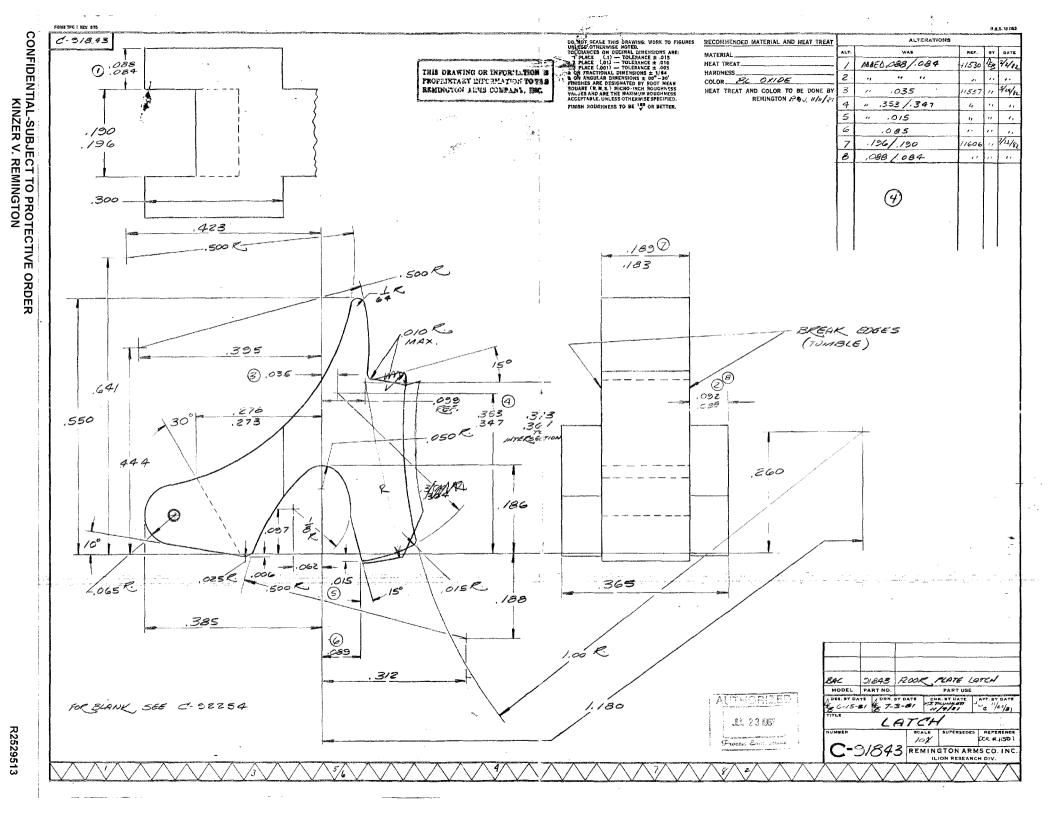


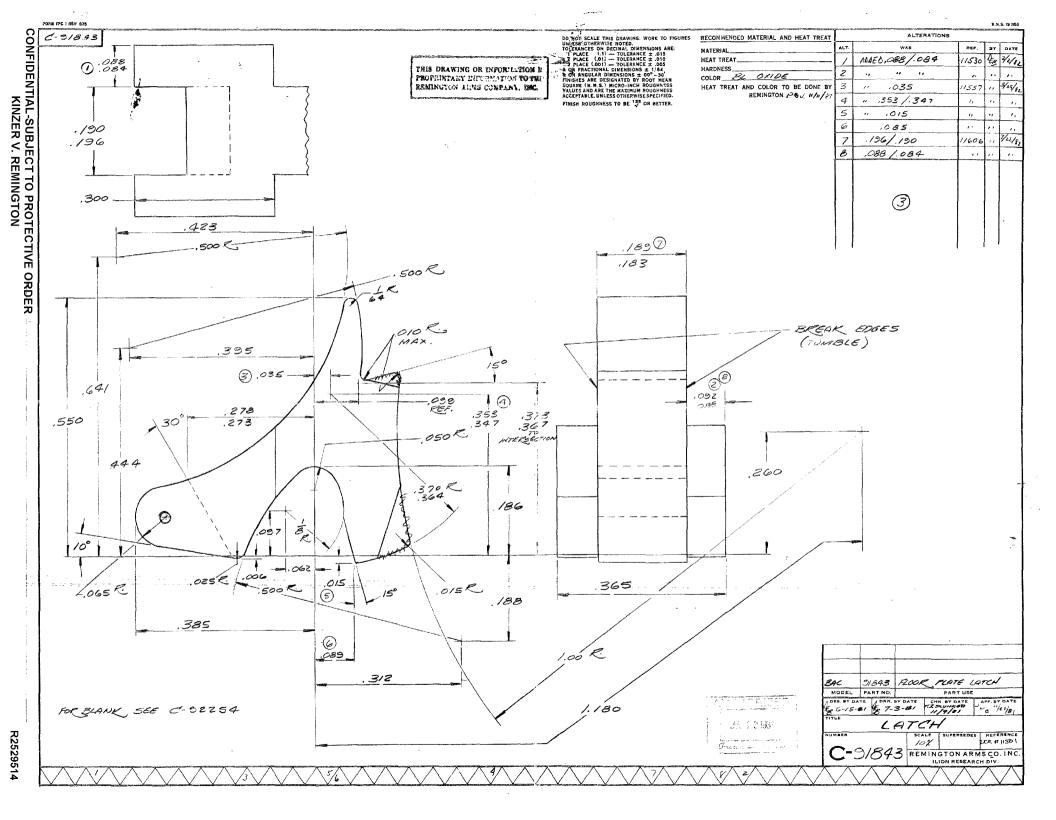


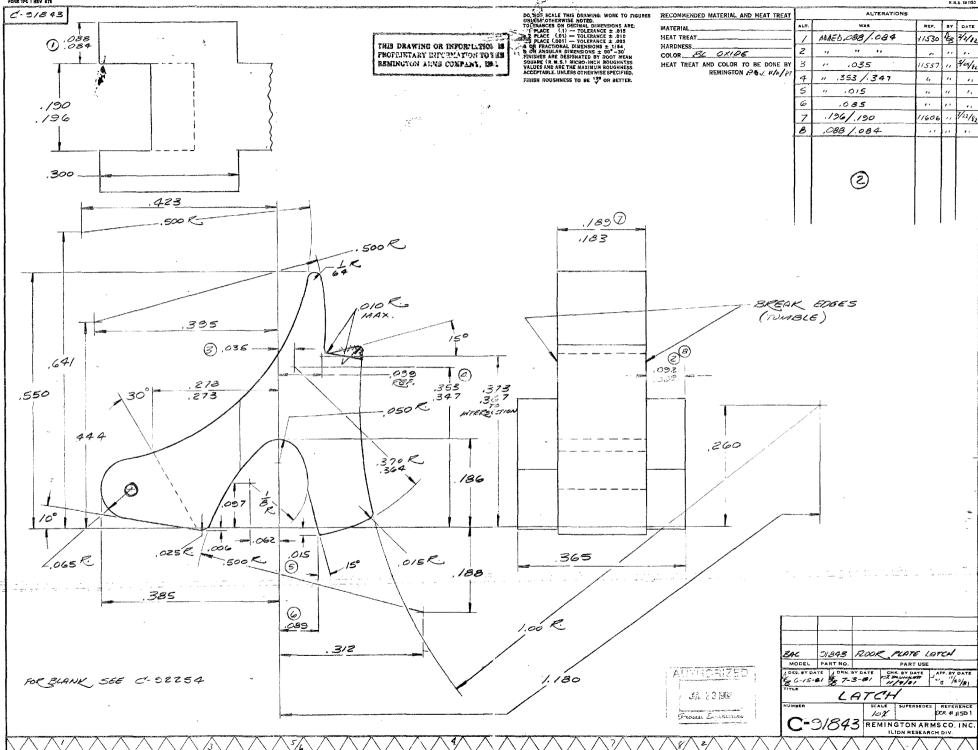






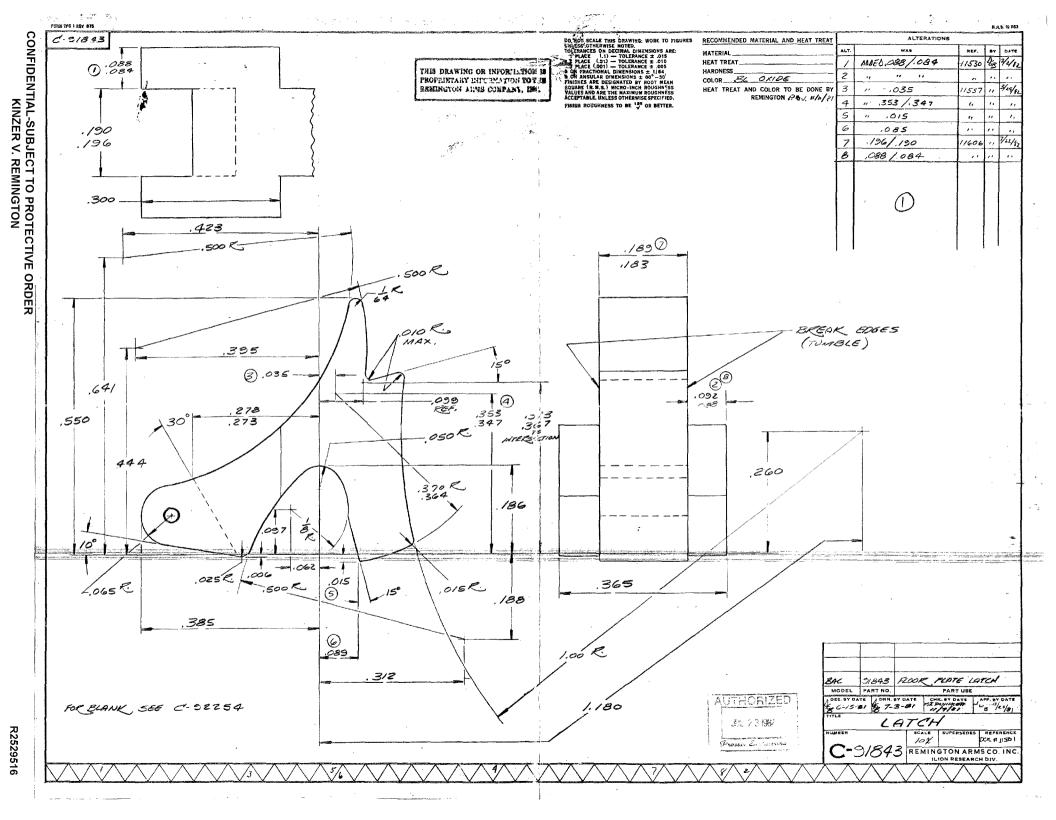






R2529515

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON



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	SUMMARY SHEET BY	~	acums green		SPETT.	and a	ALCW BACK	LOCK OPPH	FE FR MA	OM	STEMS MAG.	OVERRIDE	TOCK UP	ì	CIIA	em Mber		Jumps Mag.	FOLLOWER BINDS		OVERRIDE	म्हत्रम्द प्रष्ट	EXTERACT	to.	<b>373</b> 8 ·	STATES	,	IONS PER	te Per
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PREVIOUS

FIELD CYCLE TEST - CENTERFIRE

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

MTE: 10-12-82

KINZER V. REMINO	SUBJECT TO PROTECTIVE (
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REPROT NO.1 82281/

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BERIAL NO. 7600/0/	0-12-82	MODEL: M/7 LTW	CAC .308	BERIAL NO. 7600/0/
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ROUNDS TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TIL. RDS. FIRED:

TIL. MALFUNCTIONS:

MALFUNCTION RATE:

SUMMARY SHEET BY		acums rresp		Seere	i con	ELOW BACK	Lock over	ed om	STEWS WAG.	OVERRIDE	LOCK UP		CIN BT	em Mber		JUMPS MAG.	FOLLOWER BINDS	HARO Y TH	ERRIDE	albe de	EXTERACT	to.	FI.5	STATE	IONS PER	te per
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REPROT NO.1 822811 PAGE NO. 2

BAULES 308 BERIAL NO. 7600058 **IOOTER** 

TTL. RIE. FINED: TTL. MALFUNCTIONS: MALFUNCTION PATE:

SUMMARY SHEET BY	m	acting green		न्थ्र स्टब्स्त ऽस्थातः	משכנו.	ILOW BACK	LOCK OPEN	FE FR MA	ОМ	STEMS MAG.	OVERRIDE	LOCK UP	CIIA	em Mben	JUMPS MAG.	R BINIS	NARD YTH	ERRIDE	anc up	TEACT	SO.	. 5212	ENTS	KWOR PLATE OPETHETS	IONS PER	TE PER
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s	UMMARY SHEET BY	of.	acums grass		PPA PURID STUDIES	and the	DON'T BLOW BACK	DON'T LOCK OPEN	FR FR	OM	STEMS MAG.	OVERRIDE	SCCK UP		CIN BT	em Mden	1	SHELL JUMPS MAG.	FOLLOWER BINES	MARD YES	BOLT OVERRIDE	क्रमद पर	TEACT	и	. STEE	STATES	FLUUR PLANTE CPUNKED	MALFUNCTIONS PER	rate per
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BUMMARY SHEET BY  R. Nowe  PISO PSP  SLOW  HATD.  FAST  SLOW  CE  MED  CE  FAST  CE	ω.	STEEDS OF SCHEIS	op	TOA ZOUTO SERIE	DOM . ELECT	DOE'T SECT PACE	DON'T LOCK OPER	FR MA Int	oM d.	STEERS	POWER OVERRIDE	1 H	Bross	CIN	MDER	ISSI	SHELL JUMPS MAG.	FOLLOWER BINDS	CADITE HARD YER	BOLT OVERRIDE	ACTION HANG UP	DON'T EXTEACT	मस्त्र स्त्रत्वञ्च	ADJUSTMENTS .	REPLACEMENTES		•	
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## FIELD CYCLE TEST - CENTERFIRE

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1	8	8228	NO.1	REPROT

7 No. 2

INTE: 10-12.82

MODEL! M/7 LTW

GALUET 308

BERIAL NO. 7600036

EUCLVING BUNDON

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RIM. FINED:
TTL. MALFUNCTIONS:
MALFUNCTION NATE:

M/7 CAL 308 FUNCTION TUST "MITUNITIONS"

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	SUMMARY SHEET		ECUMINS FIREDS		SHEET	TECT	ICH BACK	ocx open	FEE FRO NAC Lat	ed om	SHELL STEMS MAG.	OVERRIDE	TOCK UP		STI			JUMPS MAG.	FOLLOWER BINDS	COADING HARD 4713	/GRETTE	BANG UP	TEACT.	ĸ	- <b>STEE</b>	ENTE	FLUCK PLATE OPENED	MALFUNCTIONS PER	ITE PER
	summry sheet by R. Nowe	SHCORES	30. CF	FIRING	THES CEET VOL	E TYNICE	E 27 NOOT	T'ECT	TV Iaf	i.Cli Sug	SHELL	POWER (	ע בישסם	HILES	TON	RIESEE		SHELL	FOLLOW	בסעסבו	BOLT OF	ACTION HANG UP	e e e	BREAKAGES	ADJUSTMENTS .	BEFACT	FLUOR P	MALFUNCT	MALF. RATE PER
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	SUMMARY SHEET BY	SHOOLES	NO. OF ACTIMIS FIRED	FIRING	MA PERT SHELL	DON'T ELECT	BLOW	DON'T LOCK OPEN	FROM MAG. 101 2nd	SHELL STEMS MAG.	N OVER	DOK.I TOCK UP	· HIER		ADER .			9	LOADING HARD 4TH	BOLT OVERRIDE	ACTION HANG UP	DON'T ETTRACT	महस्य स्वतन्त्र	ADJUSTMESTS .	REFLACEMENTS	FLOUR PLANED PRINED	MALFUNCTIONS PER	MALF. RATE PER
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HEAD SPACE WINT, 604 BUMMARY SHEET		CHELLE STRICT			SEST	102	OW BACK	rego X	FE FR	ED OM	STEMS MAG.	JERR IDE	田田		BTI CIMI	em Mber		JUMPS MAG.	3 BINDS	INRO YTH	RRIDE	क क	BACE		Ð	STR:	FLOUR PLATE OPENED	CONS PER	1000
BUMMARY SHEET BY R. Uowa	SHOCKER	in the second		FEETS	TOA PERO SERIA	DOM'T EL	DE 7.500	DON'T LOCK OPEN	Int IV	Suq	SHELL ST	POWER OVERRIDE	ממנים בסכ	मास्य	LOW	RICHE		SHELL J	FOLLOWER BINDS	LOADING HARD U	BOLT OVE	ACCION B	TOTAL E	BEFA TAGE	ADJUSTMENTS	REPLACEMENTS	Frome P	MALFUNCTIONS	
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FIELD	CYCLE	TEST	_	CENTERFIRE

REPROT NU.: 822811

10-12.82

GAUGE: 308

BERIAL NO. 2600103

TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDS. FIRED: TTL. MALFUNCTIONS: MALFUNCTION RATE:

M/7 CAL 308 FUNCTION TEST

SUMMRY SHEET BY		उटामा रामका		SPETT	TOC:	BLOW BACK	LOCK OPEN	FR:	OM	STEMS MAG.	OVERRIDE	LOCK UP	ì	STI			JUMPS MAG.	FOLLOWER BINDS	, MARD 474	BOLT OVERRIDE	ACCITOR HANG UP	zmsacz:	Z	ETT3 ,	STREET	FLOOR PLATE OPENERS	LIONS PER	ate per
	SECOTES	30. OE	France	TOBES CASE VOL	DOM'T ELECT	7.500	DOZINE I		(CII Sug	SHELL	POWER	DOM'T I	मास्य	103	XIIIX		SHELL	FOLLOW	LCADING	BOLT O	ACCION	DON'T EXTRACT	SECTION SECTION	ADJUSTMENTS	RESTACEMENTS	Front	MALFUNCTIONS	MALF RATE
W-125 PSP																												
SLOW	RU	3												$\sqrt{\frac{2}{3}}$														
MED	Re	3	OK																									
	RE	5	OK																									
W-150 S.71P																												
SLOW	MM	5	of																		_							
MED	40	3	OK															<u>                                     </u>										
FAST	HO	5	OK			_								<u> </u>				_			_		_	_	_			
W.150 P.P.															_					_		_		_				
SLOW	60	5	UK	_								_					_	_				<u>  '</u>						
MED	CD	5	cic	_	_	_			_			_							<u> </u>			_	_	_	_			
FAST	CO	5	6K				]									<u>.</u>												
TOTAL (FER IML.)																_	_								_	_	<u></u>	

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<b>!</b>	10" C-1856	, <b>U</b> ()	FI	ELD	CYC	LE	TES:	<u>r¹ -</u>	CEN	TERI	FIRI	<u> </u>	•		•			n	EPRO	T NO	<u>ع</u> .،	22	28	//_			TA CIE	110	3
	rrevious	nte:/	0./.	2 - 8	2_			MOI	_1.13C	mt	27	<i>TW</i>			Œ	WHE:	AL !	30	8			81	eria	l no		60	1)	53	3
		est t	ltle	, SU	IMMAI	RY S	HEET	S PE	R - :	RIFL	E -	ΛMM	O TY	PE -	SHC						·	•	TTL.	RDS	. PI	RED:	•		
	Summary Sheet		econs reso				DON'T SECH BACK		<b>S</b> ection :	ed M	STEMS MAG.	33			8T1	em Mber	·	SHELL JUMPS MAG.	FOLLOWER BINDS	conding Hard 474	VERRIDE	HANG UP	CETSACE.	23	<b>ENTS</b> .	MENTES.	FLOOR PLANTE (DESNEY)	TIONS PER	MALF. RATE PER
	& Home BA	SECOTES	10. CF	FIRING	TOP SEE	T. MOC	2000	i ili	IV Int	ı		POWER		HIGH	103	RICHE	Test	TIMES	FOLLOW	TOADER	BOLT O	ACCITOR	DOM'T E	HEEA KACES	ADJUSTMENTS .	REFLACE	FLOOR	MALFUNC	MALE. R
•	W-180 S.T.	<i>A</i>																											
•	SLOW	DI	5	0 K																									
	MED		6.					_								_		<u>.</u>											
	FAST	DO	5	OK																									
	W.200 5.71	P_	_																										
	5600	RC RL	5	015									<u> </u>					_											
	MED		-	οĶ		<u> </u>		_						ļ				_	Ŀ				<u> </u>		_				
	FAST	Ru	5	OK				_					11					_	_					_	_	_			
	F 150 PSI		_					<u> </u>							_		_		_		_				_				
	SLOW	RE	5	ok															<u> </u>			_	Ŀ		_		_		
-	MED	Re	15	019																									
	FAST	RE	3	٥K														l									•		
	TOTAL (FER INL.	)																											

WOT C7856 700	FIELD CYCLE TEST - CENTERFIRE
	FIELD CYCLE TEST - CENTERFIRE

REPROT NO.: 8228//

13	MTE: 10-12-82	MODEL: 7 LTW	CAL 308	BERIAL NO. 7600/03
1	TEGE TITLE SUMMARY SUPERTS	S DED _ DIVIE _ AMM OVER	CHOOMED	

PREVIOU ROUNDE TTL. RDS. FIRED: TTL. MALFUNCTIONS: MALFUNCTION NATE: - RIFLE - AMMO TYPE - SHOOTER 11/7 CAL 308 TUNCTION TEST

	SUMMARY SHEET BY		ACCURING PLEAS		SEELL	EDECT	LOW BACK	LOCK OPER	FE FR MA	ОМ	STEEMS MAG.	OVERRIDE	LOCK UP		CIM	em Mder		JUMPS MAG.	POLLOWER BINDS	NARD YTH	OVERRIDE	anc up	TEACT	S	STES .	સંજાસ	FLOUR PLINTE UPKHE	MALFUNCTIONS PER	rate per
		ESTOCHS	30°0E	PER ENG	CERT PRET	DOM'TE	DOM'T BEOW	DOT'T D	1	icii Suq		POWER O	DOM'T L	EIRE	LOS	RICER		SHELL J	FOLLOWE	COADING WARD	BOLE OV	ACTION BANG UP	DON'T EXTRACT	BREA 72 GES	STATESTICAL ACTION	REPLACEMENTS	Fround	MALFUNCT	MALE RA
.	F 180 PSP SLOW																												
٠	SLOW	N/3	5	0/5																·		_					_		
	MED	¥	5.	ok																									
	FAST	2	5	ok																									
	F 165 PREMBT.																												
		8	5	019	_																				·		_		
		QD	5	1															·										
	FAST	ØD.	5	01									,																
	•																						·				-		
																	,								_				
	TOTAL (PER MAL.)																	_		-	-	-		-	-				

WO = C 18.5	6-00	s E	LELD	CY	CLE	TES	<u> </u>	CE	NTEF	RFIR	E		•	*	,		1	REFR	or no	o≱	-2:	28	//	•		10	e 40	1
rnevious -	DATE:	10-	12	8 2	_		MO	Del:	m	17	2 _	T'	· •	•	iA Ugit	d H_	د .	3.0	رج		8	eri/	ll no	} <u></u> Z	160	2) 2004	/3	
ROUNDS	TEST	ritli	S . S	UIMM	RY S	HEE	rs Pi	er -	RIF	LE -	ΛM	10 T	YPE ·	- SH	OOTE	R				•		TTL,	. RDS	. FI	med:			
m/7		30	8	FUR	1677	0H -	TES	·		11	mle	UNCI	rions	14								MLF	VIICT	ION	NATE	1		
HEADSPACE MINT, 004		B																				Π				É	1	
						M	H	TE.		MG.	呂				em Imber	l .	AG.	S	7 g							Operven	PER	
SUMMARY SHEE	т	Remarks		SIER	Ęį.	DON'T SICK SACK	DON'T LOCK OFFE	FR MA		STEMS MAG.	OVERRIDE	R					SHELL JUMPS MAG.	FOLLOWER BINDS	CADETE NARD	BOLT OVERRIDE	ACCURATE WAS UP	ij		Ŕ	19	<u>ل</u> م	-	E
R HOWE	E		B	TO POST	DOM'T PURCE	開出	i H		Sug	LL ST	E3 69	T 1003			E4		H SG	OWER	B	OVE	田田田		3,623	TMESS	STATE OF THE PARTY.	27	NCTIC	RATE
K NOWE	- K	10. GE	PERENT	ē.	A	ğ	B		ich	SHELL	POWER	DOI 1	FICE	ğ	RICER		SHE	FOL	LOAD	BOLL	T Q	DON'T EXTERACT	ERFARAGES	ADJUSTMENTS	RESTACTORS	FLOUR PLATE	MALFUNCTIONS	MALF. RATE
R 150 PS	P																				===						====	-2
SLOW	DJ	3	06													_	-	<u> </u>				-						
MED.	DJ	5	δK																									
FAST		5	OK																									
R 180 PSI	}	_																										
	RC.	5	UR									_																
MED		5	OK	_														·										
FAST	<del></del>	5	OK																									
W 110 PS	P											,																
SLOW	RE	15	_																1			1						
MET	26	5				_													1									
FAST	RE	15	ok																	1								
TOTAL (PER MAL	<u>.)                                    </u>																											

W8 €-185		E: 10			,			CENTE			W			CAC AUGE	' <b>1</b>			or no	U. I_	82					004	•	2
EUOI VANA BUNUON	TES		-			HEE	rs pi	ER - RI	FLE -	. AM	10 T		- SH						• .	•	TTL. TTL.	. RDS MAI	9. F1 LFUNC FION	MED:	181	<u> </u>	
SUMMARY S		SECOTOR STEED NO. OF ECHINE FIEED	2 DIG	THEEL CHEET		HON	DOH'T LOCK OPEN	FRED FROM MAG. 18t 2n	日田	POWER OVERRIDE	ממיד נסכב עף	HIGH		MBER		SHELL JUMPS MAG.	FOLLOWER BINDS	TCADING MARD 474	BOLT OVERRIDE	ACCITICAL ENAIG UP	DON'T EXTENCE	HEDAKAGES	ADJUSTMENTS .	REPLACEMENTS	FLEUR PLANE UPENETS	WALFUNCTIONS PER	ST STAND COLD

SUMMARY SHEET BY	~1	ECTELLS ?		STEEL	STECK	STOW BACK	CCX OPEN	FR MA	om d.	STEMS MA	OVERRIDE	SE SE	}	CIIV	MBER		JUMPS MAG	FOLLOWER BIRES	NARD Y	OVERRIDE	ang up	TAKET	to to	. STR	STATE	ATE DP	IONS PER	TE PER
	SECORE	10. E	37227G	Case Ver	E ELLEGA	E 1,500	DON'T LOCK	•	ccii Suq		POWER (	DON'T LOCK UP	मास्य	103	अस्टब्स	1221	SHELL	FOLLOWE	CADING AND	BOLT OV	ACTION HANG	DON'T EXTENCE	BREAKAGES	ADJUSTMENTS	<b>ZRPLACSMENTS</b>	FLOUR PLATE DPS	MALFUNCTIONS	MALF RATE
W-125 PSP																						===						
SLOW	HW	5	uk	_																				_				
MED	μW	5	OK																	-				-				
	HW	5	吹																			<u> </u>			_			
W-150 S.TIP																						-				_		
SLOW	cD	5																	1									
MED	CD	3	οķ															·										
FAST	CD	5	水								7										_							
W.150 P.P.																												
SLOW	OJ	5	OK																		-	,						
MED	W	5	019																									
FAST	DJ	3	OK																	1								
TOTAL (FER ML.)																							-		-			

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U	107 C-18	56-05	ں ر	FII	ELD	CYC	LE	TES	r: -	CEN	TER	FIRI	<u> </u>	•			11		R	EPRO	T NO	.1_8	2	28	//_		ئسير	ј 'Е	110. <u> </u>	3
1	pr <b>evious</b>	ini	E:/	0./-	2 · E	2_	<del></del>		MOI	der:	mt	7 27	~W	<u>.                                    </u>		Œ	AUUE AUUE	AL !	30	8			81	erla	L no		600	ン 50	110 43	
•	ROUNDS									R -							OTE	R				·	•	TTL. TTL.	RDS.	. FII	red: Tione	91		<del></del>
•	n,	/7 cu	- , 3	808	1	UM	C17	0/1	10	57	· · ·	<u>. "</u>	nle	UNCT	ions	#			<del></del>				1	MLF	unct:	ton 1	MTE	<u> </u>		
	SUMMARY			PICTAINS FIRED		Seett	ance:	DON'T ELGH BACK	ocx open	TEI TRO	om 3.	STEMS MAG.	R OVERRIDE	क्रा क्र		BT CIV	em Mber		SHELL JUMPS MAG.	FOLLOWER BINDS	LOADING HARD 4TH	ERRIDE	and or	TEACT	<b>X</b> 1	arrs .	ENTE	FLOOR PLANE OPENED	MALFUNCTIONS PER	rate per
	R, Ho	<u>ω€</u>	SHCOTES	NO. OF	FIRETAG	THES CHART	moere made	T L DOG	ע דיזוסנ	Ist	Sug	SHELL	POWER O	T T. NOCE	2211	ICW	RICER	Teen	SHELL	FOLLOW	roanne	BOLE OV	ACCION	DON'T EXTRACT	BREAKAGES	ADJUSTMENTS	REFLACEMENTS	FLOOR	MALFUNCT	MALE BA
	W-180	S.TIF	,																											
۴		40W			017																									
	14	tD	RU	3.	OK				_						_	_			·					_						
1	FI	155	Rω	5	010			_												<u> </u>				_						
	W-200	5.71P					_	_	_					_	_	_		_	_	_				_		_				
		οω			07			<b> </b>						<u> -</u>		_	_	_	_	_			_	_	<u> </u>					
	ME	の	-		OK		_	<u> </u>		_									_	<u> </u>			_	_						
			RE	5	OK									1		_	_	_	_	_	<b> </b>		_	_	_	_	<u> </u>			
	F150	PSP						<u> </u>			_						_	_				_	_	_		_	_			
	54	òω	μω	5	ok																									
	M		$\mu\omega$	L	ok																									
	FA	57	ИU	5	61																									
	TOTAL (F	er ml.)																												

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## FIELD CYCLE TEST - CENTERFIRE

REPROT NO	.1 822811 F. 18 NO. 4
,308	SERIAL NO. 760043
<del></del>	TTL. RIS. FIRED:

PREVIOUS	IMTE: 10-12-82 MODEL: 7 47W CAL 308	BERIAL NO. 7600043
ROUNDS	TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER	TTL. RDS. FIRED:
	m/2 CAL 208 Tours	TTL. MALFURCTIONS:

m/7 CAC 308 FUNCTION TEST "MITUNITIONS"																. 1	TTL. Malf	Mal Unct	func Ion	tion <b>iate</b>	8 1						
SUMM/RY SHEET BY		OF ACTIONS FIRED	,	SHEET	BIBCE	HOW BACK	ocx open	FE FR MA	OM	STEMS MAG.	OVERRIDE	<b>100 100</b>		BT CI <b>I</b> A	em Mden	JUMPS MAG.	R BIRIDS	HARD YRTH	ERRIDE	ध्राष्ट्र प्रष्ट	TEACT	8	nis .	SAVES	FLOOR PLATE OPENED	IONS PER	स्त्र महार
	SHOOLES	NO. OF	FIREME	THERES CHARLES	DOK.I E	E L. ROC	DOIL I TOCK		end LCII	1	POWER C	TOTAL TOTA	मास्य	TON	स्याध्य	SHELL J	FOLLOWER BIRDS	CANTER HARD	BOLT OVERRIDE	ACTION HANG UP	DOM'T EXTRACT	इसक्त स्वत्स	ADJUSTMENTS .	REFLACEMENTS	FLOOR PLA	MALFUNCTIONS PER	Mede. Rate
F180 PSP SLOW																											
SLOW	CD	5																7									
	<u>cp</u>	<u>3</u> .														·		1									
	co	3																1									
F 165 PREMBT.		-																									
SLOW	40	5	OK																								
the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the sa	Ø	5	01(																								
FAST	QT	5	6K	-								ŧ															
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TOTAL (FER ML.)																		-				-					

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MTE: 10-19-82	
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MODEL: 7 LWT.

CAL: 7mm-08

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Berial	NO	6000	298

PREVIOUS
ROUNDS

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

M/7 LWT 7MM-08 FUNCTION TEST "MITUNCTIONS"

TTL. RDS. FIRED:
TTL. MALFUNCTIONS:
MALFUNCTION RATE:

	t	·		1	•	(-)																					-	
summary sheet by R. Howe	SHOCER	OF RCINDS FIRED		TIES CEET	T Elect	EMPTY SHELL OTTHES RET	E S	FR	ED OM O.	EL STEMS MAG.	ER OVERRIDE			GIN	em Mber		il jumps mag.	POLLOWER BIRIS	510	OVERRIDE	ACTION HANG UP	DON'T EXTERACT	BREA CACES	A DUTSTEMENTS	REPLACEMENTS	FLOOR PLATE OPENED	MALFUNCTIONS PER	RATE PER
N. HOWE	Ø,	g	STATE OF	12	1000 1.1300	E ST	2000 i		rcii	SHELL	POWER	DOM'T	H	5	RIGHT	T.CZI	SHELL	FOLI	COADITIO	BOLT	Ĭ		REED!	200	A LEE	1007,	ALFU	MALE
R 140 PSP				==	=		===									===			===					==	-		W.	- <u>S</u> -
	RW	3	ok								_	-					-						-	-				
MED	RW	5	OK										-						-	_		-		-				<b></b> -
FAST	Rω	5	ok					7						-									-					
																							-	-				
540W	RE	5	ok																			_						
MED	Rt	5										K																
FAST	RE	5	OK																									
				_	_																							
	hm	5	OK				_															,						
MED	MM	5	ox																									
FAST	μW	5	OK																									
TOTAL (PER MAL.)																												



KINZER V. REMINGTON	DENTIAL-SUBJECT TO PROTECTIVE		
Q N	ROTECTIV		

FIELD CYCLE TEST - CENTERFIRE	FIELD	CYCLE	TEST	- CEN	TERF	IRE
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REPROT NO.1 8228//

INTE: 10-19-82

MODEL 7 LWT.

CAL. 7mm-08

BERIAL NO. 76 00098

ENDIVARA ROUNDS

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDS. FIRED: TTL. MALFUNCTIONS: MALFUNCTION RATE:

M/7 LWT. 7MM-08 FUNCTION TEST "MIFUNCTIONS"

	PI												The shorton min														
SUMMARY SHEET BY		Borness Freeza		Seeth	1.00	HELL OTTHES RET		FE FR MA	OH	STEMES MAG.	CVERRITE	क्य उठ्ट	etem Cinader		JUMPS MAG.	र अत्यक्त		OVERRIDE	THE CTS	TAC:		è	2	PLATE OPENED	ONS PER	E PER	
R. Howe	ELECTRIC !	<b>6</b> 6	STEEL STEEL	CORE VEL	N 22 10 10 10 10 10 10 10 10 10 10 10 10 10	EMPTY SHELL	NOT T	Ist	gnd		POWER O	72 2.1800	153	Terre		SHELL J	FOLLOWER BINDS	COADURC	BOLT OV	ACCION BANG UP	DOE"T ETTEACT	3854 KJ (25)	ADJUSTMENTS	PPPFACONENT	FLOOR PL	MALFUNCTIONS	MALF. RATE
R140 PSP																			-								
SLOW	CD	5	UP																				_				
MED	9	5	6) <u>(</u>																								
FAST	9	5	ok					,																			
				_																							
	DA	5	σK																								
	N	5	σX		_																						
FAST	DJ	5	OK			_																					
		_			_									_													
	Rω	5	ok			_															,						
MED	RW	5	ok_																								
FAST	PW	5	吹																								
TOTAL (PER INL.)		L										·															

FIELD C	YCLE	TEST	-	CEN'	TERF	IRE
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REPROT NO.1 8228//

PAGE NO. 3

MTR: 10-19-82

MODEL 7 LWT.

CAL: 7mm-08

BERIAL NO. 7600098

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDG. FIRED: TTL. MALFUNCTIONS: MALFUNCTION NATE:

M/7 LWT. 7MM-08 FUNCTION TEST "MITURETIONS"

SUMMARY SHEET BY	2	ACUADS PTEED		Segue	132	SHELL OTTAKES RET		te fr m	011	STEMS MAG.	OVERRIDE	TOCK OF		cin	eM Mden		JUMPS MAG.	FOLLOWER BINDS		OVERRIDE	and the	TEACT	m		STATE	FLOOR PLATE OPENED	IONS PER	RATE PER
R. Howe	ELLOCHIS	Б В	STEELS.	CLEAR AGE	DOM'T ELECT	EMPTY SHELL	T T. STORY		end wit		POWER	d r'mod	ETIES	1501	भारत		TIMES	POLLOWE	COADURG	BOLT OV	ACTOR BANG UP	DOR'T STITEACT	SECTION SECTION	ADJUSTMENTS	REPLACEMENTS	FLOOR P	MALFUNCTIONS	MALF. BA
R140 PSP																										2		-51
SLOW	Rt'	5	ot																									
MED	ft'	6	ok																			_					*****	
FAST	RE	5	从					۲																-				
	Ħω		**									<u> </u>														T		
MED	MM	<u> </u>	1																									
FAST	Ha	5	以																							*****		
SLOW	CD	5	οK																			,						
MED	¢ D	5	6K																									
FAST	¢ D	5	ok													,												
TOTAL (PER INL.)																								-				

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0 1000	UOC	<u>F</u>	ELD	CY	CLE	TES	<u>T -</u>	CE	NTEI	<u>₹FIF</u>	RE						1	iefr(	yr no	).1_	82	28	//		_	PAG	e no	4_
HOUNDS	erst 1	rtrlæ	S . S	UMMA	RY 8	HEET	IS P	er -	RIF	LE -	AM	O T	Y PE	- SII	AL:	n_Z	m n	1 - C	181	•	,	TTL. TTL.	RDS MAL	. FJ	ned: Tion	9:	e no 9s	
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SUMMARY SHEET BY	E STATE	OF SCHOOL PIECES	R	THATS CHART VOL	DOM'T ZIZZI	Sakes.	•		ED OM	IL STEMS MAG.		1		CIN	em Moen	1	L JUMPS MAG.	POLLOWER BINIS	30	BOLL OVERRIDE	ACCION BANG OP	DOR'T STUBACT	168	ADJUSTNOSETS .	HENDLACTAL CONTEST	FLOOR PLATE OPENED	MALFUNCTIONS PER	RATE PER
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W.U. Ly8	FIELD CYCLE TES	T - CENTERFIRE	REPROT NO.1_	8128/1 PAGE NO. 4
tura Tona	MTR: 10-19-82	MODELY 7 LWT.	CAL: 7mm-08	BERIAL NO. 7600094
nounixi	TEST TITLE: SUMMARY SHEET	S PER - RIFLE - AMMO TYPE -	- SHOOTER	TTL. RDG. FIRED:

M/7 LWI 7MM-08 FUNCTION TEST "MITUNICTIONS"

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BUMMARY SHEET BY  R. Howe	SEDOTES	NO. OF ACURDS PLEED	राजाउट	בשבט מפשנים	ו ספונים בישמב	EMPTY SHELL OFTHES RED DON'T LOCK DEST	FRED FROM MAG. Int gn	THELL STEWS MAG.	SR OVERRIDE 1 F.	(i dom't lock up	h	gi	EM MOEN		SHELL JUNES MAG.	FOLLOWER BINES	LOADING	BOLT OVERRITH	ACCION HANG UP	ו משניים בבייצאכים	HEDVELGES	ADJUSTMENTS	REFLACTIONS	FLOOR PLATE OPENED	MALFUNCTIONS PER	MALE. RATE PER

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R. Howe	SHOTES			STATES	CERTAIN .		EMPTY	1 1.00		2nd	SHELL		משיד נסכב		ioi ioi	THE REAL PROPERTY.	SHELL	POLLOWER	LOADING	BOLL OV	ACTOR BASE UP	DOIS''T STITEACT	महत्त्व द्यात्व्य	ADJUST: MESTS	PRINT A COMPANY	FLOOR PLATE	MALFUNCTIONS	MAIF. RATE
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Model 7 LWT.

CAL: 7mm-08

BERIAL NO. 2600/33

PREVIOUS HOURILS

TEST TULE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RIS. FIRED:
TTL. MALFUNCTIONS:
MALFUNCTION NATE:

M/7 LWT 7MM-08 FUNCTION TEST "MIFUNUTIONS"

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Summary Sheet		activos Pleed		SERIL	2777	HELL COTTALS RED	P. Carlot	FE FR	014	STEENS MAG.	POWER CHENETIE HBL	A B		cin Bi	em Mber		JUMPS MAG.	R BIXIDS		OVERRIDE	<b>100</b> 000	3ACC	8	à	37.73	FLOOR PLATE OPENED	ONS PER	E PER
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INTE:	10	-19	-82

MODELL 7 LWT.

CAL: 7mm-08

PREVIOUS

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDS. FIRED: TTL. MALFUNCTIONS: MALFUNCTION DATE:

M/7 LWT. 7MM-08 FUNCTION TEST "MITUNITIONS"

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PREVIOUS	INTE: 10-19-82 MODEL: 7 LWT.	CAL: 7mm-08	BERIAL NO. 7600137
ROUNDA	TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE -	· SHOOTER	TTL. RDS. FIRED:
	M/7 LWT. 7MM-08 FUNCTION TEST "MIFUNCTIONS"	+	TIL. MALFUNCTIONS:

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	summary sheet by <i>R.</i> Hoωε	SECOURTE	NO. OF BCIMINS FIRED	FIZEDIG	Mary Seem	DOM: TITELE	EMPTY SHELL OPPHES RED		OM J. gnd	SHELL STEWS MAG.	POWER OVERRITE	DON'T LOCK UP		I	EM MBEN		SHELL JUMPS MAG.	FOLLOWER BINDS	LOADING	BOLT OVERRIDE	ACCITOR SEASO UP	DON'T EXTRACT	महाभ स्त्रास्ट्र	A DUTSTEMENTS .	Repr 4 Coments	FLOOR PLATE OPENED	MALFUNCTIONS PER	MAIF. RATE PER
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PAGE NO. 2

MTE: 10-19-82

MODEL 7 LWT.

CAL: 7mm-08

BERIAL NO. 2600/37

PREVIOUS ROUNDS

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDI. FIRED:
TTL. MALFUNCTIONS;
MALFUNCTION RATE:

M/7 LWT. 7MM-08 FUNCTION TEST "MIFUNCTIONS"

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- 7	1876	000	FIELD	CYCLE	TEST	_	CENTERFIRE

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MODEL 7 LWT.

CAL: 7mm-08

BERIAL NO. 7600/37

PREVIOUS

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDS. FIRED:
TTL. MALFUNCTIONS:
MALFUNCTION NATE:

M/7 LWT. 7MM-08	FUNCTION TEST	"Malfunctions"
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R. Howe	SECOTER	10. G	DETECT.	Tage Ver	E	EMPTYSHELL	TOTAL L	i	end		POWER (	משיד בי	H	ğ	Terra	1.021	SHELL	FOLLOWE	TOADTING	BOLZ OV	अद्भारत क्षत्रद पर	2011年12	BEEF CAGES	A DATESTICALES	Trees confirm	FLOOR PLATE	MALFUNCTIONS	MALF. RATE
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REPROT NO.1	822811	PAGE
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MODEL 7 LWT.

CAL: 7mm-08

BERIAL NO. 7600/37

PREVIOUS
ROUNDS

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDG. FIRED:
TTL. MALFUNCTIONS:
MALFUNCTION DATE:

•	m/7	LWT.	7mm-08	FUNCTION TEST	"MLFUNCTIONS"
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DATE:	10	-19	82	

MODELI 7 LWT.

CAL: 7mm-08

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PREVIOUS ROUNLO

TEST TUTLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDS. FIRED:
TTL. MALFUNCTIONS:
MALFUNCTION NATE:

M/7 LWT. 7MM-08 FUNCTION TEST "MIFUNCTIONS"

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Model 7 LWT.

CAL: 7mm-08

BERIAL NO. 7600081

PREVIOUS ROUNDS

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RIST. FIRED: TTL. MALFUNCTIONS: MALFUNCTION RATE:

M/7 LWT 7mm-08	FUNCTION TEST	"MIFUNCTIONS"
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PAGE NO. 3

IMTR: 10-19-82

MODEL 7 LWT.

CAL: 7mm-08

BERLAL NO. 7600080

PREVIOUS ROUNDS

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDS. FIRED: TTL. MALFUNCTIONS! MALFUNCTION NATE:

M/7 LWT. 7MM-08 FUNCTION TEST "MITUNCTIONS"

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INTE: 10-19-82

MODEL! 7 LWT.

CAL: 7mm-08

BERIAL NO. 8/600/48

PREVIOUS ROUNLS

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RIS. FIRED:
TTL. MALFUNCTIONS:
MALFUNCTION DATE:

M/7 LWT. 7MM-08 FUNCTION TEST "MITURETIONS"

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summary sheet by R. Howe	SHOTER	OF BOUNDS FIRED	والمالا	MA PRED STEEL	The Street	EMPTY SHELL OTTHES RET		te tn M Tat	OM	SHELL STEMS MAG.	POWER OVERRIDE	in lock up	tet	cim	em Moen		II JUMPS MAG.	FOLLOWER BINDS	LCADING	T OVERRIDE	ACTION BLAC UP	T STUTACE	महाभारत कड	ADJUSTMENTS .	REPLACEMENTS	FLOOR PLATE OPENED	MALFUNCTIONS PER	RATE PER
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R. HOWE	-[STATE OF	TURES CLERK Vom	DOM'T STATE	EMPTY SHELL	TI TURNE	Iat	gnd l'Cli		POWER O	DOI: 1.0		I COS	32222		SHELL J	FOLLOWER	CARTITUE	BOLL OV	ACCION BANG	DOR.IT STITESACE	SEPT THE	ADJUSTMENTS	REPLACEMENT	FLOOR PLATE	MALFUNCTIONS	MALE. RATE
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	bummary sheet by R. Howe	SHOOTES	NO. OF BOWNS PIECE	राजाञ्ज	THE S COME VO.	TOTAL STREET	EMPTY SHELL OTTALS REDOKT TO DOMING LOCK OPER	FRED FROM MAd. 18t 2nd 1Accil	SHELL STEMS MAG.	POWER OVERRIDE	का कारत का का		CIM	TEM LMBEN	SHELL JUMPS MAG.	FOLLOWER BINDS	LOADING	BOLL OVERRIDE	अद्याम सम्बद्ध पर	DON'T SUBACT	THE THE THE S	ADUSTREETS	TELETACTO(ENTES	FLOOR PLATE OPENED	MALFUNCTIONS PER	MALE. RATE PER
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	R. Howe	SECONES	8 8	E C	Cane Ver	No. of the last	EMPTY SHELL	DOT		eng Eng			71 2,300	1.03	Record		SHELL J	FOLLOWER	LOADING	BOLZ OV	ACCION BANG	1. ED	HEFA KAGES	ADJUSTONESTES	eres Acres (entre	FLOOR P.	MALFUNCTIONS	MALE. RATE
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BY R. Howe R 140 PSP	SECON	[2] [2]	H	Trans Creative	DOM'T PARTY	EMPTYS	DON'T LOCK OF	TV Tef		ड गाजसङ		DOM'T TO		103	RIGHT	1.22.1	SHELL J	FOLLOWER	LCADING	BOLT OVERRIDE	ACTION BANG	DOM'T STEERACE	BEEN 23 CORE	ADJUSTMENTS	PREFER CENTER	FLOOR PLATE	MALLTUNCTIONS	MALF. RATE
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previous	İ	ate:_	10	-19-	12	14	opeta_Z	LWT.		CAL:	mn	1-08	-	8EF	RIAL N	0	1) 26	600/3	
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	SUMMARY SHEET BY	od.	SCHAIS FLEED		ם כבבנים	Topic S	SHELL OTTAKS RE		FE FR	014	STEMS MAG.	POWER OVERSTEEN SEASON	क्रा स	-		em Mden		JUMPS MAG.	er bians		OVERRIDE	BOAR OF	ESTURACT	Ø	Sin	Signer	FLOOR PLATE OPENED	TOMS PER	RATE PER
	R. Howe	SHCORES	HO. 0H	FIRESTE	Can't Vom	1	EMPTY SHELL	T. STORE		end Edit	SHELL	CHEAN.	T III	HEE	100	NECTE E	1.0221	SHELL	FOLLOWER	LCADURG	BOLL O	ACCION	DOM'T E	मध्य स्थत्वर	ADJUSTMENTS	PRINT ACTORERY	FLOOR F	MALFUNCTIONS	MALF. RA
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R. Howé	-	SHOOMS	S B	NEW YEAR	SE SE	1.100	EXIVE	DOM'T	18t	end evil	SHELL		T. MOC	H	153	STEER .		SHELL	FOLLOWER	TOADUM	BOLT 0	ACTOR BANG	E 1. 100	BEEN ENG	ADJUSTS	SEE STATE	FLOOR]	MALFUNCTIONS	MALF. R
R14075	P		_	_								1/2																	-==

	SUMMARY SHEET BY		30.30		1	No.	HELLON	COX OF	PR MA	i	STEPAS M	PONET CHESTER	E H		CIM	MBER	ناما	R BINDS		OVERR THE	ER CER	ETHENCE	5 2	· P	577.53		IONS PE	RATE PER
	R. Howe	SHOOMS	Б В	13.00	120.200	200	EMPTY SHELL OF	DOM'T L		Suq 5		Table 2	משיים ביסמב		103	RICHE	SHELL	FOLLOWER	TOADING	BOLT OF	ACTOR BANG	四日二日日	BREAKAGES	ADJUSTMENTS	REPEACONERS	FLOOR PL	MALFUNCTIONS	MALF. RA
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REPROT NO.1 8228//

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Model 7 LWT.

CAL: 7mm-08

BERIAL NO. 7600/30

PREVIOUS ROUNLG

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RIST. FIRED:
TTL. MALFURCTIONS:
MALFURCTION RATE:

M/7 LWT. 7MM-08	FUNCTION TEST	"MIJUNCTIONS"

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SUMMARY SHEET BY		Scratts France		Traces I		HELL OTTHES RED			ed OM	STEMS MAG.	WANT BUN	B		cin al	em Mdet		JUMPS MAG.	R BINDS		OVERRIDE	130 UP	ಪಾಳಿಯ	8	512	200	FLOOR PLATE OPENED	IONS PER	क्ट ह्य
R. Howe	SECONES	8 8	BE	COME VOLUME	DOM'S STATE	EMPTY SHELL	DON'T L		tali Suq		POTEN	DOINT LOCK		103	NAME OF THE PERSON OF THE PERS		SHELL	FOLLOWER	COADURE	BOLL OV	ACTION BANG UP	DON'T ENTRACT	THEN KAGES	A DJUSTEMBRETS	ERFOR A CHOMESTONES	FLOOR P	MALFUNCTIONS	MALF. BATE
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W.V. 678.	FIELD CYCLE TE	ST - CENTERFIRE	REPROT NO.:	8228/1 UE NO. 4
PREVIOUS	inte: 10-19-82	HODELI 7 LWT.	CAL. 7mm-08	BERIAL NO. 7600/30
ROUNDS	TEST TITLE! SUMMARY SHEE	IS PER - RIFLE - AMMO TYPE	- SHOOTER	TTL. RDG. FIRED:

ROUNLES TE						HEET									OOTE	R						TTL.	MI	FUN(rrd: Tion Mte	81		
BUMMRY SHEET		उद्याप्त श्रावका		Seem	and a	HELL OTTHES RET		}	OM OM	STEWS MAG.	OVERRITIE	10CK 08			'EM MDEN		JUMPS MAG.	2 BINIES		RRIDE	日日日	ZAC:		À	MISS	ATE OPENED		e per
BY R. Howe	SECOLES	NO. OF	STEETS!	Canc Ve.	No.	EMPTYS	DOM'TE LO	181	gnd		POWER O			103	Second .	1	SHELL JI	FOLLOWER	LOADING	BOLT OVERRIDE	ACTUAL BANG UP	DOE"T STEERACT	BEEN TAKES	ALIUSTMERTS	Perekananan	FLOOR PLATE	MALFUNCTIONS	MALF. RATE
R140 PSP																									==			
SLOW	10	5	8K															<u> </u>			_							
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BUMMARY SHEE BY R. Howe R140 PS SLOW	. L	B B	STEEL STEEL	CLASS TO S	No. of Parties	EMPTYS	DON'T LOCK OF	181	end tul	SHEET S	POWER O	משייד נסמד שי	田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田	15	अस्त्रहरू	TEST.	SHELL J	FOLLOWER BINDS	LOADING	BOLL OV	ACCOUNT IN	7. EOC	मराज्यात	ADJUSTE	ELFLACTMENTS	FLOOR PLATE	MALFUNCTIONS	
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DATE:	10	-19	-8	2

MODEL! 7 LWT.

CAL: 7mm-08

BERIAL NO.

PREVIOUS ROUNDS

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDG. FIRED: TTL. MALFUNCTIONS: MALFUNCTION DATE:

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R. HOWE	SHOOMS	9 9	E STATE	THE CASE VAL	DOM'T ELECT	EMPTY	T TABLE	l	ccii Suq	SHELL	Selfar.	Darie D	HIER	5	N TEST	T.EST.	SHELL	POLLOW	LOADING	BOLT OF	ACTION BANG	DOR'T ETTEACT	उसका स्टब्स्ट	ADJUSTORETS	REFERENCES	FLOOR P.	MALFUNCTIONS	MALF. BA		
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	m/7.	LWĪ	. 7/	mm	0-08	8° F	- UN C	c7/	י גאס	TÉS	" سر	WIY.	UNC	TIONE	Į*•								TTL.	mai Unct	FUNC TON	TION RATE	B1		
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R. Ho	<u>ωε</u>	SECORES	д Д	STEEL STEEL	TIPA PORT	ST. TELES	EMPTY SHELL	DOT I		ecil tril	SHELL STEAMS		DOM'TE LA	H	13	BIESE	- 22	SHELL JUMPS	POLLOWER	COADUME	BOLT OVERRIDE	ACCITON BANG	DOE'T STEERE	इस्का का त्य	ADJUSTMENTS	Trong Actor/Bright	FLOOR PLATE	MALFUNCTIONS	MALF. RATE
R140	PSP																						===	===					
SLOW	ر	RU	5								_												/\3	_	_				. ~
MED		RU	5															-			_	_	1/2	_	_	-			
FAST	<i>-</i>	RW	5	6K					~																				
																							<u> </u>						
5400	<u> </u>	RE	5	ok																					-				
MED		RÉ	3	6 Κ																									
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SLOW	ر	Her	5									_			_	_			-	-	-	-	2	-					-
MED)	uu	5																				3/3						
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FIELD CYCLE TI	EST - CENTERFIRE	REPROT NO.1	822811	_ PAGE NO. 4
MTR: 10-19-82	MODELI 7 LWT.	CAL. 7mm-08	SERIAL NO.	600100

PREVIOUS
ROUNDS TEST 1

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RIM. FIRED:
TTL. MALFURCTIONS:
MALFURCTION DATE:

M/7 LWT. 7MM-08 FUNCTION TEST "MITURUTIONS"

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SUMMARY SHEET BY		RELIE STEEDS		STEEL		EMPTY SHELL OPTERES RET		ee er m	011	STEMS MAG.	OVERRIDE	LOCK UP		cin 81	em Mden		JUMPS MAG.	R BINIS		OVERRIDE	100: 000	TO ACT	***		Serves.	FLOOR PLANE OPENED	CONS PER	E PER
R. Howe	SECOLES	g g	SEE .	Canal Age	DOM. ELECT	EMPTYS	T IL ROOT		end (VII		POWER O	בספריים בכ		101	Zerre	1.021	SHELL J	FOLLOWER BINDS	LCADING	BOLT OV	ACTION STATE UP	DOE'T STEACT	BREAKAGES	ADJUSTMENTS	FEFFE A CHINESTES	FLOOR PL	MALFUNCTIONS	MALE. RATE
R140 PSP																							-					-51-
SLOW	CP	3																				M						
MED	CD	1																				1/3					*****	
FAST	CD	5						r														18		-				
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MED	05	5																				1/4	-					
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SLOW/					_																	,						
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•	808 m 2/m 308	. K.	308		T.Cr	וכע	, wo	FUNCTION TES	1			"FD E	FUNC	"hnleunctiong"	1.1			}				FS	TTL. PALFUNCTIONS AMERICALION INTER	PALTURCTION INTER	Crio	- E &		111
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	Lond Ulze	EELOŒS	ED DE	911-21 2	Ce55 45m	E 2.EDG	E 2.E01	n T'HOO		at 2nd		SOMER C	DOZIZ TO	POTE	KOI	Je Sile	ii see	C TITES	enctioe	STITES!	MO JIOE	E POTTO	en P'enx	ar sita	PAEDY IEA	ARK TAD	5	; "
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	APMINITION	p		Remark Freeze		שבא לבבים אבינים	3.32.2	בספיר פונה יינסם	ניסכנב סבבים	FR	ed om	STEEMS MAG.	OVERRIDE	. TO TO 2		CIIV B.I.	'EM MDEN		JUMES MAG.	इत्र अच्चा		BOLL OVZERIDE		in the second	13	Į.	المراج	VELOCIMIES .	nei4A	
Sr	Load Blze	الالتدائست	2	e Pr	STEELS.		DOT " SIECE	F. 172	2011 i	Tv Ter	2nd	STEELE	20van	1 11 100	H	15.74	37.22		Section	FOLLOWER	TOADILES.	BOLT O	अत्याक घडाउ पर	2 5' ESC	BREA FACES	ACCOUNT	REPLACEMENTS	BOLL VER	(ON 1	
رع	7600036																						-							
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	nounds		TE	UT I	TTLE	12		<u>.</u>	11		21	<u>0 ir</u>	(%		101	, 	1,11	Mo							77L.	nia	. F1	RED:			
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		-			_			-	-				<u> </u>							<u> </u>		<u> </u>	<u> </u>	<u> </u>		<u> </u>					······································
•	afrái	urrion	•		SCEEN PERSON		Seem	arger:	STOW SACK	LOCK OPPH	FR M	ed om d.	STEEMS MAG.	OVERRIDE	roce up			'EM MDEN	l ,	उत्पन्न अबद.	3 31315		टाउडा	田田田	ma & CC.	SO.	S 222	Sint	VELOCEMENTS .	REMA	nrsi
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10-15-82

RIFEE

M/7 CAL .308 FLOOR PLATE LATCH EVAL.

SER# 7600008

RIFLE#1

FLOOR PLATE LATCH RELEASE FORCE LBS.

<i>/</i> .	0	<i>RDS</i>	111	MAG.
	1		••	• •
	2			
	3	6		44
	4	()	11	n

	2	3	TOTAL	AVG
2.75	2.50	2.25	7.50	2,50
2.50	2.25	2.00	6.75	2.25
2.50	2.50	2.25	7.25	2,42
2.25	2.75	225	7.25	2.42
2.50	2,25	2.50	7.25	2.42

AUG. 7.20 2.40

M/7 CAL 7MM-08 FLOOR PLATE LATCH EVAL.

SER# . 7600098

= RIFLE# 1

FLOOR PLATE LATCH RELEASE FORCE LBS.

٨.	0	ROS.	111	MAG
	1	"	"	11
	2	•	"	"
	3	r	"	"
	4	"	u	μ

	2	3	TOTAL	AVG.
1.75	200	2.00	5,75	1.92
1.75	175	1.75	5,25	1,75
2.00	1.75	1.75	5,50	1.83
1.75	1.50	1.75	5,00	1.67
1.75	1.75	1.50	5,00	1.67

AUG 5.30 1.76

M/7 CAL. 308 FLOOR PLATE LATCH EVAL.

SER# 7600003

RIFLE# 2

FLOOR PLATE LATCH RELEASE FORCE LBS.

۲.	0	RDS	11	MAG.
	1		••	"
	2			i.
	3	•		41
	4	t.	t,	11

/	2	3	TOTAL	AVG
2.50	225	2.25	7.00	2,33
1.75	2.00	2.25	6,00	2.00
2.25	2.25	2.00	6,50	2110
2.25	2.50	2.25	7.00	2.33
2.50	2.50	2.50	7.50	2.50

AUG. 6.80 2.27

M/7 CAL 7MM-08 FLOOR PLATE LATCH EVAL.

SER# 7600010

= RIFLE# 2

FLOOR PLATE LATCH RELEASE FORCE LBS.

٨.	0	ROS.	111	MAG
	1	11	P	11
	2	•	/,	"
	3	•	"	80
	ij	11	h	"

/	2	3	TOTAL	AVG.
3.00	3.25	3.50	9.75	3.25
2.25	2.50	2.75	7.50	2.50
2.50	2.75	2.75	8.00	2.67
2.50	2.75	2.50	7.75	2.58
2.25	2.25	2,50	7.00	2.33

Keturn latch by hand
ANG. B.OO 2.67

M/7 CAL. 308 FLOOR PLATE LATCH EVAL.

SER# 7600040

RIFLE#3

FLOOR PLATE LATCH RELEASE FORCE LBS.

۲,	0.	RDS	111	MAG.
	1	•		"
	2			i,
	3	6		44
	4	c.		n

	3	TOTAL	AVG
2.50	2.50	8.00	2.67
2.25	2.50	7.00	2.33
2.25	2.25	7.00	2.33
2.25	225	7.00	2.33
3.00	2.50	8.50	2.83
	2.25	2.25 2.50 2.25 2.25 2.25 2.25	2.25 2.50 7.00 2.25 2.25 7.00 2.25 2.25 7.00

AUG. 7.50 2.50

M/7 CAL 7MM-08 FLOOR PLATE LATCH EVAL.

SER# _ 7600094

= RIFLE# 3

FLOOR PLATE LATCH RELEASE FORCE LBS.

			-	
٨.	0	RDS.	111	MAG
		**	"	11
	2	•		"
	3	,,	"	41
	4	4	h	μ

1	2	3	TOTAL.	AVG.
2.25	2,25	2.00	6.50	2.16
2.25	2,50	225	7,00	2.33
225	2,00	2,25	6.50	2.16
2.25	2.25	2.25	6.75	2,25
2.00	2.00	2.25	6.25	2.08

AUG. 6.60 2.20

M/7 CAL. 308 FLOOR PLATE LATCH EVAL.

SER# 7600.022

RIFLE#4

FLOOR PLATE LATCH RELEASE FORCE LBS.

۲,	0	RDS	111	MAG.
	1	••	••	"
	2		,,	i.
	3	4	4.	••
	4	•	1,	11

	2	3	TOTAL	AVG
2.25	2,25	2,25	6.75	2.25
2.50	2.50	2.25	7.25	2,42
2.50	2.25	2.25	7.00	2.33
2.75	250	2.25	7.50	2.50
2.50	2.50	2.25	7.25	2.42

AUG 7.15 2.38

M/7 CAL 7MM-08 FLOOR PLATE LATCH EVAL.

SER# 7600133

= RIFLE# 4

FLOOR PLATE LATCH RELEASE FORCE LBS.

7.	0	RDS.	111	MAG
	1	11	"	$\boldsymbol{\nu}$
	2	•	"	v
	3	,,	et	"
	i/	1,	h	μ

1	2	3	TOTAL	AVG.
2.25	2.00	2.50	6.75	2,25
2.00	1.75	2.50	6.25	2.08
2.25	275	1.75	6.75	2.25
2.00	2,25	1.75	6.00	2.00
1.75	1.75	1.75	5.25	1.75

AUG. 6.20

207

M/7 CAL. 308 FLOOR PLATE LATCH EVAL.

SER# 7600101

RIFLE#5

FLOOR PLATE LATCH RELEASE FORCE LBS.

ζ.	O RDS	111	MAG.
	1 "	"	"
	2 "		.,
	3 "	••	**
	4 .	.,	"

/	2	3	TOTAL	AVG
2.75	275	2.75	8,25	2.75
2.75	2.50	2.75	8.00	2.66
2.50	2.50	2.50	7.50	2.50
2.75	2.50	2.50	7.75	2.58
2.25	3.25	2.75	8.25	2.75

AUG 7,95 2.65

M/7 CAL 7MM-08 FLOOR PLATE LATCH EVAL.

SER# 7600137

= RIFLE# 5

FLOOR PLATE LATCH RELEASE FORCE LBS.

٨.	0	RDS.	111	MAG
			**	ľ
	2	"	4	u
	3	<i>•</i>	"	
	4		h	"

/	2	3	TOTAL	AVG.
2.25	2.50	3.00	7.75	2.58
2.50	2.25	2,00	6.75	2.25
2.50	2.25	2,50	7.25	2.42
2.25	2.75	2.50	7,50	2,50
2.50	2.75	2.75	6.00	2.67

AUG. 7.45 2.48

M/7 CAL. 308 FLOOR PLATE LATCH EVAL.

SER# 7600139

RIFLE#6

FLOOR PLATE LATCH RELEASE FORCE LBS.

۲.	0	RDS	111	MAG.
	1	t.	•	••
	2	4		i,
	3	ú		•
	4	U	1,	11

	2	3	TOTAL	AVG
4.0	3.50	3.5	11.00	3.66
3.50	3,25	3.25	10.00	3,33
3.25	3,25	3,50	10.00	3.33
3.00	3.5	3,00	9.50	3.16
2.75	3.25	3,25	9.25	3.08

AUG 9.95

3,32

M/7 CAL 7MM-08 FLOOR PLATE LATCH EVAL.

SER# 7600081

= RIFLE# 6

FLOOR PLATE LATCH RELEASE FORCE LBS.

<i>/</i> .	0	ROS.	111	MAG
	1	70	"	ľ
	2	•	"	•
	3	•	e e	11
	4	4	u	"

/	2	3	TOTAL	AVG.
2.00	2.00	1.75	5,75	1.92
2.50	2.00	2.00	6.50	2.16
1.75	2.00	1.75	2.50	1.83
2.00	2.00	2.00	6,00	2.00
2.25	2.00	2.00	6.25	2.08

AUG. 6.00

2.00

M/7 CAL. 308 FLOOR PLATE LATCH EVAL.

SER# 7600058

RIFLE#7

FLOOR PLATE LATCH RELEASE FORCE LBS.

1.	0	RDS	111	MAG.
	1	•	••	"
	2			ėı
	3	4	41	• 1
	4	c,	1,	11
•				

/	2	3_	TOTAL	AVG
2.75	2.75	2.50	8.00	2.67
2,50	2.75	3.00	8.25	2.75
2.50	2.75	2.50	7.75	2,58
2.25	2.50	2.50	7.25	2.42
2.25	2.25	2.50	7.00	2.33
Return	latel	by	hand	
•		AUG	7.65	2.55

M/7 CAL 7MM-08 FLOOR PLATE LATCH EVAL.

SER# . 7600080

= RIFLE# 1

FLOOR PLATE LATCH RELEASE FORCE LBS.

٨.	0	RDS.	111	MAG
	1	#	"	"
	2	•	4	•
	3	<i>r</i>	"	.,
	4	<i>1</i> ₄	le	"

1	2	3	TOTAL	AVG.
2.25	2.00	2,25	6.50	2.16
1.75	1.75	2.00	5,50	1.83
225	1.75	1.75	5.75	1.92
2.00	2,25	1.75	6,00	2,00
1.50	1.75	2.00	5,25	1.75

AUG 5,80 1.93

M/7 CAL. 308 FLOOR PLATE LATCH EVAL.

SER# 760.0036

RIFLE#8

FLOOR PLATE LATCH RELEASE FORCE LBS.

<i>Ι</i> .	0	RDS	111	MAG.
	1		••	"
	2	"	1.	٠,
	3	4	4.	44
	4	•	ŧ,	n

	2	3	TOTAL	AVG
4.00	3.75	3.50	11.25	3.75
3.25	3.00	325	9,50	3.16
3,50	3,25	3,25	10.00	3.33
3.50	325	3.00	9.75	3.25
2.50	2.75	3,50	8.75	2.92
Returi	v late	hb	y hand	
•		1116	, १ ४८	3,28

M/7 CAL 7MM-08 FLOOR PLATE LATCH EVAL.

SER# .7600148

= RIFLE# 8

FLOOR PLATE LATCH RELEASE FORCE LBS.

٨.	O	ROS.	111	MAG
	1	*	13	11
	2	•	"	u
	3	<i>r</i>	"	**
	4	4	u	μ

	2	3	TOTAL	AVG"
2.00	2.50	2.50	7.00	2.53
2.25	2.25	2.00	6.50	2.16
1.75	2.00	1.75	5.50	1.83
2.00	2.25	2.25	650	2.16
2,25	3.00	2.25	7,50	2.50

AUG. 6.60 2.20

M/7 CAL. 308 FLOOR PLATE LATCH EVAL.

SER# 7600103

RIFLE#9

FLOOR PLATE LATCH RELEASE FORCE LBS.

/.	0	RDS	111	MAG
	1		••	"
	2		,.	i.
	3	(,	4.	44
	4	ů.	1,	n
•				

/	2	3_	TOTAL	AVG
4.25	4.25	4.00	12.50	4.16
3.50	3.75	4.00	11.25	3.75
4.75	4.25	3.50	1250	4.16
3.75	3.75	4.00	11.50	3.83
3,25	3.50	3.00	9.75	3.25
D+	1.4.1	1 .	7	

Return lateh by hand .

Aug. 11.50 3.83

M/7 CAL 7MM-08 FLOOR PLATE LATCH EVAL.

' SER# . 7600130

= RIFLE# 9

FLOOR PLATE LATCH RELEASE FORCE LBS.

٨.	0	RDS.	111	MAG
	1	10	,,	ľ
	2	•	4	11
	3	"	"	"
	4	1,	h	μ

	2	3	TOTAL	AVG.
2.50	2.50	2.25	7.25	2.41
1.75	2.25	2.25	6.25	2.08
1.75	1.75	1.75	5-25	1.75
2.25	2.50	2.25	7.00	2.33
1.50	2,25	1.75	5.5	1.83

Ava. 6.25 2.08

M/7 CAL. 308 FLOOR PLATE LATCH EVAL.

SER# 7600043

RIFLE#10

FLOOR PLATE LATCH RELEASE FORCE LBS.

1.	0	RDS	111	MAG
	1		**	•
	2	.,		4.
	3	4	• •	*1
	4	v		n
•				

	2	3	TOTAL	AVG
3.50	3.50	4.00	11,00	3,67
3.00	3.25	3,25	9,50	3.16
3,50	3.50	3,25	10.25	3.42
3.50	3.00	3.00	9.50	3.16
3.50	3.50	3.00	10.00	3.33
7	1 4 /	/	<i>T</i> . T	

Return latch by hand Aug 10.05 3.35

M/7 CAL 7MM-08 FLOOR PLATE LATCH EVAL.

SER# 7600144

= RIFLE# 10

FLOOR PLATE LATCH RELEASE FORCE LBS.

٨.	0	ROS.	111	MAG
	1			11
	2	•	4	u
	3	"	"	"
	4	4	h	11

/	2	3	TOTAL	AVG.
3.50	3,25	350	10.0	3,33
3.00	3.00	3,50	9.5	3.16
3.00	3.00	3,00	9.0	3.00
2.75	3.25	3.75	9.75	3.25
2.75	2.50	325	8.5	2.83

Return latch by hand Ave. 9.35 3.11

RECORDS CAJEGORY OR TITLE:

RECORDS CAJEGORY OR TITLE:

COPY "O" (OFFICIAL) [] "X" (EXTRA) [X]

TOTAL RETENTION: Letter of the street of the s

MODEL SEVEN

JAN 18 1983

REMINETON ARMS COMPANY, INC.

Remington

CC: C. A. Riley
R. J. Long
J. P. Linde
G. D. Campbell

Bridgeport, Connecticut
January 13, 1983

De morfile

TO:

P. J. MEYER

FROM:

W. H. FORSON, JR.

SUBJECT:

REVISION TO MODEL SEVEN FORECAST

Total Company orders for the Model Seven are approaching 5,000, which is sufficient to recognize trends that differ from the original forecast. Based on an analysis of orders to date, please implement the following revised forecast.

PRODUCTION Reu Salet DEMMO OR 16 School OLIG. DEMOND Caliber Quantity 5600 2000 222 3,600 16,240 11 500 243 10,000 1000 6mm 2,400 5500 4500 3,200 7mm-08 8500 1400 308 9,300 37,640 28,500 TOTAL 28,500

WHF: daf

John: Please fell on Revised schools por one.

I have well ent 18 rava of 7mm c4 to 2000

144 118

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M/7 ORIG Dee Schelule Golday XIb days = 960

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#17891 oday May Spg [dux fran vendon 11-17] ""

STK Assg (Z56 o'dre) - """

TRIG Assy (244 0'dor) - "

FI Com Assy (489 in proces) - "

FP Latch (P/m-du 12/10)

FP Pal (P/m-du 11-24)

Boetary (678 in Roun?) - "

Fort Sight Romp (P/M - due 11-24)

01000/ 92466 13276

Sewence			
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į '	308	1500	FEB-MAR
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•	7mm08	2000	MAR-APR
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	243	3000	APR
	308	2000	MO4-
	222	3000	JU112

The L.S. Starrett Company

BEARCAT TEETH

Dick:

M/7 Mag. fallower

received Purchased dry of

Parts 11/16

not get inspected.

BALDWIN-HALL COMPANY P.O. Box 4847 6552 Ridings Road Syracuse, N.Y. 13221 Phone (315) 463-9251 M/7 Balt Stops

F 52449

HIT

P.P. not yet issued.

M/7 Han Plat Base

PP. held for Material

(senting lot rejected

by PE+C)

RD-69-8

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



PETERS

modul ?

XC: J. P. Linde
R. J. Long
W. S. Johnson
File

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

January 26, 1983

TO:

D. D. RICCI

FROM:

M. S. HALL

SUBJECT: M/7 FLOOR PLATE BASE

Purchased Parts Inspect rejected 2 lots of parts totaling 9632 pieces. Parts have cracks and 6 characteristics out of specs.

Production needs parts.

In attendance at meeting 1/25/83:

D. J. Anderson J. B. Mroz
S. D. Bennett D. D. Ricci
L. B. Bosquet J. R. Snedeker
M. S. Hall R. L. Snedeker

Z. J. Kowalski

CONCLUSIONS FROM MEETING:

In Plant Parts

Purchased Parts will screen parts and release to Production parts that don't have cracks.

Future Vendor Parts

- Vendor has changed grain flow of material to eliminate cracks.
- 2.) Vendor will be expected to meet following specs.:
 - a.) .080-.090 dia's. of hinge pin hole.
 - b.) $.495 \pm .005$ dim. of coined countersink.

CONCLUSIONS FROM MEETING:

Future Vendor Parts (contd.)

- 3.) Inspection point will be clarified on .625 dim. on width of hinge pin section and .220 dim. (height of front end). Production will file .625 dim. over hinge section.
- 4.) B. Bosquet will get with vendor on .251-.258 dia. of take down screw hole to resolve this problem.
- 5.) B. Bosquet will get with Research on possible redimensioning of .442-.448 dim. (position of takde down hole from hinge pin hole).
- 6.) Gary Barnes will check parts to see if & of hinge pin hole is in line with bottom of plate.

MS Hall

MSH/bdm

SALES

DEPARTMENT

Remington Rem-O-Gram

Quick Facts About REMINGTON PRODUCTS

ITION 6.1. FOND 10 05

cc: House Force

Bridgeport, Connecticut March 24, 1983

MAR 28 1983

TO THE FIELD FORCE:

You have already received a request to contact your jobber customers, instructing them to hold further delivery of any Model Seven rifles on hand and to supply you with a list of dealers who have received delivery of Model Seven rifles.

Our ultimate intention is to update all Model Seven rifles shipped to date by means of a return to the nearest Remington warranty gunsmith service location or to Arms Service in Ilion.

We have discovered that if a Model Seven rifle is disassembled after it leaves the factory, it is possible for the rifle to be reassembled incorrectly, producing off-center trigger alignment that might cause subsequent malfunction of the trigger and accidental firing of the rifle. The updating service on the rifle will eliminate the possibility of such incorrect reassembly.

To accomplish this, you are requested to obtain:

- 1. A list of all Model Seven rifles and matching serial numbers still in an individual jobber's inventory.
- 2. A list from the jobber of the names and addresses of dealers to whom Model Seven rifles have been shipped, including serial numbers.

Both jobbers and dealers will then be contacted by Product Service with instructions on how to have the rifles updated. Consumer purchasers of Model Seven rifles will also be contacted by Product Service with a request and instructions to have the rifles updated.

REMINGTON ARMS COMPANY, INC., BRIDGEPORT 2, CONN.

Form No. RD 451

Printed In U.S.A.

Field Force Page 2 March 24, 1983

In all contact with jobbers, dealers, and retail customers on this subject, it is important to emphasize that the potential malfunction is remote, can occur only on a Model Seven rifle that has been disassembled and subsequently reassembled outside the factory, and that the update applies only to Model Seven rifles and not to any other Remington models.

This update is being incorporated into all Model Seven rifles to be shipped in the future.

Sincerely,

E. J. Conroy Director of Sales

EJC/dr

APR 6 1983

REMINGTON ARMS COMPANY, INC.

TELEX 964-20! STRATFORD CT 939 BARNUM AVENUE P.O. BOX 1939

TELEPHONE

BRIDGEPORT, CONNECTICUT 06601

March 31, 1983

TO OUR DISTRIBUTORS:

Remington Arms Company has discovered a problem that may develop with the Model Seven rifle and is requesting you hold further delivery of the Model Seven that remain in your inventory until notified. This letter provides you with the necessary details regarding this request.

We have discovered that if a Model Seven rifle is disassembled after it leaves the factory, it is possible for the rifle to be reassembled incorrectly, producing off-center trigger alignment that might cause subsequent malfunction of the trigger and accidental firing of the rifle.

Since a rifle may be disassembled at any time in the future for one of several reasons, we wish to update all Model Seven rifles with a preventative modification that eliminates the possibility of such incorrect reassembly. As a result, if you have not already done so, we are requesting your assistance with the following actions:

- 1. Please hold any Model Seven rifles still in your inventory.
- 2. Please send to us (c/o Remington Arms Co., Inc., 939 Barnum Avenue, P. O. Box 1939, Bridgeport, CT 06601, Attention J. D. Glenn) or provide your Remington Field Representative with a list of the names and addresses of dealers to whom you have shipped Model Seven rifles with matching serial numbers for those rifles. We will then contact those dealers with instructions for the updating modification.

3. Please return any Model Seven rifles still in your possession to the Remington warranty gunsmith service location nearest you for the updating modification. A list of such locations is enclosed. If it is inconvenient or difficult for you to return Model Seven rifles to a warranty service location, you may also ship them to:

Remington Arms Co., Inc. Arms Service Division Ilion, NY 13357

To expedite, shipments should be made prepaid. Upon receipt of a copy of your freight bill, Remington will issue a check for same. Your receipt should also be referred to J. D. Glenn (c/o Remington Arms Co., Inc., 939 Barnum Avenue, P. O. Box 1939, Bridgeport, CT 06601) for handling.

In returning Model Seven rifles to either location, please include your company name and return mailing address inside each box. The updating of your rifles and return to you will be accomplished as quickly as possible. While the possibility of the described malfunction is remote and it can occur only if the rifles are disassembled after they leave the factory, we believe it is in the best interests of the eventual owner to have this preventative modification performed.

We apologize for whatever inconvenience this may cause you. This update applies only to Remington Model Seven rifles shipped prior to this date and not to any other Remington models. The corrective action will be incorporated into all Model Seven rifles to be shipped in the future.

If you have any further questions, or if any of your dealers have questions concerning this request, please feel free to call us on the following toll free number, 800-243-2953 (operational after April 8, 1983), between 8:00 a.m. and 4:30 p.m. Eastern Standard Time.

Sincerely,

E. J. Conroy

Director of Sales

EJC/dr Enc. RD-49-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Xc: L. B. Bosquet
R. C. Bottini
File: Proposal 1011

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

May 10, 1983

TO:

R. J. LONG

FROM:

D. J. ANDERSON

RE:

MODEL SEVEN LWT - .223 CALIBER

The above project has been accepted by the Operations Committee and a trial and pilot lot of 100 pieces is required for August assembly.

Please make whatever arrangements necessary. Barrel blanks have been completed through the GFM today.

DJA:hv

11D-89-B 1

INTER-DEPARTMENTAL CORRESPONDENCE

xc: L.B. Ferreira L.B. Bosquet R.J. Long S.D. Bennett

Remington. **QUPOND**

DETERS **QUPOND**

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"__

—— May 26, 1983

TO:

D.J. Anderson

FROM: D.D. Ricci

M/7 RE-DESIGN STATUS

PHASE I - Strengthen Design

1. Plate - change to .080 material

a. no changes transmitted

b. no orders issued

2. Spring - alter configuration

- a. order I-1648 issued to marked print for 10,000 parts on temporary tools
 - 1) order cancelled 5-9-83 no cancellation charges
- b. issued an additional production for 10,000 to alleviate vendor of material since not a standard thickness
- 3. Cover change to .062 material
 - a. order I-1667 issued for 10,000 parts from altered permanent tools. Requisition issued to cover \$2,800.00 tooling alteration only.
 - 1) order put on hold as there will be a consideration for the steel if scrapped. Steel will be inventoried and tooling segments shelved until June '83. Determination required at that time.
 - 2) no production parts produced.

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PD-69-B .

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"______ May 26,1983

M/7 RE-DESIGN STATUS

PHASE I - Page 2

- 4. Base change to .062 material
 - a. order I-1636 issued for 10,000 parts (#92724) requisition received
 - b. letter issued to vendor authorizing purchase of additional raw material, but hold until further decision in June '83. If not used then, a cancellation charge will be incurred.
 - c. parts have been received.
- 5. Guard temporary tool change to front & rear configurations
 - a. order I-1637 verbally issued. Requisition issued for \$1,175.00 tooling charge and 10,000 parts at \$975.00/M.
 - 1) order is on hold and vendor has incorporated enough changes that parts can not be used as #92249. Value of parts with 3 operations left to lengthen hook end is \$744.00/M

P: D-69-1

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"______ May 26, 1983

PHASE II - RETURN TO ORIGINAL DESIGN

- 1. Plate #91845
 - a. no changes required to tools
 - b. 9,000 parts in inventory next order required the end of July '83.
 - 1) I-1796 issued for 10,000 parts due 7-1-83.
- 2. Spring #91848
 - a. no changes required to tools
 - b. 7,000 parts in inventory. Original order for 10,000 never cancelled is due May '83.
 - c. due to cancellation of proposed design (non standard steel to consider) have issued an additional order for 10,000 #9.848 also due May '83. Therefore, enough parts until October '83.
- 3. Cover #92255
 - a. tooling change will be required to return to .050 material
 - 1) Requisition issued for \$580.00 Order I-3330
 - b. 11,000 parts in inventory
 - c. next order required August '83.
 - 1) I-3331 issued for 10,000 parts due 6/30.



F.D-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington
QUPOND

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"______ May 26, 1983

PHASE II - RETURN TO ORIGINAL DESIGN - page 2

4. Base #92256

- a. tooling change will be required to return to .050 material
 - 1) Requisition issued
 - 2) Order I-1797 issued to complete change week of 5/23.
- b. next order required for June '83.
 - 1) I-1798 issued for 10,000 parts due 6-8-83.

5. Guard #92249

- a. tooling change will be required to return to original design C-92249 Alt # 7 rear tab 7 front hook unchanged.
- b. but R&D has issued a transmittal to change rear tab only C-92249 Alt #13
 - 1) I-3332 issued to alter tools \$10,880.00 11-13 weeks.
 - 2) Also additional charge of \$1175.00 for temporary tools required to get parts in July.
- c. Parts required in July
 - 1) I-3333 issued for 10,000 parts due 6-30-83.

PHASE III - RETURN TO PHASE I?

Meeting to be held 5/26 for discussion and earliest implementation based on production's current requirements and vendor's leadtime.

DDR/1

SALES

DEPARTMENT

Remington Rem-O-Gram

Quick Facts Abou REMINGTON PRODUCTS

10 D2 R.J. LONG ILION 2000 m/7

JUN 1 3 1983

June 6, 1983

TO THE FIELD FORCE:

The following information covers all Model 7 production since the recent update notice. You can identify these models by:

- (1) A dot on the left side of the trigger.
- (2) A circle P (P) on all master cartons (5 pack).
- (3) A circle P P on each individual gun box.

All firearms updated by either Arms Service or Remington Warranty Gunsmiths will have triggers marked as indicated above.

Sincerely,

E. J. Conroy Director of Sales

EJC/dr

Ferm No. 80 451

REMINGTON ARMS COMPANY, INC., BRIDGEPORT 2, CONN.

Printed in U.S.A.

RD-49-8

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PETER:

Jy Shr com

AUG 1 5 1983

L. Ferreira
S. Johnson
R. Long
J. Brooks
File

film 17

XC:

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

July 29, 1983

TO:

J. Linde

FROM:

D. Ricci

REFERENCE: M/7 Steel Purchase Parts Components for Fire Control Area

The Steering minutes and other verbal communications say that all involved vendors should have been notified of the steel design obsolescence and that Purchasing should refrain from ordering additional parts.

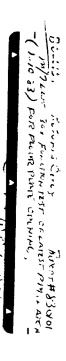
It is my understanding that the die cast design will be released for build approximately 9-1-83, with first samples due in December '83. Upon approval, trial & pilot and production build leadtimes, the earliest phase-in would be late first quarter or early 2nd quarter 1984.

Therefore, in absence of any further communication, Purchasing will continue to order the steel components per the MRP schedule, but minimum quantities to facilitate the transition next year. We'll begin advising our vendor of the possibility of a new design (since it is not a proven one) in order to keep them from running any shelf stock or ordering excess raw materials.

Also, previous orders had been issued for certain thicker design components, but were placed on hold. Again, if not advised otherwise, all outstanding orders for tools, components or raw materials will be cancelled and invoiced according to all work performed prior to the hold notification.

Based on current inventories, it appears that additional orders will have to be placed toward the end of August for MRP requirements in December '83. We will proceed with the program outlined unless otherwise advised.

DDR/sjk



	~~ <u>~</u>
Recort No.	ヨ 」こう

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	ARS	A OF TESTING
Developmental	Safety Related	Litigation
Design Acceptance	Competitive Evalu	ation Warenouse Audit
Prs-Pilot	New Design	Cost Reduction
?¶ot	Design Change	Stake
2-eduction Acceptance	Plant Assistance	Other
FIREARM STATS. MCDEL: 72 W T CAL or GAGE: 70 P BARREL TYPE: 72 P PROOFED: YES NO Strength Test Ammuniti Function Test Environment Accuracy Test Customer		Ctner
EXPLAIN IN DETAIL THE PEASON FOR T		
There are the latest. Function test 5 re		flor plate occurre
	,0026	
NOTE: NO firearms or parts will be tested in accompanied by a Work Request, and the Laps by the designer or engineer to be filled out in detail. No Exception	and both are delivered to All Work Requests are	DATE COMPLETED: 1-13-23 TEST COMPLETED BY: 2 かんぎ REPORT DATE:

70-41-0

REMINGTON ARMS COMPANY, INC.

INTER-GEPARTMENTAL CORRESPONDENCE

Distribution:

D. BULLIS

Remington

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

TEST RESULTS ONLY

RESEARCH TEST and MEASUREMENT REPORT - Report No. 830/0/

MI/7 LWT. 308 CAL. FUNCTION TEST OF LATEST POWDER METAL LATER (1-10.83) FOR FLOOR PLATE OPENING ON FIRING

Prepared by: R. HowE

Date Prepared: 1-18-83

Proofread and Cleared By:

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

Signature Date

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

Signature

Date

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 830101
REPORT TITLE: M/7 LWT, 308 CAL. FUNCTION TEST OF LATEST POWDOR METAL LATCH (1-10-83) FOR FLOOR PLATE OPENING. MODEL(S): M/7 LWT. ON FIRING.
GAUGE OR CALIBER: .308
DATE: 1-18-83
WORK ORDER NO.: C-1856-000
PART NAME: FLOOR PLATE LATCH
DESIGNER/ENGINEER: D. BULLIS
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: 130
TOTAL ROUNDS FIRED IN TEST: 650
AMMO TYPE: MAGS:; TARGET:
$\operatorname{RIM}\operatorname{FIRE}$ CENTER FIRE X

FROM R. HOWE

TEST RESULTS ONLY"

TEST TITLE

M/7 LWT, 308 CAL. FUNCTION TEST OF LATEST POWDER METAL LATCH 1-10-83 FOR FLOOR PLATE OPENING ON FIRING.

REASON FOR TEST:

TO DETIRMINE IF FLOOR PLATE LATCH WILL
RELEASE FLOOR PLATE WHEN RIFLE IS LIVE FIRED
UNDER FIELD CONDITIONS.

TEST PROCEDURE:

THIS WAS A FIELD FUNCTION TEST ONLY AND WAS SHOT AT THE ILION FISH + GAME CLUB RIFLE RANGE AT 100 YDS., FOO RDS PER GUN, FIFTERN ROUNDS EACH OF R-150-PSP, R-180-PSP, W-150-PP, W-180-ST, W-200-ST, F-150 PSP, F-180-PSP AND F-165-PREM BT.

EACH AMMIO TYPE BEING SHOT 5 RDS SLOW, 5 MED, + 5 FAST FEED SPEEDS.

THE ROUND ROBIN SYSTEM WAS USED WITH EACH SHOOTER FIRING IS RDS. AT THE ABOUT THREE FEED SPEEDS AND THEN CHANGING GUNS UNTIL EACH GUN WAS FIRED A TOTAL OF ADROS.

TEST RESULTS:

OF THE FIVE RIFLES TESTED NONE HAD AN OCCURANCE OF FLOOR PLATE FALLING OPEN ON LIVE ROUND FIRING FOR ENTIRE TEST.

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TEST RESULTS "CONT,

NO OTHER MALFUNCTIONS OCCURED WITH THE EXCEPTION OF THE FOLLOWING NOTE.

NOTE:

AFTER FIRST 150 ROS, OF TEST (30 RDS EACH GUN)

FOLLOWERS IN ALL FIVE TEST GUNS WERE ALTERED

BY BENDING LEGS IN SLIGHTLY BECAUSE FOLLOWER

WAS HAHGING UP ON STEEL STAMPING OF FLOOR

PLATE FRAME AND CUITING MAGAZINE CAPACITY FROM

4 ROUNDS TO 3. AFTER ALTERING FOLLOWERS ALL GUNS

TOOK 4 RDS IN MAGAZINE WITH NO FORTHER PROBLEMS.

Report No.	830101	

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	ARE	A OF TESTING
Developmental	Safety Related	Litigetion
Design Acceptance	Competitive Evalu	ation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pllot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S. MODEL: 74WT CAL or GAGE: 30F BARREL TYPE: CAPB PROOFED: YES V NO	FORMAL TEST RESULTS ONLY	DATE REQUESTED: 1-10-83 DATE NEEDED BY: A.S.A.P. REQUESTED BY: RULLIS WORK ORDER NO:
	TEST TYPE	C-1856000
Strength Test Ammuniti Function Test Environme Accuracy Test Customer	on Test Dry Cycle To	Other
EXPLAIN IN DETAIL THE REASON FOR T	HIS TEST:	
These are the latest		floor plate opening.
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NOTE: NO fireerms or perts will be tested in accompanied by a Work Request, at the Labs by the designer or engineer to be filled out in detail. No Except	nd both are delivered to r. All Work Requests are	DATE COMPLETED: TEST COMPLETED BY: REPORT DATE:

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Production Acceptance	Plant Assistance	Cose
PREARM STATEL	ASPORT REGIO.	
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BARRELT/FE	TEST RESULTS	AECUESTEE BY: String Promise
==CCFED: YEENC	CNLY	NORK CROSS NO. C MOD4 - DDD
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Screnger Tass Ammunit		Test Photo/Video
Function Tac Environme	entai Test Measureme	ents Sther
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NOTE: NO firearms or pairs will be tested in	1	DATE COMPLETED: 1-21-73
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Recort No.	830191

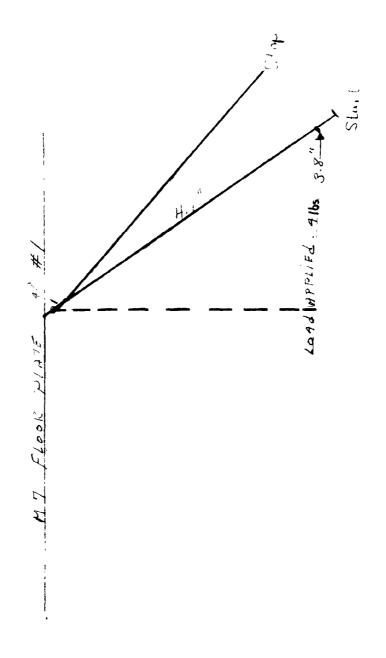
RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

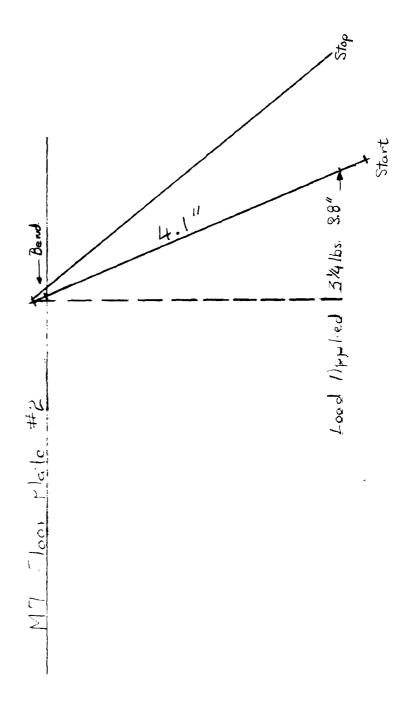
		
	<u> </u>	REA OF TESTING
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Design Acceptance	Campetitive Eva	lluation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
********************************	Design Change	Stake-
Production Acceptance:	Plant Assistance	Ctrer
FIREARM STATE	REPORT REQUE.	
MODEL: See below	FORMAL	DATE REQUESTED: 1-19-83
CALORGAGE <u>See beion</u>		DATENEEDED 8Y: 2 - 1 - 83
BARRELTYPE:	RESULTS	REQUESTED BY: St. Trooks
PROOFED: YESNO	CNLY	WORK CROER NC: C 7004 - 000
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Function Test Sovironme	ental Test Measureme	Other
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compare comp	titus ques.	
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MOOX	isson model 1500	Sako
Brown	+ 13. 3 12	weatherby vanguard
mosso	•	
(Plan with MIT floor		e test)
NOTE: NO firearms or parts will be tested in		DATE COMPLETED: 1-24.83
accompanied by a Work Request, an	d both are delivered to	TEST COMPLETED BY: C.S.
the Labs by the designer or engineer.		REPORT DATE: Jul Restroit
to be filled out in detail. No Exception		Ber

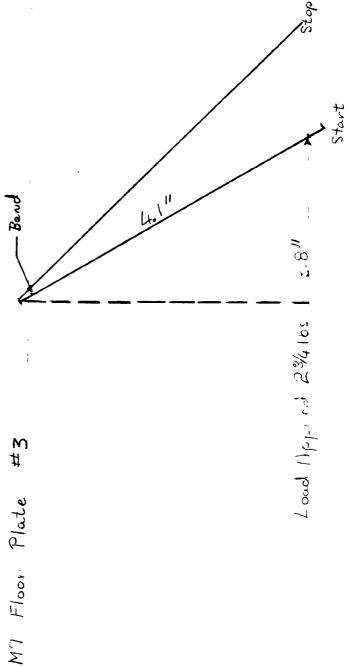
M7 Floor Plate Force Evaluation

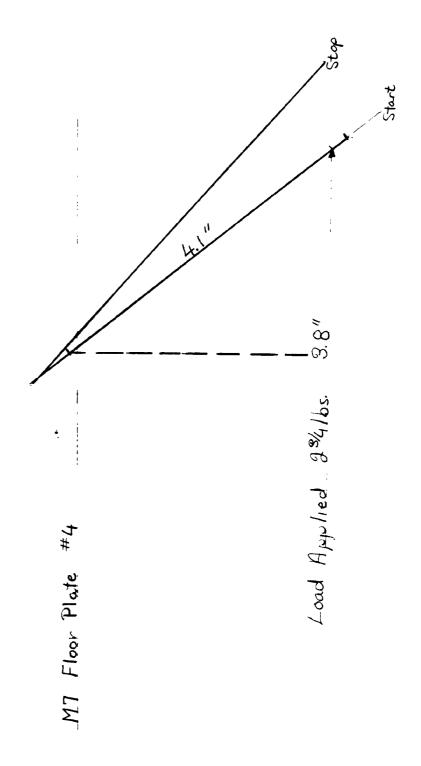
C. Stephens

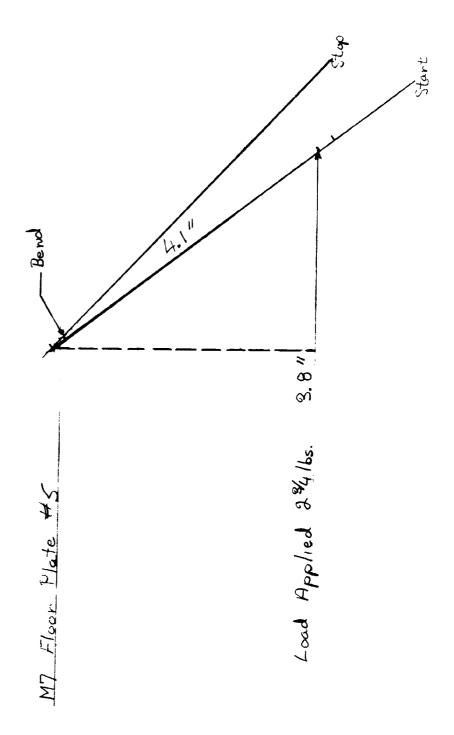
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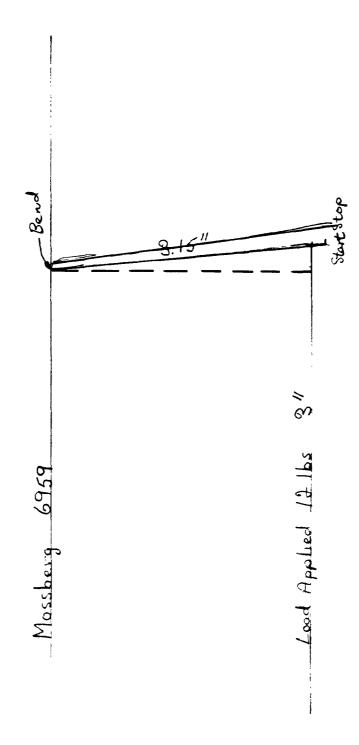


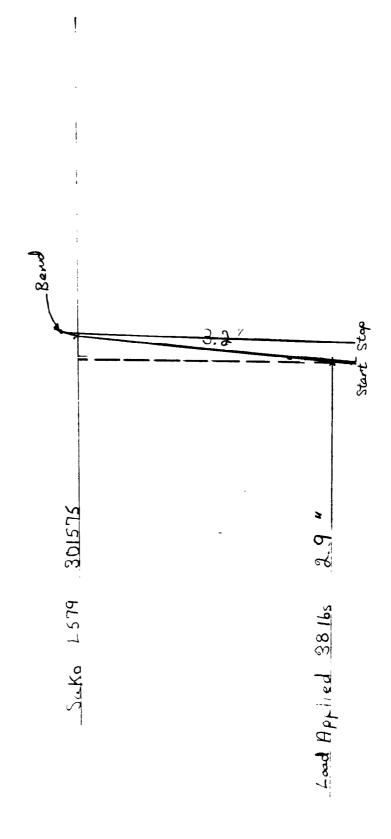


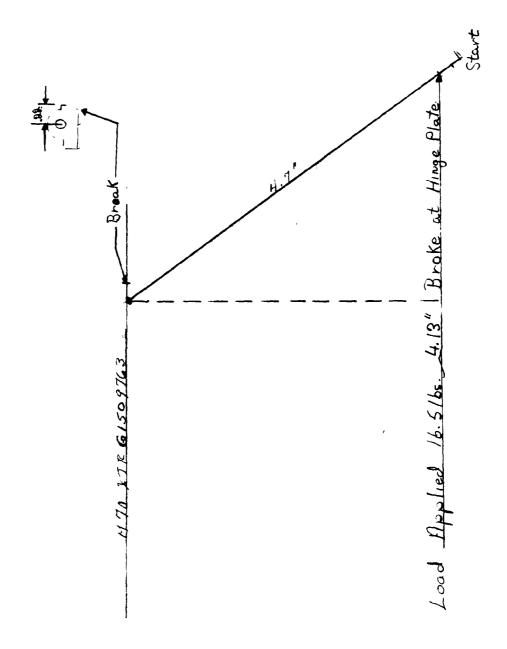






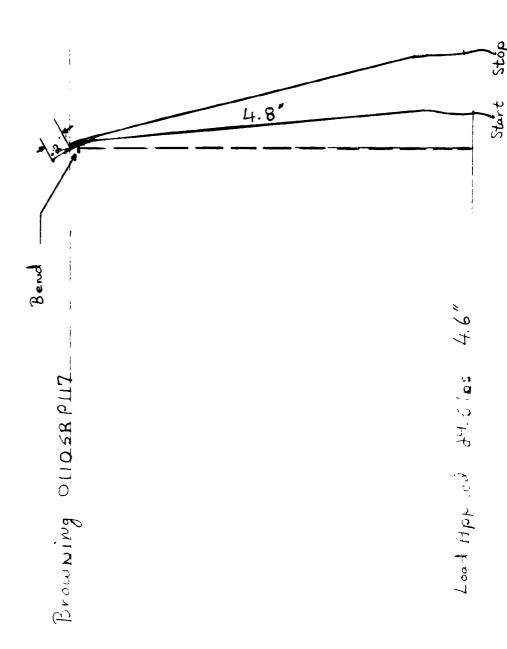


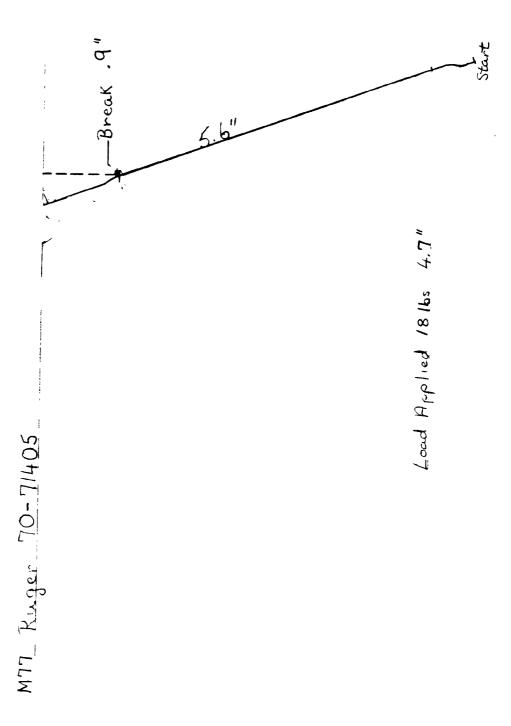


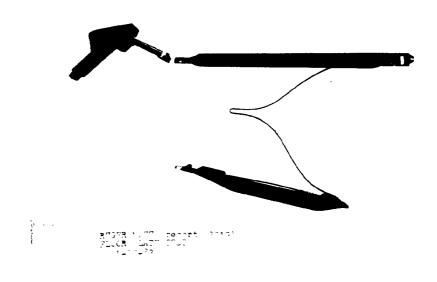


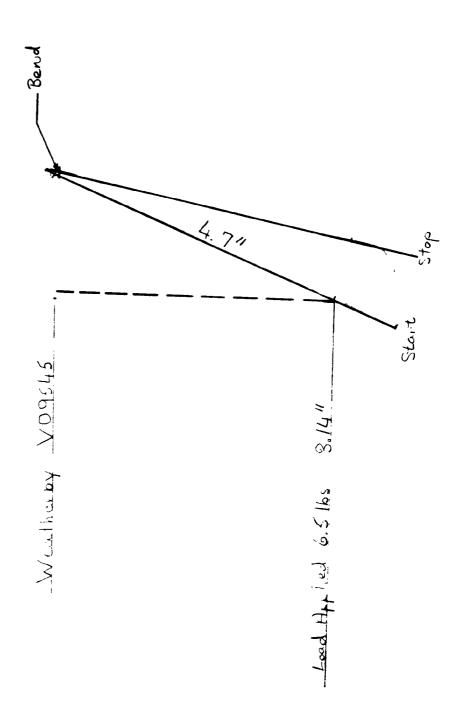


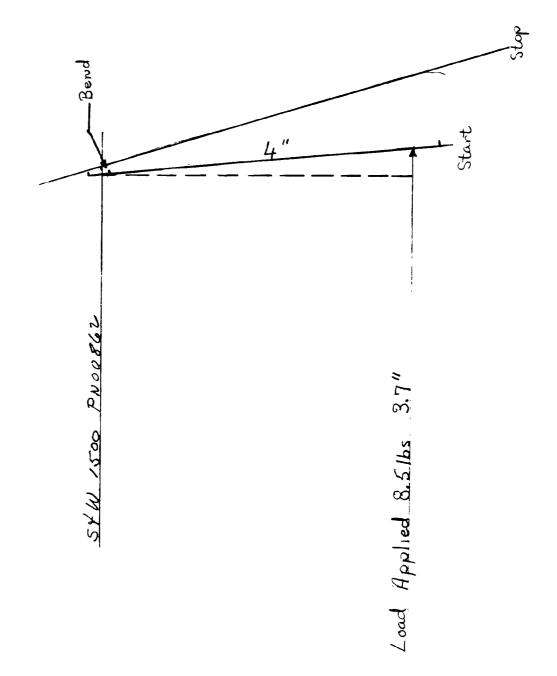
VIN. M/70 (report 830191) FLOOR PLATE TEST 1-20-83













RESEARCH TEST & MEASUREMENT LAS WORK REQUEST

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	5.54	EA OF TESTING
Developmental	Safety Related	Utigation
Design Acceptance		uation Warenouse Augit
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Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Cther
FIREARM STAT'S	REPORT REQ'D.	5 . 7 . 8 7
MODEL: 222	FORMAL	DATE RECUESTED: <u>의 소중기 기계기</u>
CAL 34 GAGS. 222	TEST	DATE NEEDED BY:
BARREL TYPS: <u>CAPEANIS</u>	RESULTS ONLY	REQUESTED BY:
PRCOFED: YESNO	ONG:	WORK ORCER NO: 4-1356-000
	TEST TYPE	
Strength Test Ammunition	on Test Dry Cycle 1	fest Photo/Video
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Accuracy Test Customer	Complaint Endurance	Test
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NOTE: NO firearms or parts will be tested in	the Labs unless they are	DATE COMPLETED: 1/24 8-
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REMINGTON ARMS COMPANY, INC.

Remington

Distribution: C. B. Workman

J. W. Brooks

C. E. Ritchie D. Bullis

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

RESEARCH TEST and MEASUREMENT REPORT - Report No. 822731

M/SEVEN LWT. .222 CALIBER STAMPED NO-BIND FOLLOWER vs. M/600 STAMPED FOLLOWER COMPARISON TEST

> J. Baggetta Prepared by:

Date Prepared: 1.24-83

Proofread and Cleared By:

C.E. Ritchie.

Sr. Supervisor - Testing, Mess. & Mech. Analysis Lab

Foreman-Test Lab Foreman-Measurement Lab

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	822731
REPORT TITLE:	M/Seven LWT222 Caliber Stamped No-Bind Follower vs.
MODEL(S):	M/600 Stamped Follower Comparison Test M/Seven LWT.
GAUGE OR CALIBER:	.222
DATE:	9-30-82
WORK ORDER NO.:	C-1856-000
PART NAME:	
DESIGNER/ENGINEER	t:D. Bullis
TEST TYPE:	
1.	PHOTO LAB
2.	STRENGTH TEST - NO. OF GUNS TESTED
3.	FUNCTION TEST · NO. OF GUNS TESTED5
4.	ACCURACY TEST · NO. OF GUNS TESTED
5.	MEASUREMENTS - TYPE:
6.	ENVIRONMENTAL TEST
7.	Ammunition testing & evaluation - type:
8.	VISUAL EVALUATIONOUT OFGUN SAMPLE
9.	ENDURANCE - NO. OF GUNS TESTED: 5
	NO. OF ROUNDS PER GUN: 75
	TOTAL ROUNDS FIRED IN TEST: 750
	AMMO TYPE: MAGS,; TARGET:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

Two Followers Per Gun.

January 24, 1983

TO:

R. E. NIGHTINGALE

FROM:

J. BAGGETTA

REPORT TITLE:

M/SEVEN LWT. .222 CALIBER STAMPED NO-BIND FOLLOWER vs.

M/600 STAMPED FOLLOWER COMPARISON TEST.

ABSTRACT

A request was received from D. Bullis, Current Firearms Design, to Field Function Test, 5 M/Seven LWT. .222 caliber with the Stamped No-Bind Follower vs. M/600 Stamped Follower.

SCOPE OF TEST

To evaluate the M/Seven LWT. .222 Caliber Stamped No-Bind Follower vs the M/600 Follower for feeding and ejection malfunctions.

TEST RESULTS

- 1.) Five (5) M/Seven LWT. .222 caliber were fired a total of 375 rounds (75 rounds each) experiencing a total of 45 malfunctions for an overall malfunction rate of 12.0%.
- 2.) Five (5) M/Seven LWT. .222 caliber with the M/600 Stamped Follower were fired a total of 375 rounds (75 rounds each) experiencing a total of 54 malfunctions for an overall malfunctions rate of 14.4%.

REPORT TEXT

- 1.) Five of the Stamped No-Bind Followers tested experienced a total of 45 malfunctions. For individual malfunction, see Appendix "A" Data Sheet No. 1.
- 2.) Four of the five M/600 Stamped Followers experienced 54 malfunctions. For individual malfunctions. See Appendix "A" Data Sheet No. 2.

TEST PROCEDURE

1.) Five (5) Stamped No-Bind Followers were assembled into the M/Seven LWT. .222 Caliber rifles, upon completion of this test, the 5 M/600 Stamped Followers were assembled into the M/Seven LWT. .222 caliber rifles.

2.) Field Function Test

• The Field Function Test was run at the Ilion Fish & Game Club Rifle Range. Five men were used to fire the rifles, incorporating the round robin system. Each man took 15 rounds of each ammotype and would fire 5 rounds each of Slow, Medium and Fast feed rate. The rifles were cooled every 15 rounds (able to hold barrel in hand). It was a one page Field Function Test.

3.) Ammunition

Ammunition used in the Field Function Test:

- Remington 50 gr. Pointed Soft Point
- Remington 50 gr. Hollow Point
- Remington 55 gr. Metal Case
- Federal 50 gr. Soft Point
- Winchester 50 gr. Pointed Soft Point

Test Rifles

Rifles used in the Field Function Test:

M/Seven LWT, .222 Caliber

- B6364423
- B6364417
- B6364418
- B6364428
- B6364421

"APPENDIX "A"

Data Sheets

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RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

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	ARE	A OF TESTING
Developmental	Safety Related	Litigation
Design Acceptance	Competitive Evalu	ation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STATS	REPORT REQ'D.	C) - 711 0 R 2
MODEL: 2 WT.	FORMAL	DATE REQUESTED: 9-30-82
CAL or GAGE. 222	TEST	DATE NEEDED BY:
BARREL TYPE: CARBINE	RESULTS	REQUESTED BY: BUCLIS
PROOFED: YESNO	ONLY	WORK ORDER NO: 6-1856-000
	TEST TYPE	
Strength Test Ammunition	on Test Dry Cycle To	Photo/Video
Function Test Environme	entai Test Measuremen	Other
Accuracy Test Customer	Complaint Endurance T	est
EXPLAIN IN DETAIL THE REASON FOR T	HIS TEST:	
WE WOULD LIKE AC	OMFARISON TEST	RUN ON THE
M/7 CWT. 222 C	#L18ER.	
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USING NEW, NO-	BING FOLLOWERS.	
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FAST, MEDIUM É	SLOW FEEDING.	
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NOTE: NO firearms or parts will be tested in	the Labs unless they are	DATE COMPLETED:
accompanied by a Work Request, an	d both are delivered to	TEST COMPLETED BY:
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FIELD CYCLE TEST - CENTERFIRE

INTE: 10-11-82

MODEL: 72WT

GAUGE: 222

SERIAL NO. B636 4423

TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

Follower Comparison "Mifunctions" NO BIND

TIL. Magnifications:

MALFUNCTIONS:

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REPROT NO. 1822 731 PAGE

PAGE NO. /

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FRIAL NO. 186364418 INTE: 10-11-82 MODEL: 71 W/T -DAUGE: 222 PREVIOUS TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER nound TTL. RDS. FIRED: Follower Comparison TTL. MALFUNCTIONS: STAMPED FOLLOWER MITHETION NATE: "MALFUNCTIONS" FEED BTEM SHELL STEMS MAG. JUMPS MAG. DON'T BEGG BACK DON'T LOCK OPEN CIMMBER POWER OVERRIDE FOLLOWER BINES FROM BOLT OVERRIDE TOA POED SEELL DON'T LOCK UP DON'T EXTRACT DCIN'T ELECT MALETINCTIONS SEPTACEMENTS ACTION BANG SUMMARY SHEET ADJUSTMENTS Md. RATE BEEN KACES BY SHOOTES **题**.码 LOADING PERMIT Ist Sug SHELL THE STATE OF FIER i de la constante de la consta 13 P50 PSP RE PE R50 HP X 5 R55 Mease de 3 13

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FIELD CYCLE TEST	r - centerfire	REPROF	NU.1822 731	rage no. /
10-11-82	MODEL: 74WT	-dance 202	SERTAL NO.	86364422

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F	PUEVIOUS NOUNDS	TES	r ri	TLE:	St	J MM A]	RY S	HEET	S PE	ER -	RIFI	БЕ -	AMM	O TY	PE -	SHO	OOTE	R					7	TTL.	RDS	. FI	RED:	٠		
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	SIMMARY SHEET BY SHEET S											FOLLOWER BINDS		ERRIDE	अज्ञाद पष्ट	TEACT	n	, S114	Signer		IONS PER	RATE PER								
	ВУ	_	SHOOTES	EO. GE	FIRENCE	THEES CEAR VOL	DCM'TE	DOM'T ELCH	א בישנים	18t	icii Sug		POWER (DON'T LOCK UP	HILE	103	स्राटक	I CONT	SHELL JUMPS	FOLLOWE	ICADING	BOLT OVERRIDE	ACTION BANG UP	DON'T EXTRACT	ERFARACES	ADJUSTMENTS	REPLACEMENTS		MALFUNCTIONS	My - F . RA
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FLELD	CYCLE	TEST	_	CENTERFIRE
				CDM TDI/L TI/D

FIELD CYCLE TEST - CENTERFIRE

REPROT NO.: \(\frac{82273}{}\)

PAUE NO. \(\frac{2}{2}\)

MTE: \(\frac{10-11-82}{}\)

MODEL: \(\frac{71}{}\)

MODEL: \(\frac{71}{}\)

OAUDE: \(\frac{22}{}\)

BERIAL NO. \(\frac{8636}{}\)

BERIAL NO. \(\frac{8636}{}\) PREVIOUS TEST TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER ROUNDO TTL. RDG. FIRED: "MLFUNCTIONS" STAMPED FOLLOWER MALFUNCTION RATE: Follower Comparison FEED BTEM SHELL STEMS MAG. POWER OVERRIDE DOR'T LOCK UP JUMPS MAG H CIMMER DON'T BLOW BACK DON'T LOCK OFFI NO. OF ACTEDIS FROM BOLT OVERRIDE ACCUTOR HANG UP TOA ZUEZO SZEZIA. MALFUNCTIONS DON'T ELECT SUMMARY SHEET MAd. BY Int Sug PERMIT RICCAL TVICII Ż FSOSP RH RH 11 30 PSP 5 8 K RE OS.

				<u>F1</u>	ELD	CY	CLE	TES	<u>'r -</u>	CEI	TER	FIR	E	_	•				1	iepk(JL NO). <u>1</u> 8	22	7	3/	•		PAUI	e no	/
	PHEVIOUS	INT	E:	10-	11:	82			МО	DEL!	7	11	VI		•	-0	AÚUE		<u> </u>	2		•	8	3 Eria	T No	٤	<u> 6</u> 2	3 <u>6 4</u>	5 110 14.2	<u>/·</u>
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	SUMMARY SHEI BY	er	·	SCHIES FEED		THEES COME VOL			DON'T LOCK OPEN	FEI FRI	ed om	STEMS MAG.		DON'T LOCK UP		BT			9	FOLLOWER BINDS		Ħ	er	ACT	13	, S.T.R.	STERS		MALEUNCTIONS PER	RATE PER
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FIELD	CYCLE	TEST	-	CENTERFIRE
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REPROT NO. 8227721

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aller Parling in commission for the contract of the contract o	Fo	1/04	ver	C	om	pa	ris	d N		•	'M\LE	FUNCI	'IONE	j# <u>-</u>	ŚTX	m	P/-7) <i>E</i>	N C /	00.		TTL. Mlf	mal Unct	FUNC ION	tion rate	B :		
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Sum: ary sheet by		ACCURING FIRED		Seath	13021	DON'T BLOW BACK	DON'T LOCK OPER	l	ed om	STEMS MAG.	OVERRIDE	BITEM CIMMEN SE				JUMPS MAG.	R BINIS		CRRIDE	100 cm	TEACT	m	. E23	مسع		ions per	RATE PER	
D1	SECOLES	130 GE	PETER	TOA ZEED	מספות ביושכנו	R 1.100	DON'T I	Ist	icii Suq	SHELL S	POWER O	DON'T LOCK UP	HIER	LON	RICCELL	1	SHELL J	FOLLOWER BINES	LOADING	BOLT OVERRIDE	ACCION HANG UP	DOR'T EXTERCT	BREA RACES	ADJUSTMENTS	erplacements		MALFUNCTIONS	M RAI
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Model 7 LWT.

Col. 222

B-6364423

MIN. T.OC.

B-6364417

Min. T.004

B-3564418

MIN. T.004

MIN. T.004

MIN. T.004

MIN. T.004

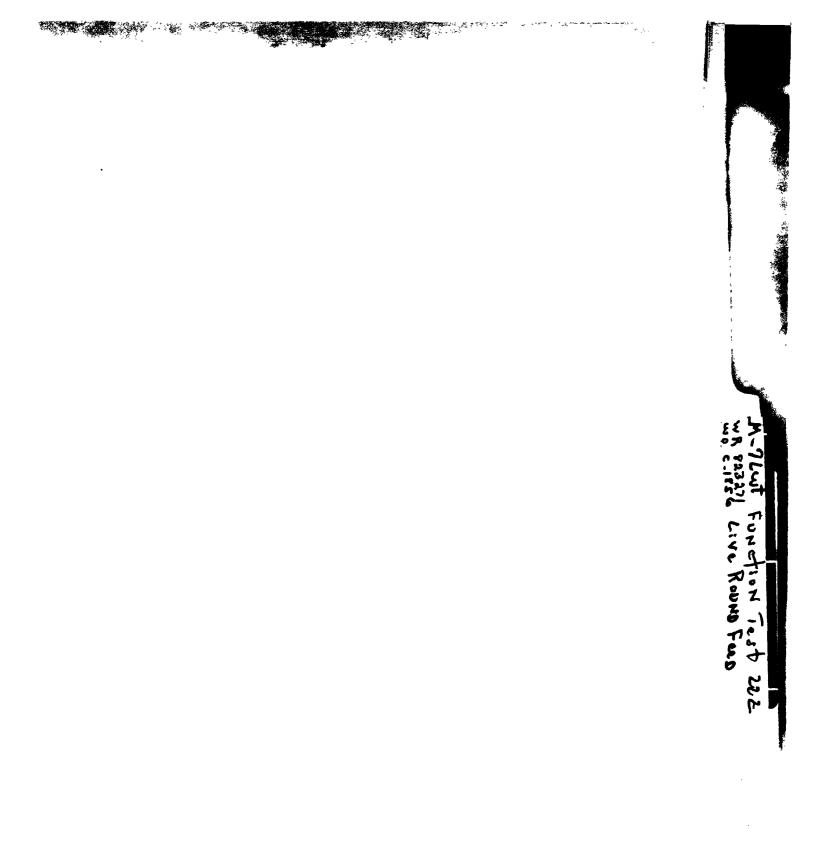
MIN. T.004

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MIN. T.003



Report No. 82327

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	ARI	EA OF TESTING
Developmental	Safety Related	Utigation
Design Acceptance	Competitive Svali	uation Warenouse Audit
Prs-Pilat	New Design	Cost Reduction
	Design Change	Stake
Production Acceptance	Plant Assistance	Gther
FIREARM STAT'S.	REPORT REQ'D.	
MODEL: 725		DATE RECUESTED:
CAL OF GAGE: 222	FORMAL	DATE NEEDED BY:
. BARREL TYPE: CA 9 3	TEST RESULTS	REQUESTED BY:
PROOFED: YESNO	ONLY	WORK ORDER NO: /- // 3-3-3
	_	
	TEST TYPE	
Strength Test Ammunit		
Function Test Environm		Cther
Accuracy Test Customer	Complaint Endurance	Test
EXPLAIN IN DETAIL THE REASON FOR I		
1. FEED É EVECT A	•	
· 100-3122 FOLLOWER	= m/600 m26	, SP,21115.
. 6:0	**	.,
· NO-BIND II	É EXP. 24 LO	AD MAG. SP.
, 600	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
-GUNS REQUIRED:		
NOTE: NO firearms or parts will be tested in	in the Labs unless they are	DATE COMPLETED: 1-27-47
accompanied by a Work Request, a	nd both are delivered to	TEST COMPLETED BY: 1.300 : 5-2
the Laps by the designer or engineer	r. All Work Requests are	REPORT DATE:
to be filled out in detail. No Except	· ·	

Report # 823271 Test Results Only

TO D Bullis

From J. Baggetta

Test Title

M 7 Luit . 222 coliber explosion of feeding and ejection of design mult stanged No. Bind Follower vs wisagam oud - M grizul - Luwer Cool-M experimental cool-M experimental 2# Load magazine spring.

Test Results

The following rifles had the experimental > 2# Load magazine spring assembled in them-

- experiencing 48 malfunction for an overall malfunction rate of 13.3%.
- Four M-600 followers were fixed a total of 360 rounds (90 rounds each) experiencing 50 malfunctions for an overall malfunction rate of 13.9%.

The following ritles had the M-600 MAGAZINE SGrinis
Assembled in them-

· Four design No. 1 Stpmped No-Bind follower were fixed a total of 360 rounds (90 rounds

each) experiencing 66 mplfunctions for an overall malfunction rate of 18.3 %.

· Four M-600 followers were fixed a total of 360 rounds (90 rounds each) experiencing 55 malfunctions for an overall malfunction rate of 15.3 %.

Rifles used In Field Function Test

M1-7Lwt 222 chiben

B 6364423.

B 6364418

B 6364422

B 6364421

	WCHL TEST	- CENTERFIRE
JACK	FUNCTION	4

REPROT NO. 1 82327/

PACE	No	
INUD	MU.	

PREVIOUS	INTE: 12-15-82- MODEL: 7 Lut GAUGE: 222	BERIAL NO.
Ednuon	TEST TITLE: SUMMARY SHEETS PER - RIFLE - ASON TYPE - BROOTER	TIL. RDS. FIRED:
	GOO Follower- M. 600 MAG Spring	TTL. MALFUNCTIONS:
	"Mitunctions"	MALFUNCTION RATE:
1		

SUMMARY SHEET BY		ACUMINS FIRED		SPELL	noer.	BECW BACK	LOCK OPEN	FE FR MA	OM	STEMS MAG.	OVERRIDE	LOCK UP		CIN	em Mden		JUMPS MAG.	R BINIES		OVERRIDE	LUG UP	ETTRACT	100	1	MTS		CONS STER RIGHT.	国 Purc
D1	ESTOCHS	8 a	773775	THE CEGA VOIL	DOM'T ELECT	E L. MOC	DON'T I	}	rcii Suq		POWER C	משייד נג	田田	101	RICHE		C TIMES	FOLLOWER BINDS	LOADING	BOLT OV	ACTION HANG	77 T. 1000	म्हारा स्टब्स	ADJUSTEMENTS	TEFT ACTMENTS		MALETINCTIONS OVER - PILL	MALT. RATE PER
B6364423		90											2.							2.0							24.4	
B6364418		90											-	2.						18							23,3	23.3
B 6364422		90		_		-		_		_			2	2			_										5_6	5.6
B636442-1		90				_		_			_			3			_	<u> </u>		4			_	_			7.8	7.8
								_					_			_												
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TOTAL (FER MAL.)																	_					_	-					

Report No. 82327/

RESEARCH TEST & MEASUREMENT LAS WORK REQUEST

	AR	EA OF TESTING
Developmental	Safety Related	Litigation
Design Acceptance	Competitive Eva	luation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S. MODEL: 7 LW F CAL or GAGE: 222 BARREL TYPE: CA PR	REPORT REQ'D. FORMAL TEST RESULTS ONLY	DATE REQUESTED: 11-25-62 DATE NEEDED BY: 25-6-62 REQUESTED BY: 25-6-6000 WORK ORDER NO: 1756-6000
PROOFED: YES VNO		WORK ORDER NO: 7/2-7/3 C2-2-2
	TEST TYPE	
Strength Test Ammuniti	on Test Dry Cycle	Test Photo/Video
Function Test Environme	ental Test Measureme	Other
Accuracy Test Customer	Complaint Endurance	Test
EXPLAIN IN DETAIL THE REASON FOR T	HIS TEST:	
1. FEED & EVECT 6	•	
r 650 1.		<i>,</i>
• 10-BIND 11	É EXP. 24 LO	MA MAG. SP.
, 600 11	<i>(</i> ·	W to the
— GUNS ŘEQUIRED:	·	·
NOTE: NO firearms or parts will be tested in	n the tahs unless they are	DATE COMPLETED:
accompanied by a Work Request, an	·	TEST COMPLETED BY:
the Labs by the designer or engineer		REPORT DATE:
to be filled out in detail. No Excepti		
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FIFE	CYCLE THOT	_	CENTERF IRE
X2AJ.	FUNCTIO	23	

REPROT NO.1 82327/

PAGE NO.

PREVIOUS ROUNDS	TEST	r T:	12 - ITLE 13 :	15	- 8 UMMU 7	2- IRY 8	SHEET	MC IS P	DEL	RIF	LE -	AM		PPE CLONS	- S#			22	2-		•		TTL.	RDS MAI	. FI FUNC	red:	181		
SUMARY SHEE			RCIENTS FIRED 6				BACK	DON'T LOCK OPEN		ED OM 2nd				LONS	81	rem Amber	1	JUMPS MAG.	BINDS		RRIDE	<u></u>	NC:					ONS HER RIPTO	## - 14
BY	-	ESTOCIAL I	SO.	DETRIE	TIBES CHEET PART	DOM'T EASON	DOM'T BLOW	DI T.MOG	T _a	Sug	SHELLS	POWER O	DOM'T LOCK UP	HEILER	1.COS	RESE	1.022	SHELL J	FOLLOWER	LOADING	BOLT OVERRIDE	ACCION BANG UP	DOR'T ETTEACT	HEFA FACES	ADJUSTMENTS	TEST ACTIVEMENTS		MALFUNCTIONS	MALE RATE FEE
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FIELD	CVENT TEST -	CENTERFIRE
JACK	FUNCTION	

REPROT	NO.1	823	271

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Summary Shee	T	ACCURING FIRED		Serie	Erser	BLOW BACK	LOCK OPEN	FR	ed Iom	STEMS MAG.	OVERRIDE	F F		CIN	em Mben	l	JUMES MAG.	R BINDS		OVERRIDE	LATE CIP	TACT	20	À	37.3		CONS FIRTHER RICHER	E :
ВУ	- SHOOTES	igo eg	BE	TEA PROTEIN	Dograf E	DOM*** BI	DOM'TE LO	Ist	end	SHELL S	POWER O	DON'T LOCK UP	RICH	TON	RIESEE		SHELL J	FOLLOWER	LOADING	BOLT OVE	ACTION BANG UP	DON'T EXTRACT	BREA KAGES	ADJUSTSCHES	RESPIACEMENTS		MAILFUNCTIONS Follower	MALF. RATE
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TIELD C	YCLE TEST	- CENTERFIRE
JACK	FUNCTI	ON

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nounds 9	(D.	TITLE Bio	1 D	UMMA FO	RY S	n o c	rs P	ER - Ey	RIF RZ	# L	-0 P	o r	LTONA V <i>P3</i> KD E	SR	rir	R 29						TTL.	rds Mal Unct	FUNC	TION	B :		
SUMMARY SHEET		ACCURATE FUEED		SHEET	302	DOE" TOW BACK	LOCK OPEN	FI	ed OM	STEMS MAG.	OVERRIDE	LOCK UP		8t Cin	em Mben	l	JUMPS MAG.	3 BINDS		OVERRIDE	TO 120	BACT		23	Sign		ions for Rate	H 110
BY	ESTOCHES	S S	FIRES	CERT VELL	DOM'T BEBEF	H 11.500	27 1.100	Ist	i.cli Suq	SHELL S	POWER O	0.1 T. 100	HIER	TON	RIGHT	1.000	SHELL J	FOLLOWER BINDS	LOADING	BOLT OW	ACCION BANG UP	DOS'T EXTENCE	BREEL KAGES	ADJUSTMENTS	Replacement		MALEUNCTIONS Follower	MALE. RATE TO OVER - P.L.
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	JAC	K E	NDU	RANG	<u>CE</u>	CEN	TER	FIR	E		e ach. F]	REPRO	yr nc).1_6	723	27		•		PAGE	e no	
PREVIOUS	MTE:	11.	30-	87	<u> </u>		MC	DEL:	7	Lu	<u>,†</u>		*5	G	AUGE	::	22	2		•	8	erla	L NO	. <u>B</u>	ر د د د	360	442	-3
ROUNDS	TEST	TITL	: _ <u> </u>	0 1 0 1 0 1	3 H	P1	Fo	100	t ver	1.	V e Ex (ML	R 2.00	الاه الاه	1" Pd	Fe Mrg	<u> કલ</u>	(;6)	E	4	1		TTL. TTL. MALF	rds Mal Unct	. FI FUNC ION	RED: TION RATE	B:	90	70
AMMUNITION		RODRING FIRED		SHELL	BCE	DON'T BLOW BACK	DON'T LOCK OPEN	FE FR MA		STEMS MAG.	OVERRIDE	B B			rem LMBER	₹	JUMPS MAG.	R BINDS		GRRIDE	AUG UP	TRACT	p	STE	SATE	VELOCITIES	REMA	rks
Load Size	SHOOTER	No. OF	PERES	TRAPPED SHELL	DON'T E.	100 I	DON'T I	Ist	2nd	開	POWER 0	DON'T LOCK UP	HECH	LOW	RIGHT	LEDI	SHELL J	POLLOWER BINDS	LOADING	BOLT OVERRIDE	ACTION B	DON'T EXTRACT	BREA RAGE	ADJUSTDE	REPLACEM	BOLT VEL	(ON	BACK)
R. 50 Ca PSI	8																											
51000		5												1														
Medium		3 5	٥K																									
Fast	30	35											1															
R-50GR HE				L																								
Slow		5											/															
Medium		-	<u> </u>										1															
FAST	15	2			L	L							1															
R. 55 Gp Ch	21																											
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Medium	Tie	, 5	οĶ								,																	
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TB TB

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TOTAL (PER MAL.)

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MMÜNITİON		NO. OF RODRING FIRED		SHELL	IBCT	BLOW BACK	DON'T LOCK OPEN	FE FR	ed om g.	TEMS MAG.	VERRIDE	DOE'T LOCK UP		CHA	em Mber		SHELL JUMPS MAG.	FOLLOWER BINDS		ERRIDE	ANG UP	TRACT	Ø	ars	ENTS	VELOCITIES .	REMA	
Load Size	SHOOTER	. Ož	PERMIT	TRA PPED	DON'T EJECT	DOM'T BI	DON'T LO	I ^{et}	2nd	HELL	POWER 0	מבויד זכם	EDGE	LOW	RIGHT	LEFT	SHELL	FOLLOWE	LOADING	BOLT OVERRIDE	ACTION B	T. MOC.	BREA KAGES	ADJUSTDE	REPLACEMENTS	BOLT VEL	(ON I	
F-50GK 58								-																				
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Load Size	SHOOTER	No. OF	FIRING	TRAPPED SHELL	DON'T EJECT	H 1, 100	א היידים	I st	ccH Sug	SHELL S	POWER O	DOM'T LOCK UP	HECH	101	RIGHT	LEFT	SHELL	FOLLOWE	LOADING	BOLT OVERRIDE	ACTION BANG UP	DON'T EXTRACT	BREAKAGE	ADJUSTERATES	REPLACEMENTS	BOLL VELOCITIES	1
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Load Size	SHOCTER	No. OF H	FIELDS	TRAPED	DON'T EJECT	DON'T BLOW BACK	DON'T LOCK OPEN	18t	2nd	SHELL ST	POWER OF	DON'T LO	HERE	TON.	RICHE	LEET	SHELL JU	FOLLOWER BINDS	LOADING	BOLT OVERRIDE	ACTION BANG UP	DON'T EXTRACT	BREEN KAGES	ADJUSTMENTS	REPLACEMENTS	BOLT VELOCITIES	(ON 1	BACK)
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51000	20	5	OK																									
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AMMUNITION Load Bize	SHOCTER	NO. OF RCINISS FIRED	FIRING	TRAPPED SHELL	DON'T EJECT	DON'T BLOW BACK	DON'T LOCK OPEN	FEED FROM MAG. 18t 2n	目	POWER OVERRIDE	DOE'T LOCK UP	HIGH		EM MBER	r	SHELL JUMPS MAG.	FOLLOWER BINDS	LOADING	BOLT OVERRIDE	ACTION HANG UP	DON'T EXTRACT	BREAKAGES	ADJUSTMERTS	REFLACEMENTS	BOLT VELOCITIES	REMARK (ON BA	

AMMUNITION		ECT IN		NHS	H	Š	LOCK	M	a.	STEM	OVER	LOCK (JUMPS	83 33		ERR1	A INC	EXTERAC	22	SIE	STAR	VELOCIT	REMA	
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PREVIOUS ROUNDS	TEST									<u>(;</u>	00 087		9 D F	10													(23) 0 22 14.4	<u></u>
AMMUNITION		ROUNTS FIRED		SHELL	BCT	DON'T BLOW BACK	DON'T LOCK OPEN	FR	ED OM	STEMS MAG.	VERRIDE	LOCK UP			'em Mber	l	JUMPS MAG.	FOLLOWER BINDS		ERRIDE	ANG UP	TRACT	82	2	ENTES	OCITIES .	REMAI	RRS
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Regart # 830211
W. C-1866-000

Report No.	83001.
Report No.	83001

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	<u> ARI</u>	EA OF TESTING
Developmental	Safety Related	Litigation
Сеноп Ассертанся	Competitive Evalu	uation Warenouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S.	REPORT REQ'D.	
MODEL 7407		DATE REQUESTED: 1-21-33
CAL or GAGE: 222	FORMAL	DATE NEEDED BY: A CA.P.
BARREL TYPE:	TEST RESULTS	REQUESTED BY: 31665
PROCFED: YESNO	ONLY	WORK ORDER NO: 2-1-56-000
	TEST TYPE	
Strength Test Ammunition	on Test Dry Cycle 1	Fest Photo/Video
Function Test Environme	ntal Test Measuremen	Other
Accuracy Test Customer	Complaint Endurance	Test
EXPLAIN IN DETAIL THE REASON FOR T	HIS TEST:	
FEEL E ELECT LIVE	FIRED ROUNDS	VSING TEST FOLLOWERS
74 4	MTLWT MAG. SPRI	(المحاسرة بين المراس
#4. (WITH	M7LWI MAG. SIN	No. (SANCE)
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- GUNS REQUIRED:	- 17-1173	
FOUR TEST GINS	26364423	
	6 6 3 6 4 4 2 7	
	2 6364423 6 6364422 8 6364422 8 6364421	
NOTE: NO firearms or parts will be tested in		DATE COMPLETED: 1-31-83
accompanied by a Work Request, an	d both are delivered to	TEST COMPLETED BY: Joe Bangs the
the Labs by the designer or engineer.	All Work Requests are	REPORT DATE: 1-31-73
to be filled out in detail. No Exception	ons.	
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REMINGTON ARMS COMPANY, INC.

Distribution: C. B. Workman

J. W. Brooks

C. E. Ritchie D. Bullis

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

RESEARCH TEST and MEASUREMENT REPORT - Report No. 830211 M/SEVEN LWT. .222 CALIBER STAMPED NO-BIND FOLLOWER DESIGN NO. 4, FUNCTION TEST.

> J. Baggetta Prepared by:

Date Prepared: 1-31-83

Proofread and Cleared By:

C.E. Ritchie.

Sr. Supervisor - Testing,

Meas, & Mech. Analysis Lab

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	830211
REPORT TITLE:	M/SEVEN LWT222 CALIBER STAMPED NO-BIND FOLLOWER
MODEL(S):	DESIGN NO. 4, FUNCTION TEST. Seven LWT.
GAUGE OR CALIBER:	.222
DATE:	1-23-83
WORK ORDER NO.:	C-1856-000
PART NAME:	Follower
DESIGNER/ENGINEER:	D. Bullis
TEST TYPE:	
1.	PHOTO LAB
2.	STRENGTH TEST - NO. OF GUNS TESTED
3.	Function test - no. of guns tested 4
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.	NO. OF GUNS TESTED: 4
	NO. OF ROUNDS PER GUN: 126
	TOTAL ROUNDS FIRED IN TEST: 504
	AMMO TYPE: MAGS,; TARGET:_X
	DRA PIDE CENTED PIDE

January 31, 1983

TO:

R. NIGHTINGALE

FROM:

J. BAGGETTA

REPORT TITLE:

M/SEVEN LWT. .222 CALIBER STAMPED NO-BIND FOLLOWER

DESIGN NO. 4 FUNCTION TEST

ABSTRACT

A work request was received from D. Bullis, Current Firearms Design, to evaluate the M/Seven LWT. .222 caliber Stamped No-Bind Follower Design No. 4.

SCOPE OF TEST

To evaluate the feeding and ejection of the M/Seven LWT. .222 C.aliber Follower.

TEST RESULTS

A. Jack Live Round Unload Function Test

o Four M/Seven LWT. .222 caliber were live round unload tested a total of 504 rounds (126 rounds each) experiencing 14 malfunctions for an overall malfunction rate of 2.8%.

B. Field Function Test

o Four (4) M/Seven LWT. .222 caliber were fired a total of 504 rounds (126 rounds each) experiencing 10 malfunctions for an overall malfunction rate of 2.0%.

REPORT TEXT

- A. The following rifles experienced malfunctions during the Jack Live Round Unload Test in the R & D shooting room:
 - 1.) B6364423 Two stem chamber high
 - 2.) B6364421 Eight stem chamber left one stem chamber low.
 - 3.) B6364418 Two stem chamber right one stem chamber left
 - 4.) B6364422 One stem chamber right
- B. The following rifles experienced malfunctions during the Field Function Test at the Ilion Fish & Game Club rifle range:
 - 1.) B6364423 One stem chamber left one stem chamber right
 - 2.) B6364421 One stem chamber right one stem chamber left three stem chamber high
 - 3.) B6364418 One stem chamber right one stem chamber high
 - 4.) B6364422 One stem chamber left

TEST PROCEDURE

A. Measurements

O No measurements were taken.

B. Test Conditions

Condition No. 1 - Indoor Jack Live Round Unload

- The test was run using the Test Lab Shooting Room Jacks.
- The rifles were loaded with 5 rounds in the magazine and one in the chamber.
- Various speed feeds were used such as: Slow, Medium and Fast.
- The rifles were live round unload tested only. No live firing was done in the jacks.

Condition No. 2 - Ilion Fish & Game Club Outdoor Range

- The test was run using the Ilion Fish & Game Club rifle range.
- The rifles were loaded with 5 rounds in the magazine and 1 round in the chamber.
- Various speed feeds were used such as: Slow, Medium and Fast.
- Four shooters were used incorporating the round robin system.
- The weather was overcast, 32° and windy.

C. Ammunition

Ammunition used in Jack Live Round Unload and Field Function Test:

Remington 50 gr. Soft Point

Remington 50 gr. Hollow Point

Remington 55 gr. Metal Case

Federal 50 gr. Soft Point

Federal 55 gr. Metal Case Boat Tail

Winchester 50 gr. Soft Point

Winchester 55 gr. Metal Case

(Refer to Appendix "A" Data Sheet No. 1 for malfunction breakdown)

D. Rifles used in Field Function Test:

M/Seven LWT. .222 Caliber

B6364423

B6364421

B6364418

B6364422

"APPENDIX "A"

Data Sheets

FIELD	CYCLE	TEST	_	CENTERFIRE
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Report No. 830211

## RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

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Developmental	Safety Related	Litigation
Design Acceptance	Competitive Eval	uation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S.  MODEL: 7 L W T  CAL or GAGE: 222  BARREL TYPE:  PROOFED: YES NO	FORMAL TEST RESULTS ONLY	DATE REQUESTED: 1-21-83  DATE NEEDED BY: A.S.A.P.  REQUESTED BY: BULLIS  WORK ORDER NO: 6-1856-000
	TEST TYPE	
Strength Test Ammunitie  Function Test Environme  Accuracy Test Customer	on Test Dry Cycle ** ontal Test Measureme	Other
EXPLAIN IN DETAIL THE REASON FOR TO	HISTEST: & FIRED ROUNDS	VSING TEST FOLLOWERS
#4. (WITH	M7LWT MAG. SPRI	VSING TEST FOLLOWERS
-GUNS REQUIRED: FOUR TEST GUNS	B 6364423 B 6364418 B 6364422 B 6364421	
NOTE: NO firearms or parts will be tested in	the Labs unless they are	DATE COMPLETED:
accompanied by a Work Request, and	d both are delivered to	TEST COMPLETED BY:
the Labs by the designer or engineer.	All Work Requests are	REPORT DATE:
to be filled out in detail. No Exception	ons.	

FIELD CYCLE TEST - CENTERFIRE
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FIELD CYCLE TEST - CENTERFIRE REPROT NO.: 850 0. TEST TITLE: Ling Lond 9 Intoad

WEATHER:

"MALFUNCTIONS"

SERIAL NO. 16 36 10 01

TTL. RDS. FIRED: 126

TTL. MALFUNCTIONS: 8

MALFUNCTION RATE: 6.3 9/10 PREVIOUS ROUNDS NO. OF ROUNDS FIRED FROM SWELLS THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE ST STEM SHELL JUMPS MAG. FROM
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TOTAL (PER MAL.)

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FIELD CYCLE TEST - CENTERFIRE													REPROT NO.: 830211 PAGE NO.																		
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Function Accorney

> REPORT No. 53032 WO# 1856-300 D. BULLIS

Report No. 250322

#### RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	<u>84</u>	EA OF TESTING
Developmental	Safety Related	Ltigation
Design Acceptance	Competitive Eval	uation Warenouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Cther
FIREARM STAT'S.	REPORT REQ'O.	
MODEL	FORMAL >	DATE REQUESTED: 7
CAL or GAGE: 223		DATE NEEDED BY:
BARREL TYPE: CARENYE	TEST RESULTS	REQUESTED BY: 1. 1814 LIS
PROOFED: YES V NO V	ONLY	WORK ORDER NO:
	TEST TYPE	
Strength Test Ammunition	n Test Dry Cycle '	Test Photo/Video
Function Test Environmen	rzai Test Measureme	nts Ctner
Accuracy Test Customer C	emplaint Endurance	
EXPLAIN IN OSTAIL THE REASON FOR TH	ISTEST: New Product	4cc critan ce
THIS IS THE INTRODUC	TION OF A NEW	1 CALIBER (223) TO THE
MITIME LINE. WE	SHOULD TEST FO	R FUNCTION & ACCURACY.
•		
. FEEDING E	UNCORDING 4/VE	R15.
FIRMS	ELECTION OF EL	eer Ros.
•		
· JACK &	PHOULDER SHOT	TING
· ACCURA	<i>ب</i> ہر	
ACCURA	C 7	
· ACTIONS CO	NTAIN # 4 M	AG FOLLOWER
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-GUNS REQUIRED: -NEED PROOFI	Uq	7600152 All aunz are with Dissills
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76001 53		
NOTE: NO firearms or parts will be tested in	the Labs unless they are	DATE COMPLETED: 2-1(-3)
accompanied by a Work Request, and	both are delivered to	TEST COMPLETED BY: L. W. 11/and
the Labs by the designer or engineer.	All Work Requests are	REPORT DATE:
to be filled out in detail. No Exceptio	ns.	· · · · · · · · · · · · · · · · · · ·

REMINGTON ARMS COMPANY, INC.	Distribution:
Remington / Dettens	
"CONFINE YOUR LETTER TO ONE SUBJECT ONL	ty"
RESEARCH TEST and MEASUREMENT REPOR	
TEST RESULTS ONLY	Prepared by: R.Williams  Date Prepared: 2-11-83
Proofread and Cleared By:	
J.H. Hennings ,   R.E. Nightingale, Foreman-Test Lab   Foreman-Measurement Lab	Signature Date
C.E. Ritchie, Sr. Supervisor - Testing, Meas. & Mech. Analysis Lab	Signature Date

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	830322
REPORT TITLE: M	7LWT CAL 223 FUNCTION & ACCURACY EVALUATION
MODEL(S): SEVE	EN LWT
GAUGE OR CALIBER	· 223
DATE: 2-11-8	<i>'</i> 3
WORK ORDER NO.:	C-1856-000
PART NAME:	
DESIGNER/ENGINEE	IR: D. Bullis
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: STATIC
6.	ENVIRONMENTAL TEST
7.	AMMUNITION TESTING & EVALUATION - TYPE:
8.	VISUAL EVALUATIONOUT OFGUN SAMPLE
9.	ENDURANCE - NO. OF GUNS TESTED:
	NO. OF ROUNDS PER GUN:
	TOTAL ROUNDS FIRED IN TEST: O
	AMMO TYPE: MAGS; TARGET:
	RIM FIRECENTER FIRE X

FEB. 11, 1983

REPORT No. 830322

"TEST RESULTS ONLY"

To: D. BULLIS

FROM: R. WILLIAMS

REPORT TITLE: M/7LWT CALLAS FUNCTION & ACCURACY EVALUATION

KEASON FOR TEST

To evaluate the performance of the M/7 LWT introduced in the new CAL. 223.

TEST PROCEDURE

Load and Unload Cycle test was conducted in the Shooting Jacks in the Test Lab. Seven (7) types of ammo were used with Slow, Medium and Fast action cycle.

AMMUNITION REM. 55 Gr. P.S.P.

REM. 55 Gr. H.P.

REM. 55 Gr. M.Case

FEO. 55 Gr. S.P.

FED. 55 Br. M. CASE WIN. 55 Br. S.P. WIN. 55 Br. M. CASE

TEST RESULTS

Two (2) rifles had no maltunctions. The other eight (8) rifles had a maltunction rate of the following percent. 40%, 8.5%, 10.4%, 1.9%, 13.3%, 20%, 19% and 28.5% Due to the high maltunction Rate of Live Round Cycle Load & Unload Test, Further testing was stopped.

Report No. 230322

## RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	AR	ea of testing
Developmental	Safety Related	Litigation
Design Acceptance	Competitive Eval	uation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S	REPORT REQ'D.	
MODEL: 7 LWT	FORMAL	DATE REQUESTED: 2- /- 83
CAL or GAGE: 223		DATE NEEDED BY:
BARREL TYPE: CARBINE	TEST RESULTS	REQUESTED BY: D. BULLIS
PROOFED: YES VNO	ONLY	WORK ORDER NO:
	TEST TYPE	
Strength Test Ammuniti	on Test Dry Cycle	TestPhoto/Video
Function Test Environme	entai Test Measureme	nts Other
Accuracy Test Customer	Complaint Endurance	Test
EXPLAIN IN DETAIL THE REASON FOR T	HIS TEST: Na. 1 Pead	1550
		PRINTER (223) TO THE
M/TLWT LINE. WE	SHOULD TEST FO	R FUNCTION & ACCURACY.
FEEDING E	UNCOADING 41VE	215 .
FIRME	UNCOADING LIVE	
· FEEDING, 1 &	ELECTION OF EL	eED RUS.
. JACK É.	SHOULDER SHOT	FING
· ACCURA	C 7	
· ACTIONS CO	ONTAIN # 4 M	4G FOLLOWER
-GUNS REQUIRED: -NEED PROOF	u v q	- All auns are
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NOTE: NO firearms or parts will be tested in	the Labs unless they are	DATE COMPLETED:
accompanied by a Work Request, an	d both are delivered to	TEST COMPLETED BY:
the Labs by the designer or engineer.	. All Work Requests are	REPORT DATE:
to be filled out in detail. No Exception	·	

JACK	ENDURANCE	<b>CENTERFIRE</b>

REPROT NO.: 830322

PAGE NO.__

Previous Rounds	<u>'T</u>	Fu	HODEL: SEVEN : CAUGE: 22.												SERIAL NO. 7600/52  TTL. RDS. FIRED: 105  TTL. MALFUNCTIONS: 0  MALFUNCTION RATE: 0													
LOAD - UNLOAD / EST "MALFUNCTIONS" OK																		UNCI	LION	PATE		0						
AMMUNITION Load Size	SHOOTER	NO. OF ROINING FIRED	FIRING	TRAPPED SHELL	DON'T EJECT	DON'T BLOW BACK	DON'T LOCK OPEN	•		SHELL STEMS MAG.	POWER OVERRIDE	DOM'T LOCK UP	FICH	LON	RIGHT	LEAT	SHELL JUMPS MAG.	FOLLOWER BINDS	COADTING	BOLT OVERRIDE	ACTION HANG UP	DON'T EXTRACT	BREA KAGES	ADJUSTEMENTS	REPLACEMENTS	BOLT VELOCITIES	REMAI (ON :	BACK
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PEM-55 M.CASE		15		ŧ																								
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CONFIDENTIAL-SUBJE KINZER V.	PREVIOUS ROUNDS	TE	TE:_	ITLE	:_W	-7	
UBJECT TO PROT	AMMUNITION Load Size		10 A	OF ROLLINGS FIRED	D.N.	PED SHELL	T EJECT

CENTERFIRE

REPROT NO.: 830322

PAGE NO.___

PREVIOUS	DAT	E:_	2-9	1-8	3_			MO	DEL:	: <u>3 E</u>	ve	<u>N_</u>			G	AUUE	: <u>*</u>	تها	<u> </u>		-	8	JERLA	L NO	<b>1</b> 2	160	101	<i>55</i>	-
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DATE: 2-9-83

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SERIAL NO. 74001119

PREVIOUS ROUNDS

TEST TITLE: M 7 LWT FUNCTION + ACCURACY

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TOTAL (TER MAL.)

#### RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	ARI	EA OF TESTING
Developmental	Safety Related	Litigation
Design Acceptance	Competitive Evalu	uation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S.	REPORT REQ'D.	,
MODEL: 74WT	FORMAL	DATE REQUESTED: 2-1-83
CAL or GAGE: 223	FORMAL	DATE NEEDED BY:
BARREL TYPE: CARBINE	TEST RESULTS	REQUESTED BY: D. BULLIS
PROOFED: YES VNO	ONLY	WORK ORDER NO: C- 1856-000
	TEST TYPE	
Strength Test Ammunitie		
Function Test Environme	ental Test Measuremen	Other
Accuracy Test Customer	Complaint Endurance	Test
EXPLAIN IN DETAIL THE REASON FOR T	HISTEST: New Product	Acceptance
THIS IS THE INTRODU	CTION OF A NEW	CACIBER (223) TO THE
M/7LWT LINE. WE	SHOULD TEST FO	R FUNCTION & ACCURACY.
·		•
FIELD TO G E	UNCORDING ZIVE	,
· FEEDING, 1 &	UNCORDING LIVE	CED ROS.
lact &	SHOULDER SHOOT	TING
, 1,400	• • • • • • • • • • • • • • • • • • • •	
· ACCURA	CY	
• ACTIONS CO	ONTAIN # 4 MA	1G FOLLOWER
·	•	•
-GUNS REQUIRED: -NEED PROOF!		All auns are
7600149 7600154	PROGFED -	7600152 All guns are 7600155 7600158
7600150 7600156 7600151 7600157	7.(00) 22	7400755
76001 51 76001 57 76001 53	•	7 600,10
NOTE: NO firearms or parts will be tested in	the Labs unless they are	DATE COMPLETED:
accompanied by a Work Request, an	d both are delivered to	TEST COMPLETED BY:
the Labs by the designer or engineer.	All Work Requests are	REPORT DATE:
to be filled out in detail. No Exception	ons.	

	CHRONOLOGICAL REC	CORD OF TESTING	REPORT #830322
	MODEL & DESCRIPTION M-71WT	CAL. 223	
	CALIBER OR CAUGE FUNCTION +		
DATE	TEST	·	ER PAGE NO.
2-8-83	Seven of the 10 rit	Mes were 1	Proofed in the
	Test Lab by Scott Fran	_	
	taken by R. Williams on all		/
2-11-83	TEST was stopped	because of	high malfunction
	Pate of Live Round Load	1 + Unload	Test Cycle
_			
		VIII.	

3.101.10.15.	
CAL. 223 REPORT No. 83032	12 Serial II. 7600152
Headspace as Received:	
Proof: YES	<del>-</del>
Firing Fin Indent(in.)	<pre>Bolt Open Force(lbs.) Cocked: I.</pre>
Trisger Pull(lbs.)  5. <u>8.75</u> 2. <u>3.75</u> 3. <u>3.75</u>	301t Release Force(lbs.)  2  3
Gun Length:  Gun Weight:  Center of Gravity:	Frimer Marking:  Safety Check:  Fining Fin Protrusion:
Sore: Thoke: Orifice Size:	Pattern Test (Avg. of 5)  Group Size:
Solt Closing Velocity:	Vert.:
Disconnector Check:	Accuracy (Avg. of 5)  Group Size:
:-13-95 :12	• Tester and Date: 1.0.I.:_ 2-8-83

# SHOTOURS, CENTEREDES, REGERES FINES & AUTOLOADERS

	TEST PROTECTED SHEET GUN (2)
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	Serval No. 7600/58
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<u> </u>	2 2 , 3 3
Headstace after Proof: Min.t.004	
Firing Pin Indent(in.)	<pre>Gooked: I Dry Fired: I</pre>
I. 1022	2
2. <u>022</u> 3. <u>022</u>	3
Trisger Pull(Uss.)	Bolt Release Force(Lbs.)
=. <u>2.75</u>	I
2. <u>9.75</u>	2
3. <u>00, 75</u>	3
Gun Length:	Primer Marking:
Gun Weight:	Safety Check:
Center of Gravity:	Firing Fin Protrusion:
3cre:	Pattern Test (Avg. of 5)
Choke:	Group Size:
Orifice Size:	Eora.:
Bolt Closing Velocity:	Vert.:
Magazine Spring Force:	Accuracy (Avg. of 5)
Disconnector Check:	Group Size:
	Horz.:
	Vert.: P.O.I.:
CJS I-IZ-82	• Tester and Date: K.Williams
	2-8-83

## SECTIONS, CENTERED S. REGISS FINES & AUTOLOADES

	TIST FROCEDURE SHEET
	Model SEVEN QUN 3
	Serrai No. 7600/55
Hescstace as Received:	Safa - "OI" - I "OII" - I
Proof: YES	2
	3
Headspace after Proof: Min.t.001	
Firing Pin Indent(in.)	Bolt Open Force(lbs.)
=0195	Cocked: I Dry Fired: I
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3. 10205	3
Trigger Pull(Dos.)	Bolt Release Force(lbs.)
±. 3.75	I
2. 4.0	2
3. <del>3. 75</del>	3
Gun Length:	Priner Marking:
Gum Weight:	Safety Check:
Center of Gravity:	Firing Pin Protrusion:
3ore:	Pattern Test (Avg. of 5)
Choke:	
Orifice Size:	Group Size:
Bolt Closing Velocity:	Horz.:
Magazine Spring Force:	Vert.:
Disconnector Check:	Accuracy (Avg. of 5)
	Group Size:
	Horz.:
	Vert.:
CJS I-12-82	• Tester and Date: KWilliams
	2-8-83

## SHOTOUTS, CENTERFIELD, REFERENCES (FURS & AUTOLOADETS)

	Model SEVEN QUN (7)
	Sernal No. 7600150
Headspace as Received: Min. +001	Safa - "ON" - I "ONT" - I
<u> </u>	2
Headspace after Proof: Mint,001	3
Firing Fin Indent(in.)  I022  2022  3022	Bolt Cpen Force(lbs.)         Cocked: I       Dry Fired: I         2       2         3       3
Trisger Pull(lbs.)  - 30  2.30  3.30	3 3
Gun Length:	Primer Marking:
Gun Weight:	Safety Check:
Center of Gravity:	Firing Pin Protrusion:
3cre:	Pattern Test (Avg. of 5)  Group Size:
Orifice Size:	Horz.:
Bolt Closing Velocity:	Vert.:
Magazine Spring Force:	Accuracy (Avg. of 5)
	Group Size:
	Vert.: P.O.I.:
5.55 5.57.80	Tester and Date:

# SHOTOUTS, CETTER TESS, RIGHTES /FURS & AUTOLOADERS

TEST PROCEDURE SHEET

	TEST FROGEDURE SHE	<del></del>	$\cdot (5)$
	Model SEVEIN		
	Serial IIc. <u>7600</u>	13/	
Headspace as Received: Min	<u>r, †, 001</u> Saile	- "CIT" - I.	"CIP" - I
? <u>7700</u> 2:	<u>.</u>	2	2
Headspace after Proof: Mil		3	3
HARUPOSCA ST. 44, 24,007; ////		<b>.</b>	
Firing Pin Indent(in.)		Open Force(lbs.)	
I 021	Cock	ed: I	Dry Fired: I.
2.021		2	2
3021		3	3
Trigger Pull (lbs.)	3012	Release Force(lbs.)	
= 3.25			•
2. 3.25		2	
3. 3. 75		3	
Gun Length:	_	Primer Marking:	
Gun Weight:	· <del>-</del>	Safety Check:	
Center of Gravity:	-	Firing Pin Prot	rusion:
3cre:		Potencian Macan (4	
Choke:		Pattern Test (A	
Orifice Size:			1ze:
Bolt Closing Velocity:	· · · · · · · · · · · · · · · · · · ·		
Magazine Spring Force:		Vert.:_	<del></del>
Disconnector Check:		Accuracy (Avg.	
	<b></b>		ize:
		∃orz.:_	
			P.O.I.:_
CJS I-12-82	•	Tester and Date:	PWilliams

2-8-183

# SHOTOURS, CLIMATETEES, RETETEES (FOVES & AUTOLOADERS)

	todal SEVEN GUN 6
	Serial No. <u>76 00/5</u> 7
Handstace as Received: Min.t. 001	Safe - "ON" - I "OFF" - I
Proof: Yes	2
Readspace after Proof: Mik +,00	3
Firing Pin Indent(in.)	<pre>Bolt Open Force(lbs.) Cocked: I Dry Fired: I</pre>
=. <u>1021</u>	2
2. <u>.021</u> 3. <u>.0215</u>	3
3. 10012	
Trizzer Pull(lbs.)	Bolt Release Force(lbs.)
<u>=. 4.0</u>	I.
2. 4.25	2
3.4.0	3
Gun Length:	Primer Marking:
Gun Weight:	Safety Check:
Center of Gravity:	Firing Pin Protrusion:
30re:	Datasan Mast (1 and 2)
Choke:	Pattern Test (Avg. of 5)
Orifice Size:	Group Size:
Bolt Closing Velocity:	Rorz.:
Magazine Spring Force:	Vert.:
Disconnector Check:	Accuracy (Avg. of 5)
	Group Size:
	Horz.:
	Vert.: F.O.I.:
cjs I-12-82	• Tester and Date: KWilliams
- <del></del> - <del></del>	2-8-93

## Santonial Commission and and Carlos S valoritation;

	Model SEVEN QUN
	Servai No. 7600/56
Headspace as Received: Min. t.001	Safa - "GI" - I "GIT" - I
Proof: Yes  Headspace after Proof: Min.t.002	2
Firing Pin Indent(in.)  I022  2022  30215	<pre>Bolt Cpen Force(lbs.) Cocked: I.</pre>
Triager Pal (15s.)  =. 4.25  2. 4.5  3. 4.5	30lt Release Force(lbs.)  I  2  3
Gun Length:	Primer Marking:
Gun Weight:	Safety Check:
Center of Gravity:	Firing Pin Protrusion:
3ore:	Pattern Test (Avg. of 5)
Choke:	
Orifice Size:	Group Size:
Bolt Closing Velocity:	Horz.:
Magazine Spring Force:	Vert.:
Disconnector Check:	Accuracy (Avg. of 5)
	Group Size:  Horz.:  Vert.:  P.O.I.:
CJS I-12-82	• Tester and Date: KWilliams
	2-8-83

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	Yodal SEVEN QUN (8)
	Serial No. 7600149
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Proof: y ES	2 2 3 3
Headstace after Proof: Min.t.001	
Firing Pin Indent(in.)	<pre>3clt Open Force(lbs.) Cocked: I Dry Fired: I</pre>
=. <u>,022</u>	2
2. <u>0215</u> 3. <u>. 022</u>	3
Trigger Pull (Lbs.)	301t Release Force(lbs.)
<u>:. 3.5</u>	I
2. <u>3. 5</u>	2
3. <u>3.25</u>	3
Jun Length:	Prizer Marking:
Fun Weight:	Safety Check:
Center of Gravity:	Firing Pin Protrusion:
Sore:	Pattern Test (Avg. of 5)
Noke:	Group Size:
rifice Size:	Horz.:
Solt Closing Velocity:	Vert.:
Disconnector Check:	Accuracy (Avg. of 5)
	Group Size:
	Horz.:
_	Vert.: P.O.I.:_
:- <b>12-</b> 82	• Tester and Date: R. Williams
	2-8-183

## SHOUGHE, CHIMINGTON, RIGHTS (FILES & AUTOLANTIS)

	Madeil OEVEN (X4N (7)
	Servai IIo. 7600/53
Headstace as Received: Min. t.001	Safe - "ON" - I "OFF" - I
Proof: Yes  Headstace after Proof: /Yin.t.ooz	2 2 3 3
Firing Pin Indent(in.)  10225  2022  3023	3clt Cpen Force(lbs.)  Cocked: I
Trisser Pall(lbs.)  5. 3.5  2. 3.5  3. 3.75	<u>Bolt Release Force</u> (lbs.)  I  2  3
Gun Length:	Primer Marking:
Gun Weight:	Safety Check:
Center of Gravity:	Firing Pin Protrusion:
Choke:Orifice Size:	Pattern Test (Avg. of 5)  Group Size:
Bolt Closing Velocity:	Horz.:
Magazine Spring Force:	Accuracy (Avg. of 5)
Disconnector Check:	Group Size:
	Horz.: P.O.I.:
CJS I-12-82	• Tester and Date: R.Williams

## عيماليانيون بيستينيسين بيسانيو المرابع المرابعين

GUN (10) indel SEVEN Serrai II. 7600154 Headspace as Received: Min. t. 001 Safe - "CN" - I.____ 7=7 3.____ Headspace after Proof: Min. +.002 Bolt Open Force (1bs.) Firing Pin Indent(in.) Cocked: I. ____ Dry Fired: I. ____ =P215 2.____ 2.10215 3.____ 3-____ 3.1022 Trigger Pull(Lbs.) Bolt Release Force(lbs.) I. 3,5 2. **3**. 5 2.____ 3. 5.75 3._____ Gun Length: Primer Marking: Gun Weight: Safety Check: Center of Gravity: Firing Pin Protrusion: Bore: Pattern Test (Avg. of 5) Choke: Group Size:_____ Orifice Size:_____ Horz.:____ Bolt Closing Velocity: Vert.:____ Magazine Spring Force: Accuracy (Avg. of 5) Disconnector Check: Group Size: Vert.:____ P.O.I.: . Tester and Date: N. Williams

CJS I-12-82

2-8-83

# REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.



Discribusion: C. B. Workman

J. W. Brooks

C. E. Ritchie T. J. Plunkett

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

M/SEVEN LWT. .308 CALIBER - NEW MACHINED 6061 ALUMINUM FLOOR PLATE DESIGN EVALUATION (SPRING LOADED BALL TYPE LATCH DESIGN)

Prepared by: J. Baccetta

Date Prepared: 2-1-83

Preciread and Cleared By:

J.H. Hennings , | R.E. Nightingale, Foreman-Test Lab/ Foreman-Messurement La

Signature Jacob Sate

C.E. Rischie, Sr. Supervisor - Testing, Meas. & Mech. Analysis Lab

Signature

Date

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	830241
REPORT TITLE:	M/Seven LWT308 Caliber — New Machined 6061 Aluminum Floor Plate Des
MODEL(S):	Evaluation (Spring Loaded Ball Type Latch Design) M/Seven LWT.
GAUGE OR CALIBER:	.308
DATE:	1-24-83
WORK ORDER NO.:	C-1856-000
PART NAME:	Latch
DESIGNER/ENGINEER	T. J. Plunkett
TEST TYPE:	
1.	PHOTO LAB
2.	STRENGTH TEST - NO. OF GUNS TESTED
3.	FUNCTION TEST - NO. OF GUNS TESTED 3
4.	ACCURACY TEST - NO. OF GUNS TESTED
5.	MEASUREMENTS - TYPE: Headspace
6.	ENVIRONMENTAL TEST
7.	AMMUNITION TESTING & EVALUATION - TYPE:
8.	VISUAL EVALUATION - OUT OF GUN SAMPLE
9.	ENDURANCE - NO. OF GUNS TESTED: 3
	no. of rounds fer gun: 30
	TOTAL ROUNDS FIRED IN TEST: 90
	AMMO TYPE: MACS . TARCET.

_center fire_X

RIM FIRE

February 1, 1983

TO:

R. NIGHTINGALE

FROM:

J. BAGGETTA

REPORT TITLE:

M/SEVEN LWT. .308 CALIBER - NEW MACHINED 6061 ALUMINUM FLOOR PLATE

**EVALUATION (SPRING LOADED BALL TYPE LATCH DESIGN)** 

#### **ABSTRACT**

A request was received from T. Plunkett, Current Firearms Design, to evaluate the M/Seven LWT., redesigned Floor Plate Latching System. (Spring Loaded Ball Type Design.)

#### SCOPE OF TEST

To evaluate the performance of the redesigned M/Seven LWT. - .308 Caliber Floor Plate Latching System checking the floor plate latch opening on recoil.

## TEST RESULTS

#### A. Jack Live Round Fire Function Test

o Three M/Seven LWT. .308 caliber rifles were fired a total of 45 rounds (15 rounds each) experiencing no malfunctions.

#### B. Field Function Test

o Three M/Seven LWT. .308 caliber rifles were fired a total of 90 rounds (30 rounds each) experiencing no malfunctions.

#### REPORT TEXT

Three (3) M/Seven LWT. .308 caliber rifles with the redesign latch (spring loaded ball-type design) were fired a total of 90 rounds (30 rounds each) experiencing no malfunctions.

#### TEST PROCEDURE

#### A. Measurements

o Headspace - (Refer to Appendix "A" Data Sheet No. 1.

#### B. Test Conditions

#### Condition No. 1 - Indoor Jack Shooting

- o The test was run using the Test Lab shooting room jacks.
- o The rifles were loaded with 4 rounds in the magazine and one in the chamber.
- o Various speed feeds were used such as: Slow, Medium and Fast.

#### Condition No. 2 - Ilion Fish & Game Club Outdoor Range

- o The test was run using the Ilion Fish & Game Club Rifle Range.
- o The weather was overcast, 32° and windy.
- o The rifles were loaded with 4 rounds in the magazine and 1 in the chamber.
- o Various speed feeds were used such as: Slow, Medium and Fast.
- o Four shooters were used incorporating the round robin system.

#### C. Ammunition

## Indoor Jack Shooting

o Winchester - 200 gr. Silver Tip

#### Field Function Test

- o Remington 180 gr. Soft Point
- o Winchester 200 gr. Silver Tip

#### D. Rifles Used In Test

#### M/Seven LWT. .308 Caliber

7600139

B6226256

7600050

Report No. 830241 Page 3

#### REPORT TEXT - cont'd.

## E. Hi-Speed Movies

- Hi-Speed movies were previously taken of this design showing latch motion by Test Lab personnel in the Photo Lab Room.
- o Hi-Speed movies can be reviewed in the Photo Lab Room.

#### F. Photos

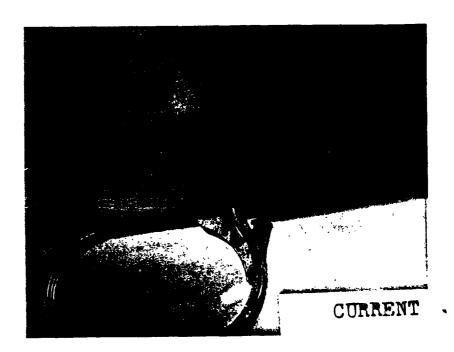
- o Pictures were taken of the redesigned M/Seven LWT. .308 caliber rifle. (Refer to Appendix "A" Data Sheet No. 2.)
- o Pictures were taken of the old style latch M/Seven LWT. .222 caliber rifle. (Refer to Appendix "A" Data Sheet No. 2.)

APPENDIX "A"

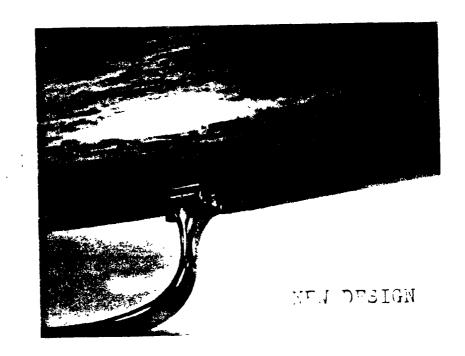
DATA SHEETS

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Measurements	14		·		<b></b>		∦-			<b></b>		<del> </del>
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# M-7 Lut .222 caliber



M.7 Lut 308 chliber



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## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Mess. & Mech. Analysis Lab

Distribution: C. B. Workman J. W. Brooks

C. E. Ritchie
T. J. Plunkett

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CONFINE YOUR	LETTER TO ONE SUBJECT O	NLY"	_	
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	T and MEASURE/ENT REP			
	.308 CALIBER – NEW MAC EVALUATION (SPRING LC			SIGN
	-	Prepared by:	J. Baggetta	
		•		-
		Data Praparad:	2-1-00	-
•				
	d 3			
Precirsad and C	sared by:			
J.H. Henmines .	/ R.E. Michringale.	\		
Foreman-Test La	o R.I. Nightingale, b Foreman-Measurement Lab	76	my hours.	2-21-53
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### TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	830241
REPORT TITLE:	M/Seven LWT308 Caliber — New Machined 6061 Aluminum Floor Plate Dest Evaluation (Spring Loaded Ball Type Latch Design)
MODEL(S):	M/Seven LWT.
GAUGE OR CALIBER:	.308
DATE:	1-24-83
WORK ORDER NO.:	C-1856-000
PART NAME:	Latch
DESIGNER/ENGINEER	: T. J. Plunkett
TEST TYPE:	
1.	PHOTO LAB
2.	STRENGTH TEST - NO. OF GUNS TESTED
3.	function test - no. of guns tested 3
4.	ACCURACY TEST - NO. OF GUNS TESTED
5.	MEASUREMENTS - TYPE: Headspace
6.	ENVIRONMENTAL TEST
7.	Ammunition testing & Evaluation - Type:
8.	visual evaluationout ofgun sample
9.	ENDURANCE - NO. OF GUNS TESTED:3
	NO. OF ROUNDS PER GUN: 30
	TOTAL ROUNDS FIRED IN TEST: 90
	AMMO TYPE: MAGS; TARGET:

_center fire_X

RIM FIRE

February 1, 1983

TO:

R. NIGHTINGALE

FROM:

J. BAGGETTA

REPORT TITLE:

M/SEVEN LWT. .308 CALIBER - NEW MACHINED 6061 ALUMINUM FLOOR PLATE

EVALUATION (SPRING LOADED BALL TYPE LATCH DESIGN)

#### ABSTRACT

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#### B. Field Function Test

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#### REPORT TEXT

Three (3) M/Seven LWT. .308 caliber rifles with the redesign latch (spring loaded ball-type design) were fired a total of 90 rounds (30 rounds each) experiencing no malfunctions.

#### TEST PROCEDURE

#### A. Measurements

o Headspace - (Refer to Appendix "A" Data Sheet No. 1.

#### B. Test Conditions

#### Condition No. 1 - Indoor Jack Shooting

- o The test was run using the Test Lab shooting room jacks.
- o The rifles were loaded with 4 rounds in the magazine and one in the chamber.
- o Various speed feeds were used such as: Slow, Medium and Fast.

#### Condition No. 2 - Ilion Fish & Game Club Outdoor Range

- o The test was run using the Ilion Fish & Game Club Rifle Range.
- o The weather was overcast, 320 and windy.
- o The rifles were loaded with 4 rounds in the magazine and 1 in the chamber.
- o Various speed feeds were used such as: Slow, Medium and Fast.
- o Four shooters were used incorporating the round robin system.

#### C. Ammunition

#### Indoor Jack Shooting

Winchester - 200 gr. Silver Tip

#### Field Function Test

- o Remington 180 gr. Soft Point
- o Winchester 200 gr. Silver Tip

#### D. Rifles Used In Test

#### M/Seven LWT. .308 Caliber

7600139

B6226256

7600050

#### REPORT TEXT - cont'd.

#### E. Hi-Speed Movies

- Hi-Speed movies were previously taken of this design showing latch motion by Test Lab personnel in the Photo Lab Room.
- o Hi-Speed movies can be reviewed in the Photo Lab Room.

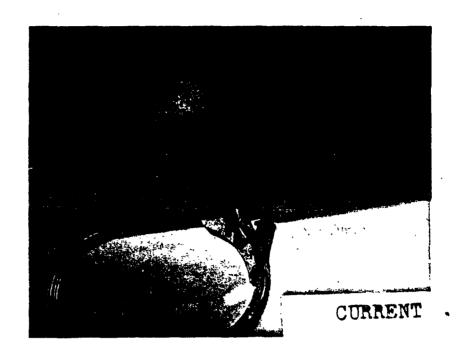
#### F. Photos

- o Pictures were taken of the redesigned M/Seven LWT. .308 caliber rifle. (Refer to Appendix "A" Data Sheet No. 2.)
- o Pictures were taken of the old style latch M/Seven LWT. .222 caliber rifle. (Refer to Appendix "A" Data Sheet No. 2.)

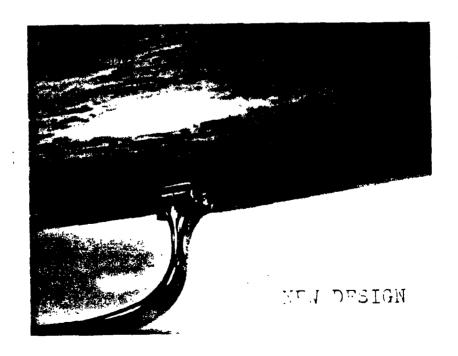
APPENDIX "A"

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M.7 Lut 308 chliber



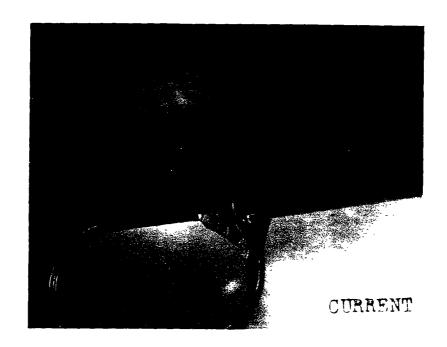
APPENDIX "A"

DATA SHEETS

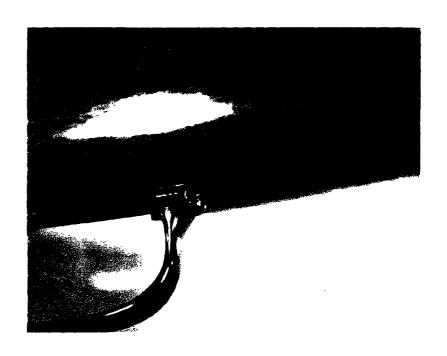
M-7 Lut 308 Caliber Redesign Latch

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# M-7 Lut ,222 caliber



M.7 Lut 308 chliber



### SHOTGUTS, CETTERS TRES, RESPERSE / FRAMES & AUTOLOADERS !

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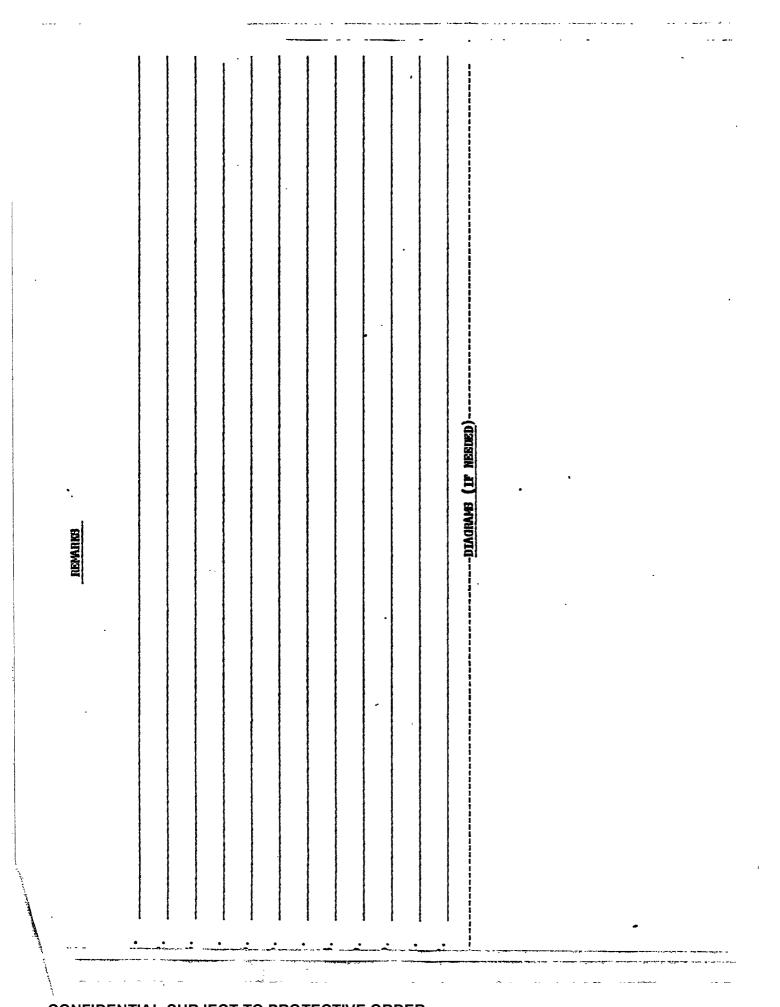
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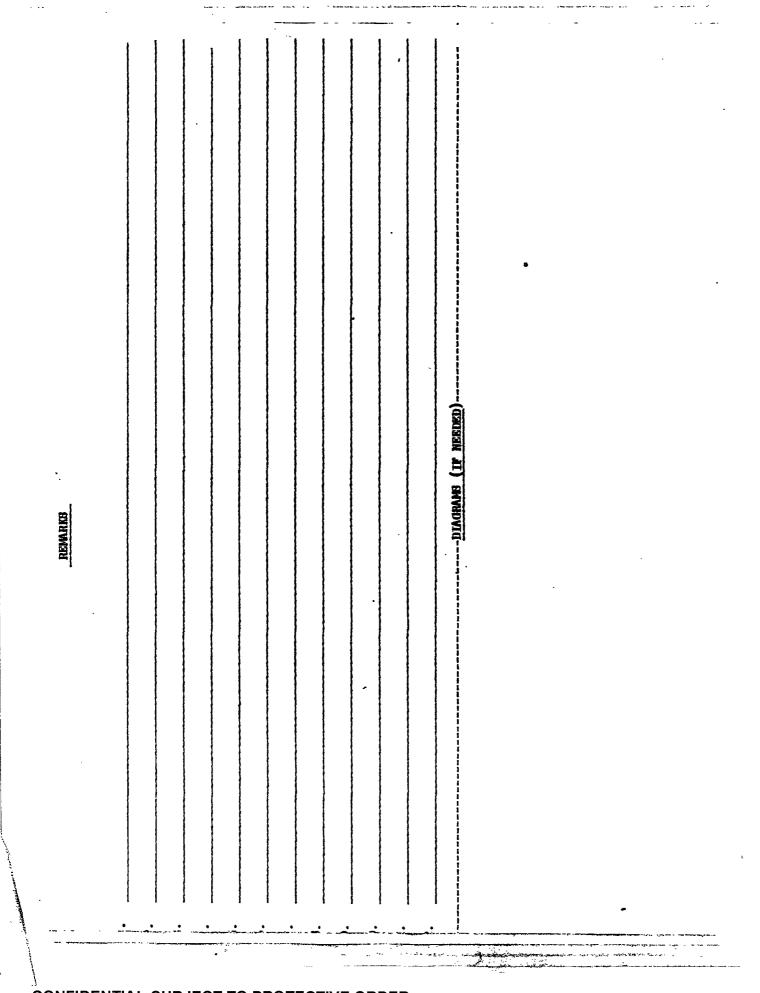
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#### RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

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	Pre-Pilot	New Design	Cost Reduction
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-	Production Acceptance	Plant Assistance	Other
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	-GUNS REQUIRED: - 3 TOTAL # 8622625-6 # 2600139 - ALL #-260005-0	308 WIN.	
	NOTE: NO firearms or parts will be tested it	n the Labs unless they are	DATE COMPLETED:
-	accompanied by a Work Request, as	nd both are delivered to	TEST COMPLETED BY:
-	the Labs by the designer or engineer	r. All Work Requests are	REPORT DATE:
أعا	to be filled out in detail. No Except	ions.	
فأدهيك دماءجه		·	

M- Seven cut TIMMOS 2-2-8
Function Test (Floor Pixt
Regart No. 830521

REMINGTON ARMS COMPANY, INC.		Distribution: T. Plunkett
Remington PETERS		
"CONFINE YOUR LETTER TO ONE SUBJECT ONLY "Test Results on RESEARCH TEST and MEASUREMENT REPOR	1 y '' T - Report No. 830	t-(Floor Plate)
	Prepared by: <u>J.</u> Date Prepared: <u>2 - 7</u>	
Proofread and Cleared By:		
J.H. Hennings ,   R.E. Nightingale, Foreman-Test Lab   Foreman-Measurement Lab	Signature	Date
C.E. Ritchie,		
Sr. Supervisor - Testing, Meas. & Mech. Analysis Lab	Signature	Date

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 830321
REPORT TITLE: M-SEVEN LUT 7MMOK FUNCTION Test-(Pluop Plate
MODEL(S): Seven
GAUGE OR CALIBER: 7 MM OF
DATE: 2-21-83
WORK ORDER NO.: C-1852-000
PART NAME: Floop PIAte
DESIGNER/ENGINEER: T. Plunkett
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. FINDURANCE - NO. OF GUNS TESTED:
NO. OF ROUNDS PER GUN:
total rounds fired in test: 60

AMMO TYPE: MAGS.____; TARGET:____

RIM FIRE CENTER FIRE X

TO T. Plunkett

From J. Baggetta

Test Title

M- Seven Lut 7mm 08 Function Test- (Floor Plate)

Test Results

# Field Function Test

- GUN NO. 7600118 Fixed 40 rounds at various speed rate (slow, medium, fast) experienced no malfunctions. Note-magazine would only take three rounds instead of four rounds.
- GUN No. 7600122-Fixed 20 rounds at uprious speed rate ( 810w, medium, fast) experienced 12 bolt override for and overall malfunction rate at 60.0%. Note magazine would only take three rounds instead at four rounds. Stopped test after 20 rounds due to excessive malfunctions.

eport No.	830521

#### RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

		ARE	A OF TESTING											
	_ Developmental	Safety Related	Litigation											
×	_ Design Acceptance		nation Warehouse Audit											
- <del></del>	Pre-Pilot	New Design	Cost Reduction											
	Pilot	Design Change	Stake											
	Production Acceptance	Plant Assistance	<b>★</b> Other											
	FIREARM STAT'S.  MODEL: 2 COT  CAL. or GAGE: 2 OR  BARREL TYPE:	ental Test Measuremen	Other											
	Accuracy Test Customer Complaint Endurance Test													
	EXPLAIN IN DETAIL THE REASON FOR THIS TEST:  DETERMINE IF FLOOR TRIBTE WILL REMAIN  CLUSED WHEN SHOOTING FROM SHOULDER  AMANO: 40 RDS TOTAL.  SLOW REED  MARD "  FAST "  RITHGE: 100 YARDS (200 IF NECESSARY) F. C. CLUB  MOTE: WIZITERS SAMPLE. DU NOT MART. SIGNTED  111 FOR 100 YARDS ON 2/18/83													
	EURNISHED = M/1	I LWT. 7 MM OB- 3 IGNED TO COL. CH	# 7600118. GUN TU BE UNLES PSKINS.											
NOT	E: NO firearms or parts will be tested	in the Labs unless they are	DATE COMPLETED:											
	accompanied by a Work Request, a	-	TEST COMPLETED BY:											
	the Labs by the designer or enginee		REPORT DATE:											
	to be filled out in detail. No Excep	·												
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FIELD	CYCLE	TEST -	CENTERFIRE

REPROT	NO.:	830	521
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PR <b>EVIOUS</b>	DΛ	TEST TITLE: Function Test												GAUGE: 77/108									SERIAL NO. 7600122						
ROUNDS		WEATHER: "MALFUNCTIONS"															TTL. RDS. FIRED: 20 TTL. MALFUNCTIONS: 17 MALFUNCTION RATE: 60.0 6/0												
AMMUNITION	<b>Amunition</b>		ROUNDS FIRED		SHELL	ECT	DON'T BLOW BACK	OCK OPEN	FE FR MA	OM	STEMS MAG.	VERRIDE	DOM'T LOCK UP		CHV	em Mber	1	SHELL JUMPS MAG.	FOLLOWER BINDS		ERRIDE	ANG UP	TRACT	82	SLA	ENTE	OCITIES	REMAI	RKS
Load Size		SHCOTER		FIRING	TRAPPED SHELL	DON'T EJECT	DOINT B	DON'T LOCK OPEN	IATCH	SHELL S	POWER O	DOK'T IC	HICH	LOW	RICH	LEFT	SHELL J	FOLLOWE	LOADING	BOLT OVERRIDE	ACTION HANG UP	DON'T EXTRACT	BREAKAGES	ADJUSTMENTS	REPLACEMENTS	BOLT VELOCITIES	(ON 1	BACK	
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	F		5			,,															33								
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PREVIOUS ROUNDS	TE	ST T	ITLE	:	<u>-77</u>	uct	101	1 1	50	5					<del></del>	·					C	)	TTL.	RDS	. FI	RED:		40	
	WE	ATHE	R:					· · · · · · · · · · · · · · · · · · ·			**	MLF	UNCI	'IONS	11								TTL. MALF	MAL UNCT	FUNC ION	TION RATE	s:	8	
1. Joe 2- Kralpi			NO. OF ROUNDS FIRED		HELL	Ę	W BACK	X OPEN	FE	OM	SHELL STEMS MAG.	OVERRIDE	B			'EM MBER	· · · · ·	JUMPS MAG.	BINDS		RRIDE	ac up	RACT		233	STE	VELOCITIES	REMAI	
AMMUNITION Load Size		SHOOTER	NO. OF R	FIRING	TRAPPED SHELL	DON'T BJECT	DON'T BLOW BACK	DON'T LOCK OPEN		Sug	SHELL ST	POWER OV	DON'T LOCK UP	HCH	LON	RIGHE	LEFT	SHELL JU	FOLLOWER BINDS	LOADING	BOLT OVERRIDE	ACTION HANG UP	DON'T EXTRACT	BREAKAGES	ADJUSTMENTS	REFLACEMENTS	BOLT VELO	(ON I	BACK)
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# REMINGTON ARMS COMPANY, INC.

Remineton

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

Distribution: C. B. Workman

C. E. Ritchie

J. W. Brooks

D.E. Bullis

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RESEARCH TEST and MEASUREMENT REPORT - Report No. 830411

M/SEVEN LWT. - CAL. .243 - EVALUATION OF RECEIVERS MODIFIED WITH INTERNAL **BROACH CUTS** 

> R. Williams Prepared by:

2-28-83 Date Prepared:

Prociread and Cleared By:

Foreman-Test Lab Foreman-Measurement Lab

C.E. Ritchie.

Sr. Supervisor - Testing,

Meas. & Mech. Analysis Lab

### TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	830411
REPORT TITLE:	M/Seven LWT Cal243 - Evaluation of Receivers Modified With Internal Broach Cuts
MODEL(S):	M/Seven LWT.
GAUGE OR CALIBER:	.243
DATE:	2/28/83
WORK ORDER NO.:	C-1856-000
PART NAME:	Receiver
DESIGNER/ENGINEER:	D. Bullis
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: Static
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: 135
	TOTAL ROUNDS FIRED IN TEST: 2,160
	AMMO TYPE: MAGS; TARGET:
	RIM FIRECENTER FIRE X

February 28, 1983

TO:

R. E. NIGHTINGALE

FROM:

R. WILLIAMS

REPORT TITLE:

M/SEVEN LWT. - CAL. .243 - EVALUATION OF RECEIVERS MODIFIED WITH

INTERNAL BROACH CUTS

### **ABSTRACT**

A total of sixteen (16) M/Seven LWT. Cal. .243 rifles with modified receivers which have a broach cut at the right lug area and Plant altered magazine boxes (right feed lip) were received in the Test Lab from D. G. Bullis, Current Firearms Design, for a Function Test.

#### SCOPE OF TEST

To determine if the New Design Change with the broach cut in the receiver will have any effect on extracted shell hanging up or being marked by receiver during ejecting cycle.

### TEST RESULTS

There were no problems of shell casings being marked or hanging up during the ejection cycle.

There were other malfunctions during the test and they can be found in Report Text.

Two rifles left rings on fired brass, photos in Appendix "A".

### REPORT TEXT

Load and Unload Cycle Test
 Cal. .243 Total Rounds Per Rifle - 135 Rds.

Rifle No. 7601300

Rifle No. 7601301

Rifle No. 7601296

Rifle No. 7601287

Rifle No. 7601288

No Malfunction

Rifle No. 7601291	- 24 Malfunctions for a 1	7.7% rate	
1 Stem High	Rem. 80 Gr. P.S.P.	3rd out of mag.	Medium Cycle
1 Stern High	Rem. 80 Gr. P.S.P.	4th out of mag.	Fast Cycle
1 Stem Low	Ren, 80 Gr. P.S.P.	2nd out of mag.	Slow cycle
1 Hard Under Rail	Rem. 80 Gr. P.S.P.	3rd out of mag.	Slow cycle
1 Stem Left	Rem. 80 Gr. H. P.	2nd out of mag.	Slow cycle
1 Stem Left	Rem. 80 Gr. H.P.	2nd out of mag.	Medium cycle
1 Stem Low	Rem. 80 Gr. H. P.	2nd out of mag.	Fast cycle
l Hard Under Rail	Rem. 80 Gr. H.P.	3rd out of mag.	Medium cycle
1 Hard Under Rail	Rem. 100 Gr. P.S.P.	3rd out of mag.	Slow cycle
1 Stem High	Fed. 80 Gr. S.P.	4th out of mag.	Fast cycle
l Hard Under Rail	Fed. 80 Gr. S.P.	3rd out of mag.	Medium cycle
l Hard Under Rail	Fed. 100 Gr. S.P.	4th out of mag.	Slow cycle
1 Stem High	Fed. 85 Gr. B.T.H.P.	4th out of mag.	Fast cycle
1 Hard Under Rail	Fed. 85 Gr. B.T.H.P.	3rd out of mag.	Slow cycle
1 Hard Under Rail	Fed. 85 Gr. B.T.H.P.	4th out of mag.	Medium cycle
l Stem High	Fed. 100 Gr. B.T. S.P.	2nd out of mag.	Medium cycle
l Hard Under Rail	Fed. 100 B.T.S.P.	3rd out of mag.	Slow cycle
1 Stem High	Win. 80 Gr. P.S.P.	4th out of mag.	Slow Cycle
1 Stem High	Win. 80 Gr. P.S.P.	4th out of mag.	Medium cycle
l Hard Under Rail	Win. 80 Gr. P.S.P.	3rd out of mag.	Slow cycle
1 Hard Under Rail	Win. 80 Gr. P.S.P.	4th out of mag.	Medium cycle
1 Bolt Stem Shell in M	lag.Win. 100 Gr. S.P.	4th out of mag.	Fast cycle
1 Stem High	Win. 100 Gr. S.P.	3rd out of mag.	Slow cycle
l Hard Under Rail	Win. 100 Gr. S.P.	4th out of mag.	Slow Cycle

### REPORT TEXT - cont'd.

Load and Unload Cycle Test
 Cal. .243 Total Rounds Per Rifle – 135 Rds. - cont'd.

Rifle No. 7601290 -	17 Malfunctions For a 12.5%	6 Rate	
l Hard Under Rail	Rem. 80 Gr. P.S.P.	3rd out of mag.	Slow cycle
l Hard Under Rail	Rem. 80 Gr. P.S.P.	4th out of mag.	Slow cycle
1 Hard Under Rail	Rem. 80 Gr.P.S.P.	4th out of mag.	Medium cycle
l Hard Under Rail	Rem. 80 Gr. H.P.	3rd out of mag.	Slow cycle
l Hard Under Rail	Rem. 80 Gr. H.P.	3rd out of mag.	Medium cycle
l Hard Under Rail	Rem. 100 Gr. P.S.P.	4th out of mag.	Slow cycle
l Hard Under Rail	Fed. 80 Gr. S.P.	3rd out of mag.	Slow cycle
l Hard Under Rail	Fed. 80 Gr. S.P.	2nd out of mag.	Medium cycle
1 Hard Under Rail	Fed. 80 Gr. S.P.	4th out of mag.	Medium cycle
l Hard Under Rail	Fed. 100 Gr. S.P.	2nd out of mag.	Slow cycle
l Hard <b>U</b> nder Rail	Fed. 100 Gr. S.P.	4th out of mag.	Medium cycle
l Hard Uner Rail	Fed. 85 Gr. B.T.H.P.	3rd out of mag.	Slow cycle
l Hard Under Rail	Fed. 85 Gr. B.T.H.P.	4th out of mag.	Medium cycle
l Hard Under Rail	Fed. 100 Gr. B.T.S.P.	3rd out of mag.	Slow cycle
l Hard Under Rail	Win. 80 Gr. P.S.P.	2nd out of mag.	Slow cycle
l Hard Under Rail	Win. 100 Gr. S.P.	3rd out of mag.	Slow cycle
l Hard Under Rail	Win. 100 Gr. S.P.	4th out of mag.	Medium cvcle

### REPORT TEXT - cont'd.

Load and Unload Cycle Test
 Cal. .243 Total Rounds Per Rifle — 135 Rds. - cont'd.

Rifle No. 7601293	- 18 Malfunctions for a 1	3.3% rate	
1 Stem High	Rem. 80 Gr. P.S.P.	4th out of mag.	Slow cycle
l Stem High	Rem. 80 Gr. P.S.P.	4th out of mag.	Medium cycle
l Stem High	Rem. 80 Gr. P.S.P.	4th out of mag.	Fast cycle
l Hard Under Rail	Rem. 80 Gr. P.S.P.	4th out of mag.	Slow cycle
l Hard Under Rail	Rem. 80 Gr. P.S.P.	4th out of mag.	Medium cycle
l Hard Under Rail	Rem. 80 Gr. P.S.P.	4th out of mag.	Fast cycle
1 Stems Incline	Rem. 100 Gr. P.S.P.	4th out of mag.	Slow cycle
1 Stems Incline	Rem. 100 Gr. P.S.P.	4th out of mag.	Medium cycle
1 Stems Incline	Rem. 100 Gr. P.S.P.	4th out of mag.	Fast cycle
l Stem High	Fed. 80 Gr. S.P.	4th out of mag.	Medium cycle
l Stem High	Fed. 100 Gr. S.P.	4th out of mag.	Medium cycle
l Stem High	Fed. 100 Gr. S.P.	4th out of mag.	Fast cycle
1 Stem High	Fed. 100 Gr. B.T.S.P.	4th out of mag.	Slow cycle
l Stem High	Fed. 100 Gr. B.T.S.P.	4th out of mag.	Fast cycle
1 Stems Incline	Win. 80 Gr. P.S.P.	4th out of mag.	Slow cycle
1 Stem High	Win. 80 Gr. P.S.P.	4th out of mag.	Fast cycle
1 Stems Incline	Win. 100 Gr. S.P.	4th out of mag.	Slow cycle
l Stem High	Win. 100 Gr. S.P.	4th out of mag.	Medium cycle
Rifle No. 7601286	- 1 Malfunction for a .7%:	rate	
l Hard Under Rail	Rem. 80 Cr. P.S.P.	3rd out of mag.	Slow cycle
Rifle No. 7601294	<ul> <li>1 Malfunction for a .7% r</li> </ul>	ate	
	— ·— · · · · · · · · · · · · · · · · ·		C11-
1 Stem Right	Rem. 100 Gr. P.S.P.	1st out of mag.	Slow cycle
Rifle No. 7601289	- 2 Malfunctions for a 1.4%	rate	
1 Drops Shell	Rem. 80 Gr. P.S.P.	2nd out of mag.	Slow cycle
1 Drops Shell	Rem. 80 Gr. P.S.P.	3rd out of mag.	Slow cycle
2 2 3 <b>2 3 2 3</b>		-	•
Rifle No. 7601297	<ul> <li>13 Malfunctions for a 9.</li> </ul>	6% rate	
l Mag Loads Hard	Rem. 80 Gr. P.S.P.	4th in the mag.	Slow Cycle
l Mag. Loads Hard	Rem. 80 Gr. P.S.P.	4th in the mag.	Medium cycle
l Mag. Loads Hard	Rem. 80 Gr. P.S.P.	4th in the mag.	Fast cycle
l Mag. Loads Hard	Rem. 80 Gr. H.P.	4th in the mag.	Slow cycle
l Mag Loads Hard	Rem. 80 Gr. H.P.	4th in the mag.	Medium cycle
l Mag. Loads Hard	Rem. 100 Gr. P.S.P.	4th in the mag.	Medium cycle
l Mag. Loads Hard	Rem. 100 Gr. P.S.P.	4th in the mag.	Fast cycle
l Mag. Loads Hard	Fed. 80 Gr. S.P.	4th in the mag.	Slow cycle
l Mag. Loads Hard	Fed. 80 Gr. S.P.	4th in the mag.	Medium cycle
l Mag. Loads Hard	Fed. 80Gr. S.P.	4th in the mag.	Fast cycle
l Mag. Loads Hard	Fed. 100 Gr. S.P.	4th in the mag.	Medium cycle Fast cycle
l Mag. Loads Hard	Win. 85Gr. P.S.P.	4th in the mag.	Medium cycle
1 Mag. Loads Hard	Win. 80 Gr. P.S.P.	4th in the mag.	medium cycle

### REPORT TEXT - cont'd.

# Load and Unload Cycle Test Cal. .243 Total Rounds Per Rifle - 135 Rds. - cont'd.

Rifle No. 7601285	601285 – 3 Malfunctions for a 2.2% rate		
1 Bolt Override	Fed. 80 Gr. S.P.	1st out of the mag.	Medium cycle
1 Bolt Override	Fed. 85 Gr. B.T.H.P.	lst out of the mag.	Fast cycle
1 Bolt Override	Win. 100 Gr. S.P.	lst out of the mag.	Medium cycle
Rifle No. 7601292	<ul> <li>7 Malfunctions for a</li> </ul>	a 5.1% rate	
1 Shell Stems Mag.	Rem. 100 Gr. P.S.P.	4th out of mag.	Medium cycle
1 Shell Stems Mag.	Rem. 100 Gr. P.S.P.	4th out of mag.	Fast cycle
l Stem Left	Fed. 100 Gr. S.P.	4th out of mag.	Slow cycle
1 Stem Left	Fed. 100 Gr. S.P.	4th out of mag.	Medium cycle
l Stem Left	Fed. 100 Gr. S.P.	4th out of mag.	Fast cycle
l Stem Left	Fed. 85 Gr. B.T.H.P.	4th out of mag.	Medium cycle
1 Stem Left	Fed. 85 Gr. B.T.H.P.	4th out of mag.	Fast cycle
D:0 N 5400001	43#10 6	0.004	
Rifle No. 7600921	<ul> <li>4 Malfunctions for a</li> </ul>	a 2.9% rate	
1 Stem Low	Rem. 80 Gr. H.P.	4th out of mag.	Slow cycle
1 Stem Low	Rem. 80 Gr. H.P.	4th out of mag.	Fast cycle
1 Stem High	Fed. 100 Gr. S.P.	2nd out of mag.	Slow cycle
1 Stem High	Win. 80 Gr. P.S.P.	3rd out of mag.	Medium cycle
Rifle No. 7600614	<ul> <li>9 Malfunctions for a</li> </ul>	. 6 60/ mate	
1 Stem Low	Rem. 100 Gr. P.S.P.	1st out of mag.	Medium cycle
1 Stem Low	Rem. 100 Gr. P.S.P.	1st out of mag.	Fast cycle
1 Stem Right	Fed. 100 Gr. S.P.	1st out of mag.	Slow cycle
1 Stem Low	Fed. 85 Gr. B.T.S.P.	lst out of mag.	Slow cycle
1 Stem Low	Win. 80 Gr. P.S.P.	1st out of mag.	Slow cycle
1 Stem Low	Win. 80 Gr. P.S.P.	1st out of mag.	Medium cycle
1 Bolt Override	Win. 80 Gr. P.S.P.	2nd out of mag.	Medium cycle
1 Stem Low	Win. 100 Gr. S.P.	1st out of mag.	Slow cycle
1 Stem Right	Win. 100 Gr. S.P.	3rd out of mag.	Slow cycle

# 2. Live Load & Fire Cycle Test

Cal. .243 Total Rounds Per Rifle - 135 Rds.

Rifle No. 7601286 Rifle No. 7601300 Rifle No. 7601296 Rifle No. 7601287 Rifle No. 7601288 No Malfunction

## REPORT TEXT- cont'd.

2. Live Load & Fire Cycle Test - cont'd.

Cal. .243 Total Rounds Per Rifle — 135 Rds.

Rifle No. 7601291	- 17 Malfunctions for	a 12.5% rate	
l Stem High	Rem. 80 Gr. P.S.P.	4th out of mag.	Slow cycle
l Stem High	Rem. 80 Gr. P.S.P.	4th out of mag.	Medium cycle
l Stem High	Rem. 80 Gr. H.P.	4th out of mag.	Slow cycle
1 Stem High	Rem. 80 Gr. H.P.	4th out of mag.	Medium cycle
1 Stem High	Fed. 80 Gr. S.P.	4th out of mag.	Slow cycle
1 Stem High	Fed. 80 Gr. S.P.	4th out of mag.	Medium cycle
1 Stem High	Fed. 80 Gr. S.P.	4th out of mag.	Fast cycle
l Stem High	Fed. 100 Gr. S.P.	4th out of mag.	Slow cycle
l Stem High	Fed. 100 Gr. S.P.	4th out of mag.	Medium cycle
1 Stem/High	Fed. 100 Gr. S.P.	4th out of mag.	Fast cycle
1 Stem High	Fed. 85 Gr. B.T.H.P.	4th out of mag.	Slow cycle
1 Stem High	Fed. 85 Gr. B.T.H.P.	4th out of mag.	Medium cycle
1 Stem High	Fed. 100 Gr. B.T.S.P.	4th out of mag.	Slow cycle
1 Stem High	Win. 80 Gr. P.S.P.	4th out of mag.	Medium cycle
l Stem High	Win. 100 Gr. S.P.	4th out of mag.	Slow cycle
1 Stem High	Win. 100 Gr. S.P.	4th out of mag.	Medium cycle
1 Stem High	Win. 100 Gr. S.P.	4th out of mag.	Fast cycle
Rifle No. 7601290	<ul> <li>23 Malfunctions for</li> </ul>	r a 17.% rate	
1 Stem High	Rem. 80 Gr. P.S.P.	3rd out of mag.	Fast cycle
l Hard Under Rail	Rem. 100 Gr. P.S.P.	1st out of mag.	Slow cycle
l Hard Under Rail	Rem. 100 Gr. P.S.P.	4th out of mag.	Slow cycle
l Hard Under Rail	Fed. 80 Gr. S.P.	lst out of mag.	Slow cycle
l Hard Under Rail	Fed. 80 Gr. S.P.	2nd out of mag.	Slow cycle
l Hard Under Rail	Fed. 80 Gr. S.P.	1st out of mag.	Medium cycle
l Hard Under Rail	Fed. 80 Gr. S.P.	2nd out of mag.	Medium cycle
l Hard Under Rail	Fed. 100 Gr. S.P.	1st out of mag.	Slow cycle
l Hard Under Rail	Fed. 85 Gr. B.T.H.P.	1st out of mag.	Slow cycle
l Hard Under Rail	Fed. 85 Gr. B.T.H.P.	1st out of mag.	Medium cycle
l Hard Under Rail	Fed. 85 Gr. B.T.H.P.	1st out of mag.	Fast cycle
l Hard Under Rail	Fed. 100 Gr. B.T.H.P.	1st out of mag.	Slow cycle
1 Hard Under Rail	Fed. 100 Gr. B.T.H.P.	2nd out of mag.	Slow cycle
1 Hard Under Rail	Fed. 100 Gr. B.T.H.P.	1st out of mag.	Medium cycle
1 Hard Under Rail	Fed. 100 Gr. B.T.H.P.	2nd out of mag.	Medium cycle
1 Hard Under Rail	Fed. 100 Gr. B.T.H.P.	1st out of mag.	Fast cycle
l Hard Under Rail	Win. 80'Gr. P.S.P.	1st out of mag.	Slow cycle
l Hard Under Rail	Win. 80 Gr. P.S.P.	lst out of mag.	Medium cycle
l Hard Under Rail	Win. 80 Gr. P.S.P.	lst out of mag.	Fast cycle
1 Hard Under Rail	Win. 100 Gr. S.P.	1st out of mag.	Slow cycle
1 Hard Under Rail	Win. 100 Gr. S.P.	1st out of mag.	Medium cycle
1 Hard Under Rail	Win. 100 Gr. S.P.	2nd out of mag.	Medium cycle
l Hard Under Rail	Win. 100 Gr. S.P.	1st out of mag.	Fast cycle

Report No. 830411 Page 6

### REPORT TEXT - cont'd.

### 2. Live Load & Fire Cycle Test - cont'd. Cal. .243 Total Rounds Per Rifle - 135 Rds.

Rifle No. 7601293	- 10 Malfunctions fo	or a 7.4% rate	
1 Stem High	Rem. 80 Gr. P.S.P.	4th out of mag.	Medium Cycle
l Stem High	Rem. 80 Gr. P.S.P.	4th out of mag.	Fast Cycle
l Hard Under Rail	Rem. 80 Gr. P.S.P.	1st out of mag.	Slow cycle
1 Hard Under Rail	Rem. 80 Gr. P.S.P.	4th out of mag.	Slow cycle
l Hard Under Rail	Rem. 80 Gr. P.S.P.	4th out of mag.	Medium cycle
l Hard Under Rail	Rem. 80 Gr. P.S.P.	4th out of mag.	Fast cycle
1 Stems Incline	Rem. 100 Gr. P.S.P.	4th out of mag.	Slow cycle
l Stem High	Fed. 100 Gr. B.T.S.P.	4th out of mag.	Fast cycle
l Stern High	Win. 80 Gr. P.S.P.	4th out of mag.	Fast cycle
1 Stem High	Win. 100 Gr. S.P.	4th out of mag.	Slow cycle
Rifle No. 7601300	<ul> <li>10 Malfunctions for</li> </ul>	or a 7.4% rate	
1 Mag Loads Hard	Rem. 80 Gr. P.S.P.	4th in the mag.	Slow cycle
l Mag Loads Hard	Rem. 80 Gr. P.S.P.	4th in the mag.	Medium cycle
l Mag Loads Hard	Rem. 80 Gr. H.P.	4th in the mag.	Medium cycle
l Mag Loads Hard	Rem. 80 Gr. H.P.	4th in the mag.	Fast cycle
1 Mag. Loads Hard	Rem. 100 Gr. P.S.P.	4th in the mag.	Slow cycle
l Mag Loads Hard	Rem. 100 Gr. P.S.P.	4th in the mag.	Medium cycle
l Mag. Loads Hard	Fed. 80 Gr. S.P.	4th in the mag.	Medium cycle
l Mag Loads Hard	Fed. 80 Gr. S.P.	4th in the mag.	Fast cycle
l Mag Loads Hard	Fed. 100 Gr. S.P.	4th in the mag.	Fast cycle
1 Mag Loads Hard	Win. 100 Gr. S.P.	4th in the mag.	Fast cycle
Rifle No. 7601301	<ul> <li>3 Malfunctions for</li> </ul>	a 2.2% rate	
1 Bolt Stems Shell	Win. 80 Gr. P.S.P.	4th out of mag.	Slow cycle
1 Bolt Stems Shell	Win. 80 Gr. P.S.P.	4th out of mag.	Medium cycle
1 Bolt Stems Shell	Win. 80 Gr. P.S.P.	4th out of mag.	Fast cycle
Rifle No. 7601294	<ul> <li>7 Malfunctions for</li> </ul>	a 5 1% rate	
		<del></del>	<b>01 0</b> 1
1 Don't Extract	Rem. 100 Gr. P.S.P.	2nd out of mag.	Slow Cycle
1 Don't Extract	Rem. 100 Gr. P.S.P.	3rd out of mag.	Medium Cycle
l Don't Extract	Rem. 100 Gr. P.S.P.	4th out of mag.	Medium Cycle
l Don't Extract l Don't Extract	Rem. 100 Gr. P.S.P. Rem. 100 Gr. P.S.P.	1st out of mag.	Fast Cycle
l Don't Extract	Rem. 100 Gr. P.S.P. Rem. 100 Gr. P.S.P.	3rd out of mag.	Fast Cycle
I DOU'T EXTRACT	kem. 100 Gr. P.S.P.	5th out of mag.	Fast Cycle
	Replaced Extractor at 45		
1 Stem High	Fed. 100 Gr. S.P.	1st out of mag.	Fast Cycle

### REPORT TEST - cont'd.

Live Load & Fire Cycle Test - cont'd.
 Cal. .243 Total Rounds Per Rifle - 135 Rds.

Rifle No. 7601289	<ul> <li>2 Malfunctions for</li> </ul>	a 1.4% rate	
1 Drops Shell	Rem. 80 Gr. H.P.	3rd out of mag.	Medium cycle
1 Stem Left	Win. 80 Gr. P.S.P.	4th out of mag.	Medium cycle
Rifle No. 7601285	<ul> <li>2 Malfunctions for</li> </ul>	a 1.4% rate	
1 Bolt Override	Fed. 85 Gr. B.T.H.P.	1st out of mag.	Slow cycle
1 Bolt Override	Fed. 85 Gr. B.T.H.P.	lst out of mag.	Medium cycle
Rifle No. 7601292	- 5 Malfunctions for	a 3.7% rate	
1 Shell Stems Mag.	Rem. 100 Gr. P.S.P.	4th out of mag.	Fast cycle
1 Stem Left	Rem. 100 Gr. P.S.P.	4th out of mag.	Slow cycle
l Stem Left	Fed. 100 Gr. S.P.	4th out of mag.	Slow cycle
1 Stem Left	Win. 80 Gr. P.S.P.	4th out of mag.	Slow cycle
l Stem Left	Win. 80 Gr. P.S.P.	4th out of mag.	Medium cycle
Rifle No. 7600921	- 1 Malfunction for a	a .7% rate	
1 Stem Low	Rem. 80 Gr. H.P.	4th out of mag.	Fast cycle
Rifle No. 7600614	<ul> <li>2 Malfunctions for</li> </ul>	1.4% rate	
1 Stem Low	Rem. 100 Gr. P.S.P.	1st out of mag.	Slow cycle
1 Stem Low	Win. 100 Gr. S.P.	1st out of mag.	Slow cycle

^{3.} Two Rifles Serial No. 7601294 and Serial No. 7600614 left deep rings on the fired brass. Also the base of the case is deformed due to the chamber.

Photographs of the fired cases will be found in Appendix "A".

#### TEST PROCEDURE

#### A. Measurements

Measurements taken in the Test Lab are Headspace after Proof and can be found in Appendix "A".

### B. Load and Unload Cycle Test and Live Load and Fire Cycle Test

Both tests were conducted in the Shooting Jacks in the Test Lab. Each rifle was cycled and fired a total of 135 rounds with nine (9) types of ammunition. Each rifle was fired 15 rds. with 5 rds. of Slow, Medium and Fast Cycle and rifle allowed to cool between each 15 rounds.

### 1. Ammunition Cal. .243

Rem. 80 Gr. Ptd. S.P.	Index	R243W1
Rem. 80 Gr. Power-Lokt H.P.	"	R243W2
Rem. 100 Gr. Core-Lokt Ptd. S.P.	77	R243W3
Fed. 80 Gr. S.P.	**	243A
Fed. 100 Gr. Hi-Shok S.P.	"	243B
Fed. 85 Gr. Boat-tail H.P.	77	P243D
Fed. 100 Gr. Boat-tail H.P.	"	P243C
Win. 80 Gr. P.S.P.	"	X2431
Win. 100 Gr. P.P.S.P.	"	X2432

M/Seven LWT.	Cal243

	<del></del>
Serial No.	Headspace After Proof
7601291	Min. + .003
7601290	Min. + .002
7601293	Min. + .003
7601286	Min. + .003
7601300	Min. + .002
7601297	Min. + .002
7601301	Min. + .003
7601296	Min. + .002
7601287	Min. + .003
7601294	Min. + .003
7601288	Min. + .004
7601289	Min. + .003
7601285	Min. + .003
7601292	Min. + .003
7600921	Min. + .003
7600614	Min. + .002

"APPENDIX "A"

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FIELD CYCLE T	EST - CENTERFIRE	REPROT NO	1.1 <u>X30411</u>	lage no. /
2-28-83	MODEL: 7/WT	ONUOR: 243	SERTAL NO.	

PREVIOUS	MTE:	2-	28	-8	<u>3</u>		MO	DEL:	Z	LW	<u>'</u> [			O	MUDE	الم	24:	3			8	eri/	T NO	),				-
ROUNDS	rest :	litle	<u>s</u>	UMMA	RY S	HEET	rs pi	ER -	RIF	LE -	- AM	40 TY	[PE	- SH	ООТЕ	R						TTL.	. RD9	. FI	IRED:	ا		
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SUMMARY SHEET BY		ACTIMING SERVING		Seem	TOE:	STEMS INCLINE	NEGO XDOI	FR	ed nom	STEMS MAG.	7977.00	UNDER RAIL	•		'em Mbet		JUMPS MAG.	FOLLOWER BINIDS	Mag. Loads Hard	OVERRIDE	BOLT STEMS SHELL	TEACT	22		STATES.		IONS PER	स्त्र मध्य
Rifle	SHOOTES	80. Q	FIRENCE	TO PPED SEEL	DOM'T ELECT	SW372	DON'TE L	1	tcli Sug	SHELL	dono.	HARD L		IQI	Name of the last		SHELL J	POLLOWE	COADING May.	BOLT OV	BOLT ST	T. MOC	BREAKAGES	ADJUSTMENTS	REFLACEMENTS		MALFUNCTIONS	MALE. RATE
7601291		135										11	8	2		2					7			<del> </del>			24	17.79
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7601293	_	135				5						3	10														18	13.39
7601286		135			_							1															/	179
7601294	_	135		_			_								1												7	.7%
7601289		135									2																2	1.4%
7601297		135																Ŀ	13								13	9.6%
76.01285	_ _	135				_					_									m							3	22%
7601292	<u> </u>	135			L					2						5											7	5.1%
7600921		135		_		_							2	2								·					4	2.9%
7600614	_	135						<u> </u>						6	2					1							1	6.6%
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TOTAL (FER MAL.	) [	1	[				•			1					•													

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FIELD	CYCLE	TEST	_	CENTERF IRE

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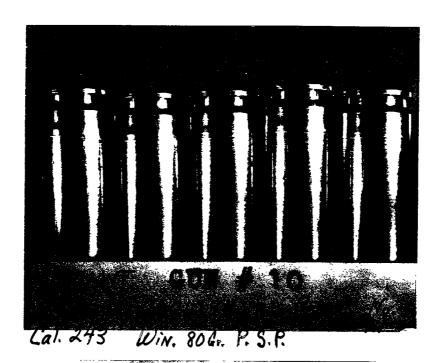
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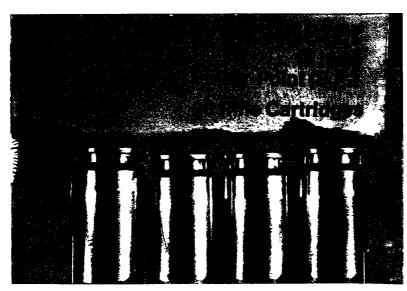
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SUMMARY SHEET		RCDAINS FIRED		Standing	ಸಾಮ	STEMS INCLINE	LCCK OPER	FEI FRI	OM	STEMS MAG.	58.98 Son 54.644	HARD UNDER RAIL		et Civa	em Mber		JUMPS MAG.	FOLLOWER BINDS	CADING Mag. Loads	BOLT OVERRIDE	STEMS SHELL		25	STES.	(SATURE)	KS or BACK	TIONS PER	Per
Rifle	SHOOTES	30. OF	FIRING	THE PERT SEED	DON'T BIBOT	STEMS	ם ביוצוסם		CH Sug	SHELL	S 3888	HARD	HIGH	LON	श्राद्धस		SHELL	FOLLOW	LOADING	BOLT O	BOLT STEMS	DON'T E	SEDEN KACES	ADJUSTMENTS	REPLACEMENTS	REMARKS	MALFUNCTIONS	MALT. NATE
7601291		/35											17														17	12.59
7601290		135										22	1														23	17.%
7601293		135				1						4	5				Ŀ										10	7.4%
7601300		135																	10								10	7.4%
7601301		135																			3						3	2.2%
7601294		135				_							1					_				6			X	X	7	5.1%
7601289		135									1		_	<u> </u>		1		<u> </u>									2	1.4%
7601285		135			_					_	_									2			_			_	2	1.4%
7601292		135	<u> </u>		_	_	_	_		1		_				4	_	_						_			5	3.7%
7600921		135			_	_	_	_					_	11				_		_	_	<u>'</u>		_			1	.7%
7600614		135				_						<b> </b>	<u> </u>	2			_	_	_		<u> </u>		<u> </u>	_	_	_	2	1.4%
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TOTAL (FER MAL.)			<u> </u>						<u> </u>		<u> </u>						<u></u>						<u> </u>			<u> </u>	<u> </u>	

Rifle No. 7601294 Replaced Extractor at 45 Rounds

### RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

<u>`</u>		
**	ARE	A OF TESTING
Developmental	Safety Related	Litigation
Design Acceptance	Competitive Evalua	ation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S.	REPORT REQ'D.	
MODEL 74W7		DATE REQUESTED: 2 - 10 -83
CALARGE: 243	FORMAL	DATE NEEDED BY: ASAP
BARREL TYPE: CARB.	TEST RESULTS	REQUESTED BY: RULLIS
PROOFED: YES VNO	ONLY	WORK ORDER NO:
	TEST TYPE	
Strength Test Ammuniti		<del></del>
Function Test Environme		
Accuracy TestCustomer	Complaint Endurance T	est
EXPLAIN IN DETAIL THE REASON FOR T		
M/7 LWT - 243 CAL.	BROACHED REC.	(RIGHT LUG AREA)
PLANT AL	TERES MAGAZINE	E BOX (RIGHT FECA LIP)
PUN TEST TO INCLUBE	FEEDING, EXTRAC	TING É ESECTION OF
LIVE & FIRED SHE	ces. (FAST, MED.	, scow)
· LOOK FOR EXTRAC	TED SHELL HANG	ING UP OR BEING
MARKED BY RECE	IVER DURING ES	ECTING CYCLE.
· BE ALERT TO FE	EDING PROBLEMS _	ESPECIALLY LAST ROUND
IN MAG.		·
-GUNS REQUIRED: 7 CO 2 9	7601300 76	601287 7601285
7600921	1297	1294 1292
7600614 1293	1301	1288
1286	1296	1289.
NOTE: NO firearms or parts will be tested in	n the Labs unless they are	DATE COMPLETED:
accompanied by a Work Request, a		TEST COMPLETED BY:
the Labs by the designer or engineer	ľ	REPORT DATE:
to be filled out in detail. No Except	j	
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GUN # 16 MYTLWT Serial No. 7600614 REPORT No. 830411

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Head space Min +.063		ROUNDS FIRED (A	a 1/a		L M			FR	ed om	10 36 10 M. M. J. M. J.	OVERRIDE	LOCK UP			EM MBER	l	JUMPS MAG.	CANDER RAIL		GREIDE	And one	TRACT	m	SIL	STEE	XIIIIS.	REMA	rks
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JACE	TR: 2	SHOOLES	RE	<b>1</b> 8	RE	R		2.8	32	RE	65			
٠ کا		Head Space Min toos Aminition Load Bize	ASD X	REGER HP	on PSP	A 8 A		87 HP	FlOOR BT SP 18	8000 DSV	100 GK SP			TOTAL (FER ML.)
	PREV IOUS ROUNDS	He.c. MMMIN	R 80ce	250 K	R1000H	F 8000	F 160 GK	F 850	F100	. W. St.	10 10		•	TOTAL

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FAGE NO.	7600619			REWARKS	(ON YES												
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		PREVIOUS ROUNDS		Hade Sy Min.	Load Bize	R fock psp	D 866K	R 100cm	F 800% SP	1/0/1	FSSCNBTHP	F160AR BTSPNE	3				TOTAL
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JACK	ENDURANCE	CENTERF TRE

REPROT NO.1 830411

PACE NO.

1	MTE:	_2	- 11	-8:	<u>3</u>		MODEL: M7LWT : CAUGE: 243										3_	SERIAL NO. 7601291							<del></del>			
PREVIOUS ROUNDS	Receiver Test												TTL. RDS. FIRED:															
		"MIFUNCTIONS" Gun (1											<b>7</b> .	TTL. MALFUNCTIONS: MALFUNCTION RATE:														
AMMUNITION		ROMANNE FIRED		THE PERD SHELL	BCT	W BACK	oce open	FEE! FROM	OM	STEMS MAG.	POWER OVERRIDE	CK UP	stem Ciramber				JUMPS MAG.	FOLLOWER BINDS		SRIDE	ANG UP	TRACT	92	25.	en en	OCILIES	REMARKS	
Load Size	SHOOTER	30. OF	PERENT		DOM'T EJECT	DON'T BEOW BACK	DON'T LOCK OPEN	Ist	rcii 2nd	HELL		DON'T LOCK UP	田田	TON	RICE	1221	SHELL J	FOLLOWE	LOADING	BOLT OVERRIDE	ACTION BANG UP	DON'T EXTRACT	BEEARAGES	ADJUSTMENTS	REPLACEMENTS	BOLT VELOCITIES	YES	no No
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R 80 HA	1												5-1 MH															
R 100 PS	P_	<u> </u>	OK																									
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F 100 SP			<u> </u>		_	<u> </u>	<b> </b>				_	_	5-1 2-1				_		_				_	_				
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ammunition		OF RCINIS	CHAILS STREET		SHELL	BCT	IN BACK	CX OPEN	FF	ed om	STEMS MAG.	POWER OVERRIDE	CM CE	stem Chamber				SHELL JUMPS MAG.	SOLLOWER BINDS		SERIDE	ANG CE	TEACT	8	MIS	STEE	OCITIES	Remarks	
Lond Size			NO. OF	PERMIT	TRAFFED SHELL	DON'S EJECT	DOM'T BLOW	DOM'T LOCK	Ist	ccH Suq		POWER O	DON'T LOCK UP	HEE	ĮŽĮ	HORE	LEFT	SHELL J	FOLLOWE	LOADING	BOLT OVERRIDE	ACTION BANG UP	DOM.T. EXTERACT	BREAKAGES	ADJUSTMENTS	REPLACEMENTS	BOLT VELOCITIES	·	BACK)
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	<b>AMMUNITÍON</b>			ROTATES FIRED		SHELL	EJECT	OW BACK	LOCK OPEN		SED OM	STEMS MAG.	OVERRIDE	LOCK UP			em Moen		JUMPS MAG.	R BINDS		ERRIDE	मामा वा	EXTRACT	82	MIS	entis	VELOCITIES	REMAJ	rks
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FIOO BISP W80 PSP

10100 SP

TOTAL (PER MAL.)

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KINZER V. REMINGTON	CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDE
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JACK	ENDURANCE	CENTERF IRE
OILCE	DIDUITION	

REPROT NO.1 830411 PAGE NO.

DATE: 3-11-83 MODEL: M 7 LWT : GAUGE: 243 BERIAL NO. 760/300 **PREVIOUS** TEST TITLE: Brached Receiver TesT TTL, RDS, FIRED: ROUNDS TTL. MALFUNCTIONS: Gun (6) MALFUNCTION RATE: "INLFUNCTIONS" LOAD + Fire FEED **STEM** SHELL STEMS MAG. DON'T BLOW BACK CHAMBER DON'T LOCK OPEN CVERRIDE BOLL VELOCITIES BOLT OVERRIDE FROM TEAPPED SEELL DOK'T LOCK UP COADERS Mag DOIS'T EXTERACT DOM'T EJECT ADJUSTMENTS Md. AMMUNITION REMARKS HEEA KAGES (ON BACK) NO. OF POWER 18t 2nd Load Size RIGHT TYLCH YES ! NO R80 PSP R80 HP . RIOO PSP 1 80 SP F100 SP ok F85 BTHP · FIOO BTSP W80 PSP OK F-1-4 W100 3P TOTAL (FER ML.)

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				8	(ON BACK) YES NO											
PAGE NO.	10			, VENAPRE	NO)											
PAUE	BERIAL NO. 760130			CILLIES .	BOLT VELC											
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PAGE	NO.	

	DATE:	ATE: 2/4/83 MODEL: M7LWT : GAUGE: 243														SERIAL NO. 2601 287													
PREVIOUS ROUNDS	TEST	LOAD FIRE "MISUNCTIONS" Gung														TTL. RDS. FIRED:													
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<u></u>															<u> </u>	Γ	ı—	Γ-	_	1	ι								
AMMÜNITİON		RODATS FIRED			SHELL	BCE	BLOW BACK	CX OPEN	FR	ed om	STEMS MAG.	POWER OVERRIDE	<b>EX UB</b>			em Mden	<b>!</b>	JUMPS MAG.	FOLLOWER BINDS		ERRIDE	Anc up	TAACT	<b>22</b>	STR	ETTE	OCITIES .	REMAI	
Load Size	SHOOTER	NO. OF			TRAZEND SHELL	DON'T BJBCT	DOE"T BE	DON'T LOCK OPEN	1 ^{8t}	ech 5nd		POWER O	DON'T LOCK UP	HICH	1. FQ	RICE	TEST	SHELL J	FOLLOWE	LOADING	BOLT OVERRIDE	ACTION HANG UP	DON'T EXTRACT	BREM KAGES	ADJUSTMENTS	REPLACEMENTS	BOLT VELOCITIES	(ON 1	BACK)
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CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON
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PAGE NO.	BERIAL NO. 760061' TTL. RDS. FIRED: TTL. MALFUNCTION BY	REMARKE	(ON TES									X			
PAGE	2	CILIES	BOLT VEL												
	ERIAL NO. 760. TTL. RDS. FIRED: TTL. MIFUNCTIONS: MIFUNCTION NATE:	State	MEDAITE												
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## REMINGTON ARMS COMPANY, INC.

NTER-DEPARTMENTAL CORRESPONDENCE

Remineton.

Distribution: C. B. Workman

C. E. Ritchie J. Brooks T. Plunkett

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

RESEARCH TEST and MEASUREMENT REPORT — Report No. 831311

MODEL SEVEN — ALUMINUM FLOOR PLATE DESIGN ACCEPTANCE

Prepared by: F. L. Supry

Date Prepared: 6-27-83

Propiread and Ceared By:

J.H. Hennings ,

R.E. Nightingale,

creman-Test Lab/ Foreman-Measurement Lab

C.E. Ritchie,

Sr. Supervisor - Testing,

Meas, & Mech. Analysis Lab

Carlay JUNTON

Date

### TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	831311
REPORT TITLE:	Model Seven - Aluminum Floor Plate Design Acceptance .
MODEL(S):	Seven
gauge or caliber:	.308
DATE:	6-27-83
WORK ORDER NO.:	C-1856-000
PART NAME:	Aluminum Floor Plate Assembly
DESIGNER/ENGINEER:	Requested by T. J. Plunkett
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: Headspace Latch Force
6.	ENVIRONMENTAL TEST
7.	AMMUNITION TESTING & EVALUATION - TYPE:
8.	VISUAL EVALUATION - OUT OF GUN SAMPLE
9.	ENDURANCE - NO. OF GUNS TESTED: 10 8 to 2000
	NO. OF ROUNDS PER GUN: 2 to 5000
	TOTAL ROUNDS FIRED IN TEST: 26,000
	AMMO TYPE: MAGS; TARGET:
	RIM FIRECENTER FIRE X

Report No. 831311 Page 1

July 20, 1983

TO:

R. E. NIGHTINGALE

FROM:

F. L. SUPRY

REPORT TITLE:

MODEL SEVEN - ALUMINUM FLOOR PLATE DESIGN ACCEPTANCE

#### ABSTRACT

On May 11, 1983, a request was received from T. J. Plunkett to conduct a Design Acceptance Test on ten (10) Model Seven, .308 caliber rifles, assembled with a new design aluminum floor plate assembly.

#### SCOPE OF WORK

To determine by Field Function Testing and Jack Endurance Testing if the button in front of the trigger guard will retain the floor plate cover in the closed position, while the rifle is being fired, and prevent the dumping of shells.

#### TEST RESULTS

No floor plate openings occurred during any portion of the testing conducted on these rifles.

NOTE: It was determined that some dimensional changes in the trigger guard bow would be necessary, due to an interference between the inside of the bow and the trigger.

#### REPORT TEXT

After the assembly of these rifles, an interference between the bow of the trigger guard and the trigger was found. To eliminate the interference, material was ground from the end of the trigger.

The ten rifles were subjected to a Field Function Test, then enduranced to 2000 rounds in a Jack Function Test. Two of the ten rifles were selected and enduranced to 5000 rounds. No floor plate openings occurred during any portion of the testing conducted on these rifles.

A breakdown of the rifles by serial number and finished round level is located in the appendix.

#### TEST PROCEDURE

#### Assembly:

The assembly was made by T. J. Plunkett (Research - Current Products).

The triggers were ground by F. L. Supry, (Research - Test Lab).

#### Measurements:

Headspace measurements were made using graduated headspace gauges.

Latch force measurements were made using a ten pound chattlon push-pull gauge.

An individual measurement sheet is located in the appendix.

#### Field Function:

165 rounds of Remington and competitive ammunition were fired through each rifle, during a Field Function Test conducted at the Ilion Fish & Game Club.

Slow, medium and fast feed cycle speeds were used. The round robin system was used in this test.

Three feeding malfunctions occurred; resulting in a .2% overall malfunction rate.

Prior to the firing of each ammunition type, the magazine was manually unloaded by pushing the release button.

#### Jack Endurance:

8 rifles were enduranced to 2000 rounds.

2 rifles were enduranced to 5000 rounds.

#### Ammunition:

#### Field Test:

Remington - Remington - Winchester - Winchester - F ederal	R308 W1 R308 W2 X3081 X3087 P308C	Code Code Code Code	L22A W09F 14 12SH13 32A	D0364 D8217 PN 80 3118
Endurance:	R308W2	Code	W09F	D8217

#### Appendix Contents:

Serial Numbers of the rifles used and finished round level.

Headspace and Latch Measurement Sheet.

Field Function breakdown.

**APPENDIX** 

Serial Numbers	Finished Round Level.	
7603983	2000	
7603866	5000	
7604206	2000	
7604123	2000	
7603941	2000	
7604158	2000	
7604243	2000	
7604175	2000	
7604114	2000	
7604185	5000	

<u>Serial</u>	Head Space (In.)	Latch	Force (Lbs.)	Floor Plate
No.'s	Start Finish	Start	Finish	Openings
7603983	.004 .004	2.25	2.25	0
7603866	.003 ,004	2.25	2.0	0
7604206	.000 .001	2.5	2.75	0
7604123	.003 .003	2.75	2.75	0
7603941	.004 .004	2.75	3,00	0
7604158	.004 .004	2.75	2.75	0
7604243	.003 .004	2.25	2.25	0
7604175	.004 .004	2.25	2.25	0
7604114	.004 .004	2.75	2.75	0
7604185	.004 .004	2.75	3.75	0

### Field Function Breakdown

Serial No.	No. of Malfunctions	Malfunction Description	<u>Malfunction</u> <u>Rate</u>
7603983	0	_	0%
7603866	0	Faii to	0%
7604206	1	Extract	.6%
7604123	0	_	0%
7603941	0	_	0%
7604158	0	<del>-</del>	0%
7604243	0	_	0%
7604175	2	1 ST.R.*, 1 B.O.**	1.23%
7604114	0	-	0%
7604185	0	-	0%

*ST. R = Stem Right **B.O. = Bolt Override

xe- Ju. willen

Report No. 8	31311
--------------	-------

- /	RESEARCH TEST & MEAS	Furement Lab Work R	EQUEST	
		AR	EA OF TESTING	
Developmental		Safety Related	Litigation	
Design Acceptance		Competitive Eva	luation Warehouse Audit	
Pre-Pilot		X New Design	Cost Reduction	•
Pilot		Design Change	Stake	`
Production Acceptan	ice	Plant Assistance	Other	
FIREARM STAT	'S. R	EPORT REQ'D.		
MODEL: 720	<u> </u>	~	DATE REQUESTED: 5/	11/83
CAL or GAGE:	! FORM	AL X	DATE NEEDED BY:	-
BARREL TYPE:		TS .	REQUESTED BY: 77.7	LUNKETT
PROOFED: YES	. 1		WORK ORDER NO:	
		TEST TYPE		<del></del>
Strength Test	Ammunition Test	Dry Cycle	Test ·	deo Wi'SPEEDS
X Function Test	Environmental Test	Measureme	ents Other	ON LATER
Accuracy Test	Customer Complaint			
PETERMINE  ACK ENDURAR  UIARD WILL RE  HILE RIFLE IS  TEST PROCEDURE  LATCH SPRING OF  LOAD FOUR DUM  AND DELIBERAT  FIELD FUNCTION  STAKE LATCH OF  HI-SPEED MOUN  HI-SPEED MOUN  ALLOADING OF  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED MOUN  HI-SPEED	YEE TESTING TRING FLOOR  BEING FIRED,  SSRING-MEADS  PRENING FORE  MIES IN MARGINES  MIES IN MARGINES  MIEST, PLL M  PENING FORE  ST TWO (2) GUM  ST FORES A  TO VIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW  TO MIEW	UNCTION TO INFORMATE BUTTON PROPERTY PROPERTY PUSH PUSH PUSH PUSH PUSH PUSH PUSH PUSH	COUER RELEASE RE SURE IT IS OK PLL GUNS (10 OK WI REAIN, RDS. SELECT FRO	TIGGETY TO TO SHELLS, THE TOTO SHELLS, THE BOTTON THE BOTTON TO THE SOUTH
•	arts will be tested in the Labs a Work Request, and both are	•	DATE COMPLETED:	
the Labs by the d	; fesigner or engineer. All Worl	c Requests are	REPORT DATE:	
to be filled out in	detail. No Exceptions.			

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Distribution:

J. W. BROOKS

FILE

Reminster

PATER

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RESEARCH TEST and MEASUREMENT REPORT - Report No. 832691 REPEAT

TEST

M/7LW 3M AIOACRYLIE ADHESIVE

ENVIRONMENTAL TEST

Prepared by: R. WILLIAMS

Date Prepared: 3-16-84

Proofread and Cleared By:

R.E. Nightingale,
Foreman-Test Lab Foreman-Measurement Lab

Signature Date

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

Signature

Date

### TEST & MEASUREMENT LAB REPORT

REPORT NUMBER	i 83	2691 REPEAT TEST
REPORT TITLE: /	M/7LW	3M AIOACRYLIE" ADHESIVE
MODEL(S): 74	V	ENVIRONMENTAL TEST
GAUGE OR CALIF	BER: A	WY
DATE: 3-16-8	<b>'</b>	
WORK ORDER NO	o.: C-1	856-000
PART NAME:	TOCK	
DESIGNER/ENGI	NEER:	J.W. BROOKS
TEST TYPE:		
	<b>1.</b>	PHOTO LAB
<u> </u>	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 X
	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:
		DIM BIDE CENTED FIDE

MARCH 16, 1984

REPORT No. 832691 REPEAT TEST

To: J. W. BROOKS

FROM: R. WILLIAMS

TEST TITLE: MYTH 3M AIDACRYLIE" ADHESIVE ENVIRONMENTAL TEST

REASON FOR TEST

To evaluate what effect various solvents

have on a 3M Product "Aioacrylic" adhesive.

TEST PROCEDURE

The Test Lab received from J.W. Brooks a flat Stack with M/7 Finish and with sample spacers put on with various adhesive thicknesses.

Inhibisol was sprayed on the tock and spacers and allowed to set for two days. Than Hoppe's #9 Oil, Hoppe's #9 Solvent, CRC and Rem. Oil were used and allowed to stay on the stock two days each. The lubricants were liberally applyed and the stock was cleaned with inhibisol before applying each lubricant.

TEST RESULTS

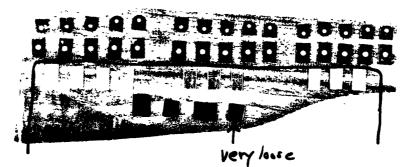
Some spacers became losse after applying Hopp's

#9 Salvent but did-not come off.

Photo on next page.

MARCH 16, 1984

REPEAT TEST



These spacers became loose None came off

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### RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	ARE	A OF TESTING	
Developmental	Safety Related	Litigation	
Design Acceptance	Competitive Evalu	ation Warehouse Audit	
Pre-Pilot	New Design	Cost Reduction	
Pllet	Design Change	Stake-	
Production Acceptance:	Plant Assistance	Other	
FIREARM STATS MODEL: CAL or GAGE: BARREL TYPE:	PORMAL TEST RESULTS	DATE REQUESTED: 2 - 17 - 84  DATE NEEDED BY: 3 - 5 - 84  REQUESTED BY: 1 BRUKS	
PROOFED: YESNO	ONLY	WORK ORDER NO: (1856-01)	
	TESTTYPE		
Strength Test Ammunit	ion: Test Dry Cycle T	est Photo/Video	
Function Test: Environm			
Accuracy Test Customer		Terr	
XPLAIN IN DETAIL THE REASON FOR T	THE TEST:		
		FECT VARIOUS SOLVENTS	
<u> </u>		•	
HAVE ON a 3	m product 1101	CRYLIC ADHESINE	
FAMILY, RE	PEAT TEST 8.	32691.	
<del>-</del> -	•	liberally, a force to	
		20 taken	
set for a day	1. There to see i	y parts are loose and	
mate.	<b>y</b>		
S Tant with			
. 5 tant with Inhibiail.  There was Hope's oil, Hope's no veit, CRC+Ram o'clcleaning inbetween with Inhibiail.			
. There was kings	er oil, Hyeer solve	T, CRC+Rom oilcleaning	
UNS REQUIRED: FUR WISHE	the Inhibisol.		
+ FLAT STO	CK WITH MIF,	NISH WITH SAMPLE	
SPACERS AN	D VARIOUS ADME	SIVE THICK, ME TO ES.	
OTE: NO fireering or parts will be tested	in the Labs unless they are	DATE COMPLETED:	
ecompenied by a Work Request, a		TEST COMPLETED BY:	
the Labs by the designer or enginee		REPORT DATE:	
to be filled out in detail. No Smeastlans.			

# REMINGTON ARMS COMPANY, INC.

Distribution:

J. W. BROOKS

FILE

Remington.

PETER

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"____

RESEARCH TEST and MEASUREMENT REPORT - Report No. 832691 REPEAT
TEST

M/7LW 3M AIOACRYLIE ADHESIVE
ENVIRONMENTAL TEST

Prepared by: R. WILLIAMS

Date Prepared: 3-16-84

Proofread and Cleared By:

R.E. Nightingale,
Foreman-Test Lab Foreman-Measurement Lab

Signature Date

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

Signature

Date

### TEST & MEASUREMENT LAB REPORT

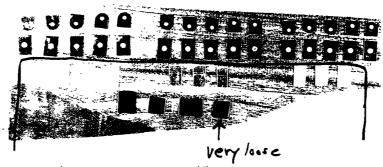
		2691 REPEAT TEST
REPORT TITLE: /	M/7LW	3M HIOACRYLIE" ADHESIVE
MODEL(S): 74W	,	ENVIRONMENTAL TEST
GAUGE OR CALIF	BER: A	wy
DATE: 3-16-8	4	
WORK ORDER NO	o.: C-1	856-000
PART NAME:	TOCK	
DESIGNER/ENGI	NEER:	J.W. BROOKS
	,	
TEST TYPE:		
	1.	PHOTO LAB
	2.	STRENGTH TEST - NO. OF GUNS TESTED
·· · · · · · · · · · · · · · ·	3.	Function test - No. of guns tested
	4.	ACCURACY TEST - NO. OF GUNS TESTED
	5.	MEASUREMENTS - TYPE:
	6.	environmental test X
	7.	AMMUNITION TESTING & EVALUATION - TYPE:
	8.	VISUAL EVALUATIONOUT OFGUN SAMPLE
and the same	9.	ENDURANCE - NO. OF GUNS TESTED:
		NO. OF ROUNDS PER GUN:
		TOTAL ROUNDS FIRED IN TEST:
		AMMO TYPE: MAGS:; TARGET:

RIM FIRE ____CENTER FIRE

MARCH 16, 1984	KEPORT No. 832691
	REPEAT TEST
To: J. W. BROOKS	
FROM: P. WILLIAMS	
TEST TITLE: MYTHW 31	M AIDACRYLIE" ADHESIVE
REASON FOR TEST	
To evaluate	what effect various solvents
have on a 3M Product	what effect various solvents  "Aioacrylic" adhesive.
TEST PROCEDURE	
The Test Lab	received from J.W. Brooks
a flat Stack with M/	7 Finish and with sample
spacers put on with u	parious adhesive thicknesses.  prayed on the stock and  set for two days. Than  Solvent, CRC and Rem. Oil
Inhibisal was sp	prayed on the stock and
spacers and allowed to	set for two days. Than
Hoppe's #9 Oil, Hoppe's #9	Solvent, CRC and Rem. Oil
were used and allowed	To slaw on the slack
two days each. The	lubricants were liberally
applyed and the stock before applying each l	lubricants were liberally was cleaned with inhibisol
TEST RESULTS	
Some spacers be	came losse after applying Hoppe's
#9 Salvent but did-not	come losse after applying Hoppe's
Photo on next page	1.

MARCH 16, 1984

REPEAT TEST



These spacers became loose None came off

### RESEARCH TEST & MEASUREMENT LAB WORK RECUEST

		<del></del>
	AREA OF TESTING	
Developmental	Safety Related	Lixigation
Design Acceptance	Competitive Evalu	uation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pliet	Design Change:	Stake-
Production Acceptance:	Plant Assistance	Other
FIREARM STAT'S.	REPORT REQ'D.	
MODEL: 7		DATE REQUESTED: 2 -17-84
CAL or GAGE:	FORMAL	DATENEEDED BY: 3-5-84
BARREL TYPE:	TEST	REQUESTED BY: 1 10 BROOKS
PROOFED: YES NO	RESULTS	WORK ORDER NO: (1856-00)
rnoora. Ta	• ]	
	TESTTYPE	
Strength Test Ammun	ition Test Dry Cycle 1	Test Photo/Video
Function Test Environ	mental TestMessuremen	Other
Accuracy Test Custome	er Complaint Endurance	Terr
XPLAIN IN DETAIL THE REASON FOR	THIS TEST: /	
THIS TEST 15	To SEE WHAT ER	FECT VARIOUS SOLVENT
HAVE ON & 3	M PRODUCT AIDA	CRYLIC ADHESINE
FAMILY, RE	PEAT TEST 8	32691.
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		+ 00000 110
inter the play	se oil, Hoper sove	it, CRC+Ram vilcleaning
UNS RECURED: FUR MISH	ED Shibisol.	•
· FLAT STU	OCK WITH MIF	INISH WITH SAMPLE
SPACERS A	ND VARIOUS ADME	SIVE THICKNESSES.
		The Thirty Is
OTE: NO firearms or parts will be teste	d in the Labs unless they are	DATE COMPLETED:
accompanied by a Work Request	, and both are delivered to	TEST COMPLETED BY:
the Labs by the designer or engineer. All Work Requests are		REPORT DATE:
to be filled out in detail. No Exc		
• • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·	

#### 7Q-10-6

Remineton

# REMINGTON ARMS COMPANY, INC.

NTTRACEPACTMENTAL CORRESPONDENCE

Paren

Disaribution: C. B. Workman

C. E. Ritchie J. W. Brooks

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

RESEARCH TEST and MEASUREMENT REPORT - Report No. 830941

M/SEVEN LWT. PENDULUM DROP TEST TO EVALUATE NEW TRIGGER DESIGN.

Prepared by: R. Howe

Date Prepared: 4-6-83

Propinsad and Cleared By:

J.H. Hennings , | R.E. Nightingale,

Signature Date

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

Signature

ate

### TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	830941	
REPORT TITLE:	M/Seven LWT. Pendulum Drop Test To Evaluate New Trigger Design	
MODEL(S):	M/Seven LWT.	
GAUGE OR CALIBER:	.243	
DATE:	4 - 6- 83	
WORK ORDER NO.:	C-1809-000	
PART NAME:	Trigger	
DESIGNER/ENGINEER	: D. Bullis	
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: 4	
	NO. OF ROUNDS FER GUN:	
	TOTAL ROUNDS FIRED IN TEST:	
	AMMO TYPE: MAGS; TARGET:	

RIM FIRE _____CENTER FIRE_

April 6, 1983

TO:

C. E. RITCHIE

FROM:

R. W. HOWE

REPORT TITLE:

M/SEVEN LWT PENDULUM DROPTEST TO EVALUATE NEW DESIGN TRIGGER

#### **ABSTRACT**

On April 4, 1983, a request was received to test three (3) M/Seven LWT. rifles. Two with New Style Trigger, one with the Old Style Trigger, and also one M/700 with old style trigger. D. Bullis, Current Firearms Design, requested the Test Lab to do a Pendulum DropTest on these four rifles. To evaluate the Jar-Off resistance of the Fire Control Assembly.

## SCOPE OF TEST

To evaluate and compare the Jar Off resistance of the Fire Control Assembly at a 3' drop height against a hardwood back stop.

#### TEST RESULTS

Some Jar -Offs did occur in the top and bottom side modes at various heights as described in Result Sheet Appendix "A".

#### REPORT TEXT

1. Trigger Pull and Sear Engagement was preset at minimum present Remington Specs.

Present Remington Specs. are:

Trigger Pull Lbs.

3.0 to 5.0 lbs.

Trigger Sear Eng.

.015 to .020

2 The four rifles were drop tested at the 3' drop height against a hardwood backstop in the following modes:

Muzzle First W/Safe in "On" & "Off" positions

Butt First W/Safe in "On" & "Off" positions

Right Side W/Safe in "On" & "Off" positions

Left Side W/Safe in "On" & "Off" positions

Top Side W/Safe in "On" & "Off" positions

Bottom Side W/Safe in "On" & "Off" positions

Results in Appendix "A".

Note: During .drop test, some Jar-Off did occur in the top and bottom side modes so it was decided to drop these guns at various other levels to determine what height the Jar-Off would occur. Other drop levels and results are recorded in Appendix "A".

3. After the first drop test was completed, all four (4) rifles were set at the minimum (3.0lb.) trigger pull and redropped in all test modes.

Also, one M/700 rifle from Test Report No. 820391 was added to this test. This rifle contained a new design trigger spring and screw as per Drawing Nos.:

Trigger Spring Dwg. No. SK A-3687

Trigger Screw Dwg. No. SK B-3688

Results in Appendix "A".

#### TEST PROCEDURE

#### A. Measurements

Trigger Pull was taken at the start of each test.

Sear Engagement was taken at the start of each test.

#### **Test Conditions**

- 1. Trigger pull forces were taken on all test guns using a Chatillon Model IN-10 Spring Pull Scale (See Appendix "A".)
- 2. Sear Engagement was set on productions Optical Comparator in M/700 final assembly area. (See Appendix "A".)
- 3. The Pendulum Drop Test was conducted on all test rifles at the 3' and the various other drop levels against a hardwood backstop from the muzzle, butt, both sides, top and bottom. (See Appendix "A".

#### Rifles Used in Test

M/Seven - Serial No. 7601285, Serial No. 7601292, Serial No. 7601289

M/700 - Serial No. A6351001, Serial No. B6341922

Report No. 830941

APPENDIX "A"

	M/	7	NEW	STYLE	TRIGGER	EVALUATION
--	----	---	-----	-------	---------	------------

4/5/83 #830941

			TEST #1				TEST #2	#830941	
DROP/JAR-OFF TEST OF HARDWOOD SURFACE FRO 3' DROP EVALUATION		M/7 New Style Trigger	M/7 New Style Trigger	M/7 Old Style Trigger	M/700 Old Style Trigger	M/7	M/7	м/7	M/700
Serial (	<b>#</b>	#7601285	<u>#7601292</u>	<b>#7601289</b>	#A6351001	<b>#7601285</b>	<u>#7601292</u>	#7601289	#16351001
SAFE POSITION		On Off	On Off	On Off	On Off	On Off	On Off	On Off	On Off
TRIGGER PULL (Lbs.) Avg.		3.5 lbs.	316.	4.751b.	5.751b.	3.01b.	3.01ь.	3.01b.	3.01b.
SEAR ENGAGEMENT	ľ	. 015"	.015"	.015"	.015"	.015"	.015"	.015"	.015"
MUZZLE FIRST		Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok
BUTT FIRST		Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok
RIGHT SIDE		Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok
LEFT SIDE		Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok
BOTTOM SIDE	12" 18" 24" 36"	- Ok - 3 J/04 - 4 J/04 Ok 4 J/04	- Ok - 1 J/O4 - 2 J/O4 Ok 4 J/O4	- Ok - Ok - 1 J/04 Ok 2 J/04	Ok Ok Ok Ok Ok Ok Ok Ok	Ok Ok Ok 1 J/04 Ok 2 J/04 Ok J/0	Ok Ok Ok 3 J/04 Ok 4 J/04 Ok J/0	Ok Ok Ok 2 J/04 Ok 4 J/04 Ok J/0	Ok Ok Ok 4 J/04 Ok 4 J/04 Ok J/0
TOP SIDE	12" 18" 24" 36"	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok	Ok Ok Ok Ok Ok J/O

NOTE: J/O means - Jar-Off (i.e. 3 J/O 4 means 3 Jar-Offs out of 4 tries.)

CERitchie: js 4/10/83

Report No.	830941
LIBOLL IAO	030191

## RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

		ARS	A OF TESTING			
Developmental		Safety Related	Litigation			
Design Acceptance	ļ	Competitive Evalu	<del></del> · · ·			
Pre-Pilot		New Design	Cost Reduction			
Pilot	ŀ	Design Change	Stake			
Production Acceptance	,	Plant Assistance	Other			
FIREARM STATS.  MODEL: 7 4  CAL & GAGE: 2  BARREL TYPE: PROOFED: YES 1	243 FO	REPORT REQ'D.	DATE REQUESTED: 4-4-83  DATE NEEDED BY: A.S.A.P.  REQUESTED BY: Sullis  WORK ORDER NO: C-1809-000			
		TEST TYPE				
Strength Test	Ammunition Tes	Dry Cycle T	est Photo/Video			
Function Test	Environmental To	est Measuremen	Other DROP.			
Accuracy Test	Customer Comple	eint Endurance 1	Test			
EXPLAIN IN DETAIL THE R	EASON FOR THIS TE	IST:				
DRUP TEST	7 2 M/7 LWT 243 CAL. RIFLES.					
NEW STYLE -GUNS REQUIRED: ±1 7601285		engagement	3074 SIDES015"			
NOTE: NO firearms or parts	will be tested in the L	abs unless they are	DATE COMPLETED:			
· /	ork Request, and both		TEST COMPLETED BY:			
	gner or engineer. All Y		REPORT DATE:			
į.	xail. No Exceptions.					
	-					

# CONTROL GUNS) (4.5-83)

M/7 LWT DROP TEST SAFE "OFF" ONLY, (HARD WOOD STOP)

(FOUR DROPS AT EACH LEVEL)

M THUT GUN # 13 - JARRED OFF 2 TIMES IN 4 DROPS AT 24"

(BOTTOM DROP ONLY)

O" "4" "12"

M/7 LUT GUN#14- JARRED OFF 4 TIMES IN 4 DROPS AT 24"
(BOTTOM DROP DHLY) 3" "4" " 18"
0" "4" " 12"

(CONTRIL GUN)
M/7 LWT GUN#12 JARRED OFF 4TIMES IN 4 DROPS MT 24"
(BOTTOM DROP ONLY)

2 " " 4 " " 18"

0 " " 4 " " 12"

m/700 (CONTROL GUN) TARRED OFF 4 TIMES IN 4 DROPS AT 24"
(ВОТТОМ DROP ONLY) 0" "4" "12"

MOTE:

M/700 CONTROL ALSO ENGLED ON TOP AT

12'-18" + 24" LEVELS 4 TIMES AT EACH LEVEL

RESULTS 24" OK ALL 4 TIMES
18" OK """"
12" OK """"

	4-5-83									
-			OFF	70	OK	914	) y o	JAKRED OFF	JARRED. OFF	Pull
OF ONLY)	CONTROL GUM	1001 SEATH 635 1001	NO	¥0	OX	οK	σK	O/<	٥١	318. TRIS PULL
DROP TEST (HARD WOOD STOP ONLY)	COMTROL GUM.	P821092#22	OFF	2//0	ox ox	OK	οK	OK	JARRED OFF	A
EST (HAK	COMTRO	12 SK	HO	<i>%</i> 0	NO	<i>79</i>	σK	OK	0 K	NOTE! ALL FOUR GUMS HAVE BEEM SET MND-015 ENGAGEMENT (SEAR)
, DROP T.	TRIG	14 SER#7601292	OFF	OK	*o	Χo	01	οK	TMRRED OFF	UHS HAV
M/72WI-NEW STYLETRIGGER-3"	NEW STYLE TRIG.		HO	οχ	0 x	Do	20	OK	. 0K	FOUR G
STYLETA	HEW STYLE TRIG.	13 ser #7601285	OFF	OK	o.k	70	οK	OK	JARRED	: pur .015
r-NEW	NEW STY.	13 ser #7.	N0	OK	OK	NO	OK	0%	οK	Non- CIMA
m/71w		GUN+SAR#	SAFESITION.	MUZZLE	BUTT	RIGHT SIDE	LEFT SIDE	705	BOTTOM SIDE	

	4-5-83									
	U.M.	1635 1001	DIFF	79	γó	94	<i>&gt;&gt;</i> 0	JAKRED OFF	JARRED.	Rue
(47110 co	CONTROL GUN	1001 SEATH 635 1001	NO	¥0	OX	οK	σK	) OK	10	31B. TRIG Pul
1555 (HARD WOND STON ONLY)	COMTROL GUM.	12 sx#7601289	1,10	7/0	24	ОК	οK	OK	JARRED OFF	\ \ \ \
EST (HAK	COMTRO	25 61	HO	% %	NO	χg	oκ	OK	0 %	E BEEN SET
THOS	TR19.	14 SER#7601292	9FF	OK	70	×°	λo	οK	TMRRED OFF	WHS HAV
MITLENT-NEW STYLE IRIGGER- 5.	NEW STYLE TRIG.		NO	σχ	04	λo	20	0X	98	ALL TOUR GUMS F.
STYLE 1A	HEW STYLE TRIG.	13 sir #7601285	OFF	OK	OK	<i>&gt;&gt;</i> 0	οK	OK	JAPRED OFF	~ •
NEW	NEW STY.	13 sire 7.	20	OK	ΟK	OK	OK	0%	οK	None AND-
11.1m		IUN + Ser#	Posinon	WZZLE FIRST	BUTT FIRST	PIGHT SIDE	FFT SIDE	70P 80C	30TOM SIDE	

M/7 LWT DROP TEST SAFE "OFF" ONLY. (HARD WOOD STOP) (FOUR DROPS AT EACH LEVEL) M) LWT GUN # 13 - JARRED OFF 2 TIMES IN 4 DROPS AT 24"
(BOTTOM DROP ONLY)

O"" 4"" 12" M/7 LUT GUN#14- JARRED OFF 4 TIMES IN 4 DROPS AT 24"
(BOTTOM DROP DHLY) 3" "4" "18" (CONTRIL GUN)

M/7 LWT GUN#12 JARRED OFF 4/11/165 14 4 DROPS NT 24"

(BOTTOM DROP ONLY)

2 " " 4 " " 18"

0 " " 4" " 12" M/700 (CONTROL GUN) TARRED OFF 4 TIMES IN 4 DROPS AT 24"

(BOTTOM DROP ONLY) 0" "4" "12" NOTE: M/700 CONTROL ALSO DROPPED ON TOP AT 12'-18" + 24" LEVERS 4 TIMES AT EACH LEVEL RESULTS 24" OK ALL 4 TIMES 18" OK " " " 12" OK """

	(NEW SI	YLE TRIGGE	R) FIRST TES	182	
M/7 LWT	3' DR	OP TEST	R) FIRST TES 4/4/ (HARD WOOD	STOP ONLY	)
GUN#	13 SER# ;	7601285 SAFE OFF	1	5AFE OFF	
MUZZLE FIRST	OK	OK	OK	oK	
BUT FIRST	OK	OK	OK	OK	
RIGHT SIDE	OK	OK	OK	OK	
LEFT SIDE	OK	OK	OK	OK	
TOP	OK	OK	OK	ok	
Borrom	OK	*J.O.	OK	* J.O.	

J.O. = JARRED OFF (FIRING PIN FELL)

3.25 375 350 AUG 3.5 2BS.

#13 TRIG PULL

3-3-3 AUG. 3LBS.

* CONTROL n n 450-475-500 AUG 4.75 LBS.

MYOO n 550 600 575 AUG. 575 LBS.

HARD WOOD STOP N-SAKE OFF ONLY
M/7 LUT DROP TEST, B-BOTTOM ONLY
(4 DROPS AT FACH LEVER BELOW)

M/7 LWT CONTROL GUN JARRED OFF 2 TAMES IN 4 AT 36"

1 " " " " " AT 24"

CONTROL TRIG PULL DUG OF THREE 4.75 LBS

REG M/700 DID NOT JAR OFF UNTIL 4 DROP.

M/700 TRIG PULL AUG OF THREE 5.75 LBS.

$\mathcal{L}$		· `
1 11	<i>C</i>	<u> </u>
( /YEW	DTYLE	TRIGGER)
(	,	0.01990

MITLUT	3'	DROP	TEST	HARD	WOOD	STOP	OHLY	)
--------	----	------	------	------	------	------	------	---

GUN#	13 SER# ;	7601285 SAFE OFF		7601292 SAFE OFF
MUZZLE FIRST	OK	OK	ok	OK
BUT FIRST	OK	OK	OK	OX
RIGHT SIDE	OK	OK	0 火	OK
LEFT SIDE	OK	OK	OR	017
Top	OK	OK	OK	OK
Borrom	OK	¥J.O.	ÓK	* J.O.

J.O. = TAPRED CFF (FIRING PIN FELL)

#13 TRIG PULL 3.5 355 350 AUG 3.5 185.
#14 " " 3-3-3 AUG. 3CBS
* CONTROL " " 450-475-500 AUG 4.75 LBS <
MYOO " " 550 600 575 AUG 505 LBS.

```
HARD WOOD STOP M-SAFE OFF ONLY
M/7 LIST DROP TEST, B-BOTTOM OHLY
(4 DROPS AT EACH LEVER BELOW)
```

M/7 LWT CONTROL GUN JARRED OFF 2 TAMES IN 4 AT 36"

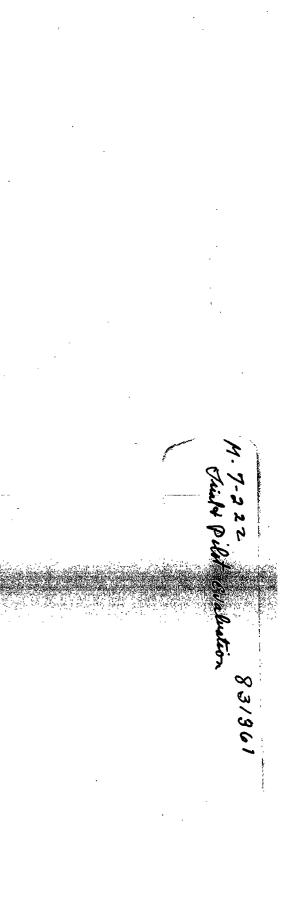
1 " " 4 " 4 AT 24"

1 OK — 4 " " 4 AT 12"

CONTROL TRIG PULL DUG OF THREE 4.75 LBS

REG M/700 DID NOT JAR OFF CHTIL 4' DROP.

M/700 TRIG PULL AUG OF THREE 5.75 LBS.



# REMINGTON ARMS COMPANY, INC.

NTER-DEPARTMENTAL CORRESPONDENCE

Remineton



Discribution: C. B. Workman

J. P. Linde G. Hill J. Brooks C. E. Ritchie

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

RESEARCH TEST and MEASUREMENT REPORT - Report No. 831361

MODEL SEVEN - .222 CALIBER TRIAL & PILOT EVALUATION

5-18-83

C. E. Ritchie

Proprieta and Cleared By:

J.H. Hennings , | R.E. Mightingale,

Signature Lats

C.E. Ritchis, Sr. Supervisor - Testing, Meas. & Mech. Analysis Lab

3---

# TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	831361
REPORT TITLE:	Model Seven — .222 Caliber Trial & Pilot Evaluation
MCDEL(S):	Seven
GAUGE OR CALIBER:	.222
DATE:	5-16-83
WORK ORDER NO.:	81343-904
PART NAME:	
DESIGNER/ENGINEER:	G. Hill/J. W. Brooks
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 - 8 OUT OF 40 GUN SAMPLE
9.	ENDURANCE - NO. OF GUNS TESTED:
	NO. OF ROUNDS PER GUN:
•	TOTAL ROUNDS FIRED IN TEST:
	AMMO TYPE: MAGS; TARGET:
	RIM FIRECENTER FIRE

Report No. 831361 Page 1

May 18, 1983

TO:

C. B. WORKMAN

FROM:

C. E. RITCHIE

REPORT TITLE:

MODEL SEVEN - .222 CALIBER TRIAL & PILOT EVALUATION

#### **ABSTRACT**

A request was received from G. Hill, Supervisor, Process Engineering, to perform a Trial & Pilot evaluation of the Model Seven .222 Caliber production firearm.

#### SCOPE OF WORK

Perform a Trial & Pilot evaluation on an 8 gun sample from a 40 gun production run.

#### TEST RESULTS

Only a Visual Inspection was performed. The sample lot was rejected due to the following:

- 1.) 3 of the 8 guns had been assembled using old style unheat treated trigger guards with the tab bent in the old position (upwards).
- 2.) 1 stock was cracked.

#### REPORT TEXT

Of the 8 firearms inspected, the following major objections were pointed out:

- 1.) 3 of the 8 guns had been assembled using old style unheat treated trigger guards with tabs bent in the old position (upwards).
- 2.) I stock was cracked (beginning at the floor plate tab and running about 34" towards the muzzle of the gun).

These objections were the basis for rejection of this sample lot. No other physical testing was performed on the sample.

#### TEST PROCEDURE

An eight gun sample was selected by Charles Stephens, Research Test Lab, from a 40 gun production run.

A visual inspection was conducted in the Test Lab on 5-17-83 at 1:00 p.m. by Z. Kowalski, Process Engineering, D. Bullis, Current Firearms Design, R. Nightingale and E. Ritchie, Test Lab. Guns were wiped down with a clean cloth and inspected by each member of the committee and comments were recorded. Comments on individual guns can be found in the Appendix.

APPENDIX

#### <u>Visual Inspection - T & P Evaluation</u> <u>M/Seven .222 Cal.</u>

#### 7602556

- rear swivel screw hole not properly aligned.
- floor plate cover exceeds .026" gap .
- grip cap over polished to mis-shape the cap.

#### 7602642

- front swivel screw bright mark on dome and hole not properly aligned.
- dent in top of stock

#### 7602629

- 2 pin holes and 1 dent in stock.
- light checkering on pistol grip both sides.
- trigger guard used has tab bent in the old direction (appears not to be heat-treated).

#### 7602508

- excess space between floor plate pad and inlet cut in stock.

#### 7602651

- comb cut (left side) is mis-shaped.
- wood inlet rear of trigger guard impression of trigger guard in wood screw hole probably mis-aligned.
- 2 pin holes in the bottom of the fore-end area.
- light checkering pistol grip area both sides.

#### 7602631

- 2 dents in pistol grip.
- dent on left top rail of stock.
- bottom of comb is mis-shaped 3 flats.
- trigger guard used has tab bent in the old direction (appears not to be heat-treated).

#### 7602637

- cracked stock - starts at floor plate pad.

## 7602605

- sight screw hole marred on rear sight.
- rear trigger guard screw marred.
- dent in floor plate pad.
- scratch on the floor plate cover.
- dent in top of the stock.
- trigger guard used has tab bent in the old direction (appears not to be heat-treated.)

# $\underline{\text{General Note}} - 1.) \quad \text{Barrel bracket on all guns were dull finished}.$

2.) Ejection port radius on the stock are all 3/16" radius drawing calls for 3/8" radius.

# REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PETER

Distribution: C. B. Workman C. E. Ritchie J. W. Brooks C. J. Hill

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

RESEARCH TEST and MEASUREMENT REPORT - Report No. 831361 Supplement M/SEVEN - .222 TRIAL & PILOT EVALUATION

Prepared by: F. L. Supry

Date Prepared: 6-24-83

Propired and Ceared By:

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

Signature Du hty all 7-19-83

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

7 ....

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	831361 Supplement					
REPORT TITLE:	Model Seven .222 Caliber Trial & Pilot Evaluation					
MODEL(S):	Seven					
GAUGE OR CALIBER:	.222 Caliber					
DATE:	6-24-83					
WORK ORDER NO.:	81343-904					
PARŢ NAME:	Rifle					
DESIGNER/ENGINEER:	Requested by G. Hill					
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 8					
5.	MEASUREMENTS - TYPE: 4					
6.	ENVIRONMENTAL TEST					
7.	AMMUNITION TESTING & EVALUATION - TYPE:					
8.	VISUAL EVALUATION - 8 OUT OF 40 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 50 gr

June 24, 1983

TO:

R. E. NIGHTINGALE

FROM:

F. L. SUPRY

REPORT TITLE:

MODEL SEVEN - .222 CALIBER TRIAL & PILOT EVALUATION

#### **ABSTRACT**

A request was received from G. Hill, Supervisor, Process Engineering, to perform a Trial & Pilot evaluation of the Model Seven .222 caliber production firearm.

The first Trial & Pilot sample of this firearm was rejected by a visual inspection committee on May 17, 1983. (Refer to Report No. 831361, dated 5-18-83.)

#### SCOPE OF WORK

Perform a Trial & Pilot evaluation consisting of Visual Inspection, Field Function, and Accuracy Testing on an eight gun sample from a forty gun production run.

#### TEST RESULTS

The eight gun sample was accepted in each phase of the Trial & Pilot evaluation. Individual results and comments on each phase of the evaluation are located in the Report Text section of this report.

#### REPORT TEXT

 Visual — It was the consensus of the visual inspection committee that there were no major deterrents in the appearance of the (8) rifles inspected. However, the following observations were made on the rifles:

Serial No. 7613006 -Poor latch color

Barrel pad uneven from side to side

Over-runs on checkering.

Serial No. 7613454 - Poor latch color

Front of bolt handle marred Over-runs on checkering.

Serial No. 7613278 - Poor latch color.

Poor location of bolt marks on lugs Finish on recoil pad body.

Serial No. 7612795 -Poor latch color

Trigger quard marred left side.

Serial No. 7613306 - Poor latch color

Latch unhooked from trigger guard.

Serial No. 7612969 - Poor latch color

Butt pad dirty.
Pitt marks in finish.

Serial No. 7613510 - Poor latch color

Barrel inletting uneven

Rear trigger guard screw marred.

Serial No. 7613513 - Poor latch color

Dirt under finish - rear of trigger quard

Finish on left side appears to be two different colors.

 Field Function - 100 rounds were fired through each rifle in a field function test. The following results were obtained:

3 rifles had no malfunctions

1 rifle had 1 malfunction

3 rifles had 2 malfunctions

1 rifle had 10 malfunctions

The rifle with 10 malfunctions (Gun No. 3, Serial No. 7613306) was examined by Process Engineers. It was determined that the magazine spring had been altered, resulting in a loose fit. A spring from another rifle was assembled into Gun No. 3 and the rifle functioned without any further malfunctions.

The overall malfunction rate, not including Gun No. 3, was 1%, which compared favorably to the Model 700 ADL Restyle .222 Caliber, accepted May 1983 and reported on in Report No. 831292.

Data sheets located in Appendix "A" contain individual results by rifle, shooter and ammo type.

#### REPORT TEXT - cont'd.

3. Accuracy - The Remington standard for .222 caliber is 2.2" center to center in a 5 shot group.

Three (3) five shot groups were fired with four of the Trial & Pilot rifles.

Each rifle was within Remington standards.

Data Sheets located in Appendix "B" contain the individual results.

#### TEST PROCEDURE

#### 1. Visual

- A.) The Visual Inspection Committee consisted of T. Plunkett, R. Murphy, R. Nightingale, F. Supry (Research); W. Warren (Quality Control), and Z. Kowalski (Engineering).
- B.) Each rifle was wiped down with a clean cloth and inspected by each member of the committee.
- C.) Rifles used for the visual inspection.:

Serial No. 7613513	7613454
7613006	7612795
7613306	7612969
7613278	7613510

#### 2. Field Function

Each rifle was subjected to a Field Function Test, conducted at the Ilion Fish & Game Club, consisting of 100 rounds of Remington and competitive ammunition cycling the action slow, medium and fast. The round robin system was used in this test. The weather was warm, sunny with temperatures around  $80^{\circ}$ F.

#### 3, Accuracy

One-hundred yard accuracy was shot on four of the rifles by R. Williams and C. Stephens (Research Test Lab). Three, five shot groups were shot utilizing .222 Remington 50 gr. "Power Lokt" hollow point ammunition, Code No. S22 ND 4072.

Before shooting the rifles for accuracy, each bore was wire brushed with Hoppe's No. 9 Solvent and patched dry.

The rifles were cooled and cleaned between groups, and one "warmer" was fired prior to each group.

The following rifles were used for the 100 yard accuracy test: 7613454 7612795 7613510

#### 4. Ammunition

Function Test -	Remington	R.222R1	Code	Uloa	D0780
	Remington	R 222R3	Code	S22	ND4072
	Remington	R 222R4	Code	T15U	D2458
	Federal	222A -	Code	3B	1268
	Winchester	X222R	Code	24SL21	24
Accuracy Test -	Remington	R 222R3	Code	S22	ND4072

APPENDIX "A"

TOTAL (FER INL.)

FIELD	CYCLE	TEST -	CENTERF	IRE

REPROT	NU.1 83/36/	PAGE NO.
	Supplement	400

PREVIOUS	ĪΛ	TE:_	6-	22	-8	3_		MO	Del:	:	<u>50</u>	VE.	<u>٧</u>		đ	NUUE	B1	.2	عغ		-	8	erla	T NO	·		ALL		
ROUNDS	TE	et t	TTLE	<u>s</u>	UMMA	RY S	HEET	rs Pi	SR -	RIF	LE -	AM	10 T	Y PE	- SH	OOTE	R						TTL.						٠,
											11	ML	unci	'iona	Ħ								TTL.	mai Unct	FUNC L'ION	TION RATI	18 i		
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SUMMARY SHE	CET		RCOWNS FIREM		SEELL	TECT.	DON'T BLOW BACK	DON'T LOCK OPEN	FR	ed Iom	STEWS MAG.	OVERRIDE	TOCK UP		cin Cin	'em Mbet	t	JUMPS MAG.	R BINDS		TRIDE	100 CE	TEACT	70	B	NITS		CONS PER	E PER
RIFLE		ESTOCES	NO. OF	FIRING	TEA PUET	DOM.I ETECH	H 1. 100	71 ILLEDO	ıst	rcli Sug		POWER O		arres .	LOW	RICHE	1.02	SHELL J	FOLLOWER	LOADING	BOLT OVERRIDE	ACTION BANG UP	DOR'TE EXTENCE	उद्यक्त स्वत्वर	ADJUSTMENTS .	RESTACTMENT		MALFUNCTIONS	MALF. RATE
1) 7613513	3													2															
2) 761300	6													1													<b> </b>		1
3) 7613301	6													5	<b>—</b>	1		3							-			<b> </b>	<b> </b>
4) 7613278	3																	Ť				-	<b> </b>		-	-		<b> </b>	<del> </del>
5) 76/345	4																			-	_	-	<del> </del>			-	<del>                                     </del>		<del> </del>
6)7612795	5													,			1						<b> </b>			<b> </b>		<b> </b>	-
7) 761296	9																				-				-	_		<b> </b>	
8) 761 35														1		-	1		<u> </u>			-			<b> </b>	-	<del> </del>		<del>                                     </del>
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FIELD	CYCLE	TEST	_	CENTERFIRE

REPROT	NO.1 83/36/ SUPPLEMENT	Page	NO
222	GPDTAT NO	A	

revious	Date:_	6-	- 22	-8:	3_		MO	DEL:	<u> </u>	<u>SEVI</u>	<u>= 14</u>			đ	AUJE	! <b>!</b>	.2	22		_	£	Jerl/	w nc	)	AL	<u>.</u>		-
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	"MIFUNCTIONS" MIFUNCTION NATE: 2.1252 /%																											
SUMMARY SHEET BY		ACTIONS FIRED		SPECT	anc:	DON'T BLOW BACK	DON'T LOCK OPEN	FR	eed Iom	STEWS MAG.	OVERRIDE	LOCK UP			'em Imber	i	JUMPS MAG.	FOLLOWER BINDS		ERRIDE	ance up	TEACT	n	SIR	BINTE		IONS PER	TE PER
Shooter	SHOOTES	NO. OF ACCENDE	FIRING	TRA PUED SHELL	DOM'T RIBCT	H L. ADO	DOM'T L		rcii Suq	MIL	B . 1	משיים נג	साउड	I COM	RIGHT		SHELL	FOLLOWE	LCADING	BOLT OVERRIDE	ACCEDING BRANG UP	DON'T EXTENCE	BREA RACES	ADJUSTMENTS	Replacements		MALFUNCTIONS	MALIF. RATE PER
J. BAGGETTA	1												3															
R. HOWE							<u> </u>						2															
C. STEPHENS	<u> </u>			_	_								4				2											
R. WILLIAMS		_	<u> </u>	<u> </u>		_	<u> </u>						1		1	2												
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TOTAL (PER MAL.)	)			1			1 '	1 '		1 1	<b>i</b> '		10			2	3											

PIRTO	CVCIE	niti Cm	_	CENTERFIRE
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SEVEN

ONUUE: .222

BERIAL NO.

PREVIOUS ROUNDS

TEGT TITLE: SUMMARY SHEETS PER - RIFLE - AMMO TYPE - SHOOTER

TTL. RDS. FIRED: TTL. MALFUNCTIONS: MALFUNCTION RATE:

# "MALFUNCTIONS"

Summary Sheet		acums Fired		SEELL	338	BLOW BACK	CX OPEN	FE FR MA	OM	STEMS MAG.	OVERRIDE	TOCK TE		et.	em Mber		JUMES MAG.	R BINDS		OVERRIDE	ang up	TRACT	Ŋ	ALS .	SATE		IONS PER	rate per
ву _ <i>Атто</i>	SHOOTES	NO. OF 3	FIRING	TRAPERD SHEET.	DOIL T. EDG	DOT'T H	DON'T LOCK	18t	2nd		POWER O	DOM'T TO	मास	LOW	प्राटका		C TEERS	FOLLOWER BINDS	LOADING	BOLT OV	ACTION BANG	DOR'T EXTERACT	HEEA KAGES	ADJUSTMENTS	REPLACEMENTS	• • • •	MALFUNCTIONS	WALF. BA
R-60-PSP													3				1											
R- 50- HP				_			_				_				l										_			
R-55-MC								_				_				1	1				_							
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W-50-PSP		_											6					_										
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APPENDIX "B"

REPORT No. 831361

Minimum of 3 - 5-shot Groups

Gun # 5 SER. 7613454

ACCURACY:

Ammunition Used KFM. CAL. 222
50 H. POWER-LOKT H.P.
Provious Rounds INDEX R222R3
CODE S22 ND 4072.

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

Avg. 1.26

.56

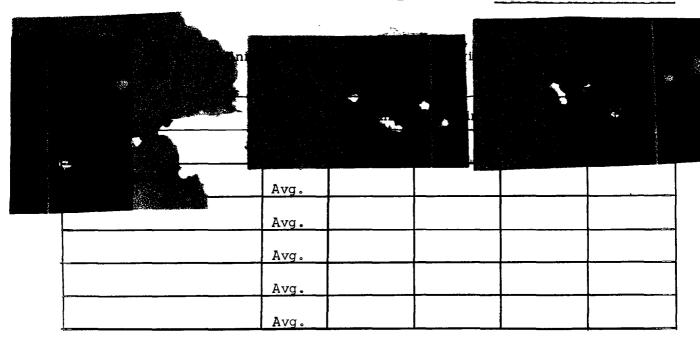
R. WILLIAMS

REM. STOS. 2.2"-5 SHOT

Tester

6-16-83

Date



Tester
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Date

	•	FM. CAL. 222 Or. Power-LOKT H.P.	SER. 761279
	Provides Includes I/	NOEX RAZZRS DE SAZ NO4072	_
	Group Size (in.)	Vertical Spread	Horizontal Spread
	1.7	1.3	1.6
	1.9	.9	1.7
	2.1	1,7	2.0
Α	rg. 1.9	1.3	1.76
a .\	STOS. 2.2"-5 SHO		1 11 62
	OF IMPACT: Minimum	Date	6-16-83
	OF IMPACT: Minimum	Date	6-16-85
	A	Date  of 3 10 10 10 10 10 10 10 10 10 10 10 10 10	6-76-85

	URACY: Minimo	I/7 Im of 3 - 5-	shot Groups Al. 222	GUN#7
	Previous Rounds	INDEX CODE Só	R222 R3 22 ND4072	DIUN # 1/ P. SER. 761296
	Group Size (in.)	V	ertical Spread	Horizontal Spread
1	1.5		1.3	1./
2	1,2		1.1	1.0
3	1,3		1.2	1.0
4				
5				
I	Avg. 1.3		1,2	1.0
	4	•	, Tester	R. WILLIAMS
2				
EM.	Stos. 2.2"-5	SHOT	Date	6-16-83
EM.	Stos. 2.2"-5	SHOT	Date s w	
EM.	STOS. 2.2"-5		s w	6-16-83
EM.	Stos. 2.2"-5	Avg.	s w	6-16-83
EM.	Stos. 2.2"-5		s w	6-16-83
EM.	Stos. 2.2"-5	Avg.	s w	6-16-83

· Date

ACCU	JRACY: Minimum	/ / / / / / / / / / / / / / / / / / /	Gur # 8
	Provinus Rounds	REM. CAL. 222 50 Gr. POWER-LOKT H INDEX R222 R3 ODE S22 ND 4072	SEP 7/1351
	Group Size (in.)	Vertical Spread	Horizontal Spread
1	1.0	.8	,9
2	2.0	1.1	1.7
3	1.3	1.3	.7
4			
5			
A	vg	1.0	
e EM. c	STOS. 2.2"-5 N	HOT Tester	6-16-83
		Date	6-16-83
	N	Date ps w	6-76-83
	I I	ps w	6-76-83
		ow (	6-76-83

Date

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# KERORT. No. 831361

M/7 CAL. 222 AMMO REM. 222 50 Gr. POWER-LONT HOLLOW PT. IMER MARCHS
LODE JAZ NO4012

MOUNT - LEUPOLD RINGS - LEUPOLD SCOPE - LEUPOLD VARI-X-III 1.5 x 5

aux#5 SER-7613454

JUN#6 SER-7612795

Jun 7 BER-76/2969 2nd Orange Marc 2000 11 300 miles

Sur #8 SEC-76/3510

The accuracy test was shot at the K. + D. 100ya. The by P. Williams and C. Stephens.

A total of three (3) five (5) shot groups were find with each of 4 nifles and the barrel cooled Let in 1997 and I former that think often in ling.

Before shooting villes for occuracy such bore was nice brusines with Hoppe's No.7 Solvent and patched dry.

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		7				Ι	i	Γ	<u> </u>		<u> </u>	<u> </u>		<u> </u>	•			Γ	Γ-	Γ-	r —	<del>-</del>	<u> </u>	T-	ι	<u> </u>			
Joe Bob Chuck RON AMMINITION			ROTHER FIRED	١	V)	1583	DOM'T BLOW BACK	DON'T LOCK OPEN	į	ed om	STEMS MAG.	OVERRIDE	LOCK UP			'em Mbet	ł	JUMES MAG.	FOLLOWER BINDS		ERRIDE	ALEC UP	TRACT	n	2133 2133	ENTS	VELOCITIES	Remai	
Load Size	SHOOTER		NO. OF	FIRING	TRA PERL	DON'T EJECT	E L. MOC	DON'T L	1	rcH Suq		POWER O	DOM'T IN		153	Name of the last		SHELL J	FOLLOWE	LOADING	BOLT OVERRIDE	ACTION BANG UP	DOS'T EXTRACT	BREAKAGES	ADJUSTMENTS	REFLACEMENTS	BOLT VEL	YES (ON 1	BACK)
R-50-PSP	1/2	,	15	٥k		2	22	212		V	101	7	0	07	80	<b>—</b>													
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. F-50-SP	1	,]	15	014		23	ZA		35	12	68							<u> </u>					<u> </u>						
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PREVIOUS ROUNDS TEST TITLE: T&P .222 Cal. SERIAL NO. 76/300 TIL. RDS. FIRED: 100 TIL. MALFUNCTIONS: 1 MALFUNCTION RATE: .70																												
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W-50-PSP	2	15			_	_	_	_			<b> </b>	_	14	_		_		<u> </u>			_	_			_			
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Load Size	SHOOTER	80 . OF	FIRING	THE PERT	1,100 1,100	DOM"T BLOW	DON'T LOCK OPEN	Ist	ecH Suq	1	POWER 0		HICH	LON	BICHE	LEFT	SHELL	FOLLOWE	LOADING	BOLT OVERRIDE	ACCITOR BANG UP	DON'T EXTRACT	BREAKAGES	ADJUSTMENTS	REPLACEMENTS	BOLL VEL		BACK)
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AMMUNITION		ROLLING FIRED		SHELL	TOE!	DON'T BLOW BACK	DON'T LOCK OPEN	FE: FR:	OM	SHELL STEMS MAG.	OVERRIDE	LOCK UP			'EM MBER	1	JUMPS MAG.	FOLLOWER BINDS		ERRIDE	And the	TEACT	M	Size	ENTS	OCILIES	Remai	
Load Size	SHOOTER	NO. OF ROLLINS	PERMIT	TRA PPED SHELL	DON'T BJECT	DOE": 12	DOE"T IL	Ist	2nd	SHELL	POWER O	DOM'T IV	HICH	LON	RICHE	IZ.	SHELL	POLLOWE	LOADING	BOLT OVERRIDE	ACTION BASE UP	DOR'T EXTENCT	BREA TAGES	ADJUSTMERTS	REPLACEMENTS	BOLT VELOCITIES	YES	Back)
R-50-PSP	ī	15	SŁ																									
R-50-HP	2	15	OF																									
R-55-M. CASE	3		OK			_							<u> </u>	<u> </u>	_		L											
F-50-SP	4	15	DK.	_	<u> </u>							_				_												
W-50-PSP	1	15	ok		_	_	_			_	_	_	_	<u> </u>	_		_		_		_	_	_	<u> </u>		_		<u> </u>
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R-50-PSP	1		0K										ļ	<u> </u>	ļ	ļ	_	<u> </u>					_	_	_	<u> </u>		
R-50-HP	2	5	bK		_	<u> </u>	<b> </b>				_		_	<u> </u>	_	_	<u> </u>		<b> </b>		ļ	<u> </u>			_	<u> </u>		
. R-55-M. CASE	3	•	DK	_	_	ļ							<u> </u>	<u> </u>	ļ		ļ		<u> </u>		_	_	ļ	_	<u> </u>	<u> </u>		
. <b>F-</b> 50-SP	प		0K		_	<u> </u>	_			<u> </u>		_	1	<u> </u>	<u> </u>				<u> </u>			<u>'</u>	_	_	_	_		
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TOTAL (PER MAL.)																												

FIELD	CYCLE	TEST -	CENTERFIRE

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	R-50-PSP	7	<b>L</b>	5	OK	1														·										
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prutotig					83 MODEL: 7 Τέρ. ZZZ cal "MIFUNCTIONS"																!	TTL. TTL.	RD8	. FI	RED: TION		10	
AMMUNITION		ROLLINGS FIRED		STELL	BCT	DON'T BLOW BACK	CK OPEN	FE FR MA	OM	STEMS MAG.	OVERRIDE	tock up			em Mber	1	SHELL JUMPS MAG.	FOLLOWER BINDS		जर <b>स</b> राज्य	ang up	TRACT	22	STE	STATES	OCITIES .	REMAI	
Load Size	SHOOTER		FIRING	TRA PPED SHELL	DOK'T EJECT	E 1,1900	DON'T LOCK	18t	2nd		POWER C	e raine	HIGH	101	RICHE	1.02.1	SHELL J	FOLLOWE	TOADING	BOLT OVERRIDE	ACTION BANG UP	DOE"T EXTERCT	HEEA KAGES	ADJUSTMENTS	REPLACEMENTS	BOLT VELOCITIES	YES (ON 1	
R-50-PSP	4	15	OK																									
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R-55-M. CASE	2		OK		_	_	ļ						<u> </u>	_			_	<u> </u>							<u> </u>			<b> </b>
F-50-SP	3	15	OK	1		_	<u> </u>	_	<u> </u>					<u> </u>		_		<u> </u> _			_	Ļ		_	<u> </u>		<b> </b>	<u> </u>
W-50-PSP	17	5	1	_					-		-	-	-	_	-	_	_	$\vdash$	_	-	-	-		_	_	_		_
TOTAL (PER MAL.	+	-			-	-	├-	-	├	-			-		-		<del> </del>	-	<del> </del>	<del> </del>		<b> </b>					<b> </b>	

(N)

## SHCCCCS, TENTETTES, REGISTES /FURS & AUTOLOADES

	IIST FRODUNE SHEET
	15del
	Serval No. 76/3006
Headspace as Received:	3a2a - '01" - 1. 8 "032" - 1. 8
Proof:  Eeedspace after Proof: 7,003	2. <del>8</del> 2. <del>8</del> 3. <u>8</u>
Firing Fin Indent(in.)	Gooked: I. 5.5 Dry Fired: I. 8.5  2. 11 2. 1
2	3
3	lately  3013 Release Force(lbs.)  1. 5.5  2. 5.5  3. 5.5
Gum Length:	Primer Marking:
Gun Weight:	Safety Check:
Center of Gravity:	Firing Pin Protestion:
Graine:	Fattern Test (Avg. of 5)
Crisice Size:	Group Size:
Bolt Closing Velocity:	Horz.:
Magazine Spring Force:	Yers.:
Disconnector Check:	Accuracy (Avg. of 5)
	Group Size:
	iorz.:
	Vers.: F.O.I.:_
C.73 I-12-62	Tester and Date:



#### SHOTOLIS, CENTERTORS, REPORTS (ROMES & AUTOLOGISTS)

·/		
		IIST RECIPCIE SHEET
		Model
9		Serrai IIc. 764 35/3
Headspace as Received:		Sada - "CIT" - 1. 14 29 2022" - 1. 150
Proof:		2. 74 2 9 2 2. 15 1
Eeedstace after Proof: 1	1.003	3. 14 9 ½ 3. LS 10
Firing Pin Indent(in.)		Bolt Oven Force(Dos.)  Cocked: I. 7 Dry Fired: I. 9
I		2. 7
2		3. <u>7</u>
3		3
<u> Trigger Pall</u> (Lis.)		Arch FC, Plot TE  Release Force(liss.)
= 4/2		<u>:. 5.5</u>
2.4/2		2. <u>\$.5</u>
3. 4h		3. <u>5.5</u>
Sum Length:		Primer Marking:
Gum Weight:		Safety Check:
Cantar of Gravity:	<del></del>	Firthe Pin Provention:
30:-:		Pattern Test (Avg. of 5)
Cacka:		Group Size:
Orifice Size:		Eors.:
Bolt Closing Velocity:		
Magazine Spring Force:		Vert.:
Disconnector Check:		Accuracy (Avg. of 5)
		Group Size:
		Ecrs.:
		Verr · PAT.

CJ3 I-12-82

e Tester and Date:____

### SHOUGHE, CENTERED RECEIVED AND A RETOLIKENS

	IIST FROTEGIES SHEET
	ladel 7
	Serval No. 7613306
Headstace as Received:	Sade - "OH" - 1. 10 "OFF" - 1. 15
Proof:	2. 10 2. 15
Headstace after Proof: 7.003	3. <u>10</u> 3. <u>15</u>
Firing Fin Indent(in.)	Bolt Coem Force(lbs.)
<u></u>	Cocked: I. 3. 5 Day Fired: I. 7.5
2	2. <u>3.5</u> 2. <u>7.5</u>
3	3. <u>3. <del>5</del></u>
- <u>Trisser Puli</u> (Lbs.)	lathan Release Force (lbs.)
<u>=. 3.75</u>	<u>:. 5</u>
2. 3.75	2. <u>5</u> 2. <u>5</u> 3. <u>5</u>
3. <u>3.</u> 75	3. <u>5</u>
Sum length:	Primer Marking:
Gun Weight:	Sadety Check:
Center of Gravity:	Firing Pin Protrusion:
3ore:	Fattern Test (Avg. of 5)
Choice:	Group Size:
Orifice Size:	iora.:
Bolt Closing Velocity:	7e <del></del>
Magazine Spring Force:	Accuracy (Avg. of 5)
Disconnector Check:	Group Size:
	āorz.:
	Vert.: F.C.I.:
CJS 1_17_32	Tester and Date:

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3550 - 255.00	·			

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(4)	TEST FROTEURE SHEET  Model 7
Eesdatade la Receive	
<u>Proof</u> : Zeedspace witer Proo:	2. <u>8.5</u> 2. <u>7.5</u> 3. <u>7.5</u>
Firing Pin Indent(in.	301t Cyen Force(lbs.)  Cooked: I. 7 Dry Fired: I. 9  2. 7 2.9
3	3. <u>7</u>
<u> Trisser Pull</u> (liss.) =. <u>U.S</u>	ادبادلم <del>عملت Release Force</del> (Lbs.) ت <u>ـ ل. ح</u>
2. 4.5 3. 4.5	2. <u>6.5</u> 3. <b>6.5</b>
Gum Length:	Primer Marking:
Gun Weight:	Safety Check:
Center of Gravity:	Firing Pin Protonsica:
3o <del>re</del> :	Pattern Test (Avg. of 5)
Choka:	
Orifice Size:	∃orz.:
Bolt Closing Velocity	7ert.:
Magazine Spring Force	Accuracy (Avg. of 5)
Disconnector Check:	Group Size:
	Aora.:
	Vers.: P.O.I.:
CJS T_T2_82	Tester and Date:



## SECTIONS, CENTERS THE REPORT (FIGS & AUTOLOGISTS)

	Model 7
	Serrai IIO. 7613454
Easdataca as Receivad:	3a2a - "cur" - 1. 8 "cur" - 1. 8
	2. 8 2. 8
?reef:	<u> </u>
Readstace after Proof: +.001	3. <u>8</u>
	Bolt Open Force(15s.)
Firing Fin Indent(in.)	Cocked: I. 5 Ery Fired: I. 9.5
<u> </u>	2. 5
2	2. <u>5</u> 3. <u>5</u> 3. <u>9.5</u>
3•	
Trigger Full(Lis.)	luhk B <del>olo</del> Relesse Force(lbs.)
<u> 4.25</u>	z. 5.5
2. 4.25	2. <b>5.5</b>
	3. <u>5.5</u>
3. <u>4. 25</u>	3. <u></u>
Gum Length:	Durings Yaminings
Gun Weight:	Safety Check:
Center of Gravity:	Fining Pin Protrusion:
3o <del>re</del> :	Fattern Test (Avg. of 5)
Choke:	
Orifice Size:	Group Size:
Bolt Closing Velocity:	Horz.:
Magazine Spring Force:	Vert.:
Disconnector Check:	Acquiracy (Avg. of 5)
	G <del>roup</del> Size:
	āorz.:
	7ers.:
CJS I-IZ-82	Tester and Date:

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### SECTIONS: CENTER TORS, REGISTER (FORS & AUTOLOGENS)

	1357 13:00:0023 SHIII
	16del 7
	Serval No. 7612795
Eesdspace as Received:	3a2a - "ON" - 1. <u>9</u> "OFF" - 1. <u>7</u>
?roof:	2. <u>9</u> 2. <u>9</u> 3. <u>9</u> 3. <u>9</u>
Readstace after Proof: + 001	· · · · · · · · · · · · · · · · · · ·
Firing Fin Indent(in.)	Bolt Open Force(Ds.) Cocked: I. 5.5 Day Fired: I. 9.5
<del>-</del>	2. <b>5.5</b> 2. <b>9.5</b>
3	3. <u>5.5</u>
<u> Crisser Pull</u> (Lis.)	<u>Bolt Release Force(</u> lbs.)
= 4	<u> </u>
2. 4	2. 6
3. 4	3.6
Gum Length:	Primer Marking:
Gun Weight:	Safety Check:
Center of Gravity:	Firing Pin Protrusion:
3ore:	Fattern Test (Avg. of 5)
Choke:	Group Size:
Orifice Size:	<del> </del>
Bolt Closing Velocity:	Ecrz.:
Magazine Spring Force:	Veru.:
Disconnector Check:	Accuracy (Avg. of 5)
	Group Size:
	Hora.:
	Vers.: 3.0.I.:_
CJS I-IZ-82	Tester and Date:

(5) SHOTOUS, JUIN	roides (rights <u>4 augulantes)</u>
	TIST PROCEDURE SPEET
	:todal
,	Servai 110.7612969
Hesistace as Received:	3a2a - "011" - 1.8.5
	2.8.5
Proof:	3. <b>8.5</b> 3. <b>8.5</b>
Resistance after Proof: 4,002	· · · · · · · · · · · · · · · · · · ·
Firing Fin Indent(in.)	Bolt Open Force(lbs.)
<u> </u>	Cocked: I. 4 Day Fired: I. 7.5
2	2. <u>4</u> 2. <u>7. 5</u>
3	3. <u>4</u> 3. <u>7.5</u>
	LATCH
<u>Trisger Pull</u> (lbs.)	Release Force(Lbs.)
=. 4.5	:. <u>4.5</u>
2. 4.5	2. 4.5
3. <u>4. S</u>	3. <u>4.S</u>
Gum Langth:	Primer Marking:
Gun Weight:	Safety Check:
Center of Gravity:	Firing Fin Provension:
30:::	Satisfación (Assert / Assert Assert Assert Assert Assert Assert Assert Assert Assert Assert Assert Assert Assert
Choka:	Pattern Test (Avg. of 5)
Orifice Size:	Group Size:
Bolt Closing Velocity:	Ecrz.:
Magazine Spring Force:	Vert.:
Disconnector Check:	Accuracy (Avg. of 5)
·	Gr <del>oup</del> Size:
	Horz.:
	Vers.: P.O.I.;
CJ3 I-12-62	Tester and Date:



## SHOUGHS, SERVERS, SERVES (FORS & AUTOLOUSES)

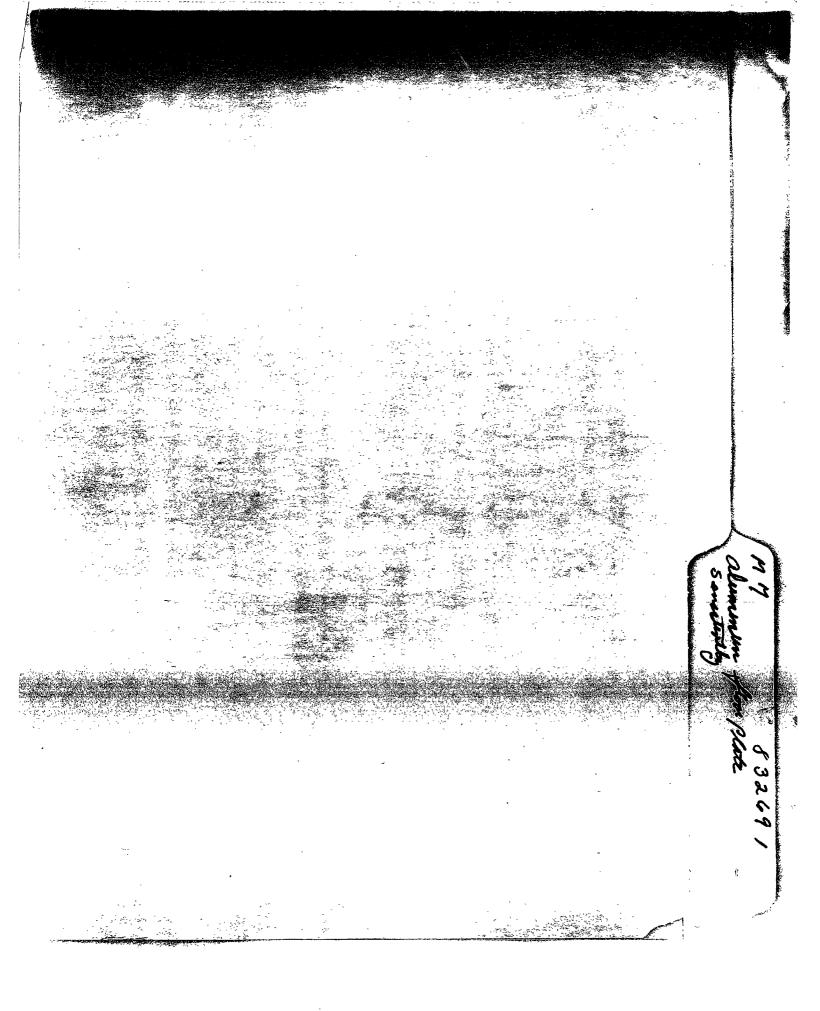
	TEST RECOUNTE SHEET
	::::::::::::::::::::::::::::::::::::::
	Sarrai II. 76350
Esadatace as Receivad:	Same - "on" - 1. 8.5
? <del>???</del> ?	2. <u>8.5</u> 2. <u>8.5</u> 3. <b>8.5</b>
Headstace after Proof: 4.003	3. <u></u>
Firing Pin Indens(in.)	Bolt Open Force(lbs.)  Cocked: I. 55 Dry Fired: I. 9
<u> </u>	2. <b>5.5</b>
2	3. 5.5
3	
Trigger Pull(List.)	Bolt Release Force(Lbs.)
= 4.25	<u> </u>
2. 4.25	2. <b></b>
3. 4.25	3. <u>6</u>
Gum Langth:	Primer Marking:
Gun Weight:	Safety Check:
Center of Gravity:	Fining Pin Provension:
3cre:	Pattern Test (Avg. of 5)
Choke:	Group Size:
Orifice Size:	Ior2.:
Bolt Closing Velocity:	Vert.:
Magazine Spring Force:	
Disconnector Check:	Accuracy (Avg. of 5)
	Group Size:
	Horz.:
	Vert.: F.O.I.:_
CJS I-12-62	Tester and Date:

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Crockett W. Our thing

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	- color merks top front in a literary
	tradical and a second
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	in the second

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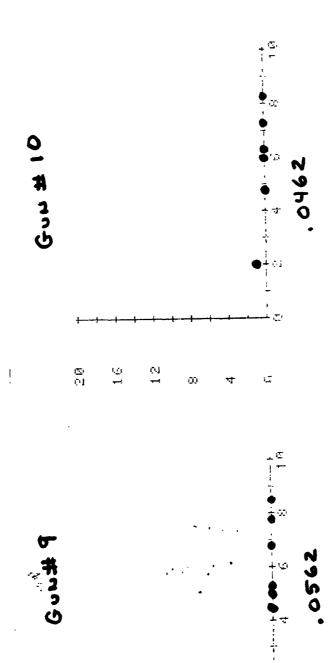
## Sensitivity Analysis Alum. Floor Alde

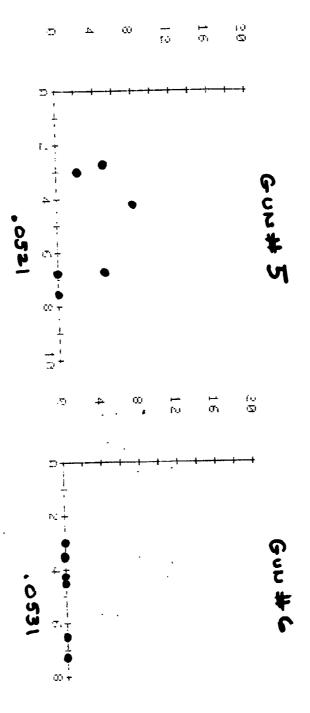
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	± 760 4175 ± 760 4114		760 4206
	£ 7604/85		760 4/23 760 3941
7-8		loor plates a	-
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-  -	83 - Latch taken	force and Co	overage Measureme
-	83 - Latch taken	force and control	
-	83 - Latch taken ierval # 4243	Force and Co halch Force 2,00	coverage .041
<u> </u>	83 - Latch taken taken 4243 3983	Force and Control Land Force 2,00 2,00	Coverage .041 .042
<u> </u>	83 - Latch taken 1243 3983 4175	Force and Co halch Force 2,00	coverage .041
<u> </u>	83 - Latch taken taken 4243 3983	Force and Control Land Force 2,00 2,00 2,00	Coverage O41 .042 .045
-  -	83 - Latch taken 1243 3983 4175 4114	Force and Co halds Force 2,00 2,00 2,00 2,50	Coverage .041 .042 .045
	83. Latch taken 1243 3983 4175 4114 4185	Force and Co halds Force 2,00 2,00 2,00 2,50 2,75	Coverage .041 .042 .045 .046
<u> </u>	83: Latch taken 1243 3983 4175 4114 4185	Force and Control 2,00 2,00 2,50 2,75	Coverage .041 .042 .045 .046 .033

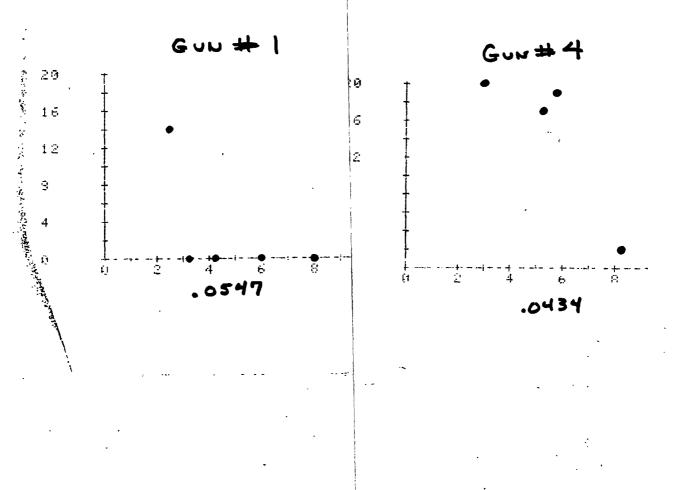
2.25

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	springs wee	LE CUT TO 5	
	GON #	Latch Force (165)	
-	( 3941		
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20°	) 4123	1,25	-
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•	Test 1-1 atch Opening Fance
	Test 1- Latch Opening Force
<b>3</b> -	Parts Used:
	1. S+d. Latch
	2. Thick Assembly
	. 060" thick Base
4	.080" " Trigger Plate
	3. Std. Latch Spring
· · · · · · · · · · · · · · · · · · ·	Dimension "A" modified to 5
	get desired Opening Force. KA->
*	Started test with "A" = .160"
<i>i</i>	4. Trigger Guards - Tab ground to sit Hicker
λ, .	Assemblies. Not Ht. Treated (50ft). Rear tab
1	hent to 0° Over-all
	trigger quard length the same
	trigger quard length the same initially for all +.g. 2. (2.190").  & 2.190"
	¢ 2.1%"
`	5. Stock-inlet for thicker assemblies. Inlet
`	surfaces cleaned out (scraped) to allow for good
	fit between stock fassembly. Bottom surface
	filed as needed to allow for adequate latch
	coverage (50% at least desired).
	V
	Actions used.
,	Ser. No. Assembly No.
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#### RESEARCH TEST & MEASUREMENT LAB WORK RECUEST

	ARE	ea of testing
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Design Acceptance	Competitive Evalu	uation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
?llot	Design Change	Statos-
Production Acceptance:	Plant Assistance	Other
MODEL: 7 Light weight	REPORT REQ'D.	DATE REQUESTED: 7-6-83
CAL OF GAGE: ALL CAL		DATE NEEDED BY: ASAP
BARREL TYPE:	TEST RESULTS	REQUESTED BY: J.W. R.
PROOFED: YESNO	ONLY	WORK ORDER NO: <u>C 1856 0</u>
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Strength Test Ammuni	don Test Dry Cycle T	est Photo/Video
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accompanied by a Work Request,	and both are delivered to	TEST COMPLETED BY:
accompanied by a Work Request, the Labs by the designer or engine		TEST COMPLETED BY:

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_	2. To work free 3. Load <u>/ </u>	ely in <u>235</u> dia. hole ely on <u>dia. pin</u> to <u>168</u> lb. at <u>300</u> length (with set removed) 258 max. 7. Winderwers H 595 min. 8. Remove set (1886)
	6. Ends Sac MANUFACTURE 9. Wire dia. 10. Outside dia.	(No [except for inspection]  11. Free Length. 625 (with set removed)
	DESIGN DATA  13. Rate <u>#. 8.3</u> 14. Solid Stress.  15. Solid Load _	234,000 lb./sq. in. 17. Torsional Mod. G=//.5-x/0
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## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington. **QUOOND** 



Distribution: C.B. Workman

C.E. Ritchie
J.W. Brooks
R.S. Murphy
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"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"	rile
RESEARCH TEST and MEASUREMENT REPORT - Report No.  MODEL SEVEN LWT - PROTOTYPE ALUMINUM FLOOR PLATE	
Prepared by:  Date Prepared:	
Proofread and Cleared by:	
R.E. Nightingale, Foreman - Test, Measurement Lab  Signature	cyllingaly 12-283

C.E. Ritchie, Sr. Supervisor

Testing, Measurement & Mech. Analysis Lab

#### TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 832691	
REPORT TITLE: PROTOTYPE	ALUMINUM FLOOR PLATE SENSITIVITY ANALYSIS
MODEL(S): MODEL SEVEN L	WT
GAUGE OR CALIBER: .308	
DATE: 11/30/83	
WORK ORDER NO.: C-1856	-000
PART NAME: FLOOR PLATE	ASSEMBLY
DESIGNER/ENGINEER: J.	W. BROOKS/D.E. BULLIS
TEST TYPE:	
1.	PHOTO LAB
2.	STRENGTH TEST-NO. OF GUNS TESTED
3.	FUNCTION TEST-NO. OF GUNS TESTED 10
4.	ACCURACY TEST-NO. OF GUNS TESTED Acceleration, Coverage, Opening
5.	MEASUREMENTS - TYPE Force, Screw Torque, Headspace
6.	ENVIRONMENTAL TEST COLD
7.	AMMUNITION TESTING & EVALUATION-TYPE
8.	VISUAL EVALUATIONOUT OFGUN SAMPLE
9.	ENDURANCE-NO. OF GUNS TESTED: 2
	NO. OF ROUNDS PER GUN 2,000
	TOTAL ROUNDS FIRED IN TEST 4,000

AMMO TYPE: MAGS. ____TARGET:____

RIM FIRE _____CENTERFIRE _.308

180 gr.

REMINGTON ARMS CO., INC. Firearms Research Division

Report No. 832691 Page 1

November 30, 1983

TO:

R. NIGHTINGALE

FROM:

S.R. FRANZ

REPORT TITLE:

MODEL SEVEN LWT PROTOTYPE ALUMINUM FLOOR PLATE SENSITIVITY ANALYSIS

#### ABSTRACT

A previous sensitivity analysis on the steel floor plate assembly showed that this design was sensitive to a number of variables and dimensions. In order to assure no floor plate openings with this design it would require 100% inspection of all floor plate assembly parts; a very costly and time consuming process. Because of this a new aluminum floor plate assembly was designed that would be cheaper to make and be less sensitive to manufacturing tolerances. (See Appendix for the Floor Plate Assembly Parts List) Prototypes were made and initial testing confirmed that the design was better from a functional standpoint. Production reviewed this design and recommended that some changes be made to allow for their manufacturing process. These design changes were made and 10 prototypes were built and assembled on .308 cal. actions. The Test and Measurement Lab received a work request from D.E. Bullis, Current Firearms Design, to run a sensitivity analysis on these prototype rifles.

#### SCOPE OF TEST

To determine the sensitivity of the new aluminum floor plate assembly to floor plate openings during live fire.

#### TEST RESULTS

Testing has proven that the new aluminum floor plate assembly is not as sensitive to floor plate openings as the steel assembly. The Report Text section contains a detailed explanation of the tests that were run as well as their results. Testing did show, however, that a condition exists that could adversely effect the functioning and appearance of the rifle. This condition is discussed below.

Report No. 832691 Page 2

TEST RESULTS - Contd.

Initial observations showed that the front trigger guard screw on all 10 rifles interfered with the floor plate when the floor plate was closed. This interference caused the floor plate to bow out. Not only does this detract from the appearance of the rifle but it also increases the load on the floor plate latch. This condition could also increase the sensitivity of the floor plate latch to floor plate openings because of this additional load. J.W. Brooks and D.E. Bullis were made aware of this condition so that corrective action could be taken. After this condition was found the front screw heads were filed down to eliminate this interference. The remainder of testing was completed with the filed down screw heads.

Although this testing has proven that the aluminum assembly is a good design we must remember that these were prototype parts machined in the Research N/C area and the Model Shop, not vendor parts handled by production. As soon as vendor parts are received another sensitivity analysis similar to this one will be run to increase our confidence level before production begins with this assembly.

Report No. 832691 Page 3

#### REPORT TEXT

A total of ten newly designed aluminum floor plate assemblies were tested for sensitivity to floor plate openings. Sensitivity to the following parameters were considered:

- Part Wear (endurance)
   Guard Screw Torque
   Fit to Stock (washers)
   Latch Coverage
   Opening Force

- 6. Lubrication7. Temperature (cold)

In addition, measurements, high speed movies and accelerometer measurements were taken to compare the aluminum to the steel assembly. An explanation of each test and the results follow.

Note: See last page in Appendix for prototype Floor Plate Assembly Parts List.

#### TEST PROCEDURE

#### A. Measurements

Before any testing was done some preliminary measurements were taken on all the rifles. A listing of the measurements made and the range of values measured are listed below. (See Appendix for the complete data listing).

Opening Force: 2.25 --- 3.50 lbs.
Latch Coverage: 0.065 -- 0.085
Headspace; min + .004 -- min. +.005 in.
Screw Torque: pre-set at 25 lb-in
Stock to Floor Plate Cover Gap: 0.008--0.031 in.

#### B. Initial Shooting

After initial measurements all ten rifles had five rounds of Rem. 180 gr. .308 cal. ammo shot through them in the Test Lab jacks. No floor plate openings occurred.

#### C. Field Cycle Test

After the initial jack shooting all ten rifles were brought up to the Ilion Fish and Game Club for a full field function test. Each rifle was shot a total of 150 rds. of Rem. and Competitive ammo. All ten rifles shot malfunction free.

#### D. Measurements

The initial measurements were repeated after the Field Test to determine if any changes had occurred. A summary of the results are listed below. (See Appendix for complete data listing.)

Opening Force 2.25 -- 3.25 lbs.
Latch Coverage 0.064 -- 0.084
Headspace: min + .004 -- min. + .005 in.
Screw Torque: front 10 -- 25 lb. - in.
Rear 20 -- 25 lb - in.
Stock to Floor Plate Cover Gap 0.010 -- 0.031 in.

This data shows that the assembly screws did loosen slightly and that the front screw loosened more than the rear. This is explained under the Screw Torque Test.

#### TEST PROCEDURE - Contd.

E. Part Wear (endurance), High Speed Movies, Accelerometer Measurements

Two rifles were selected from the ten guns supplied for endurance testing. The rifles selected were:

Ser. No. 7603854 Ser. No. 7603221

Both of these rifles were shot 2000 rds. each using Rem. 180 gr. .308 cal. ammo. The floor plates on both rifles were opened and closed every 20 rounds throughout this test. Rifle No. 7603854 had high speed movies taken both before and after endurance. High speeds were taken to determine if the aluminum assembly moves during live firing and to determine if this movement increases as rounds are put on the rifle.

No rifle experienced floor plate openings during shooting. In addition, the high speed movies indicated that the assembly does move slightly downward (out of stock) but that it is considerably less that the steel assembly. There was also no noticeable increase in this movement in the second high speed taken after the 2000 rounds were fired. No floor plate latch movement was detected in either of the high speeds. This indicates that the slight movement of the floor plate housing is not enough to initiate latch movement during live firing. (These high speed movies are available for viewing in the Research Photo Lab.)

Accelerometer measurements were also made to confirm the movement of the floor plate assembly in the stock during live shooting. These measurements were taken with a PCB miniature accelerometer, Model No. 303A02, powered by a PCB power supply, Model No. 482A04. The accelerometer was mounted on the bottom of the floor plate housing to measure vertical acceleration. Similar measurements were also made on a rifle with a steel assembly for comparison. These measurements showed that the aluminum assembly had one-half of the downward acceleration of the steel assembly. This can be seen in the two graphs in the Appendix. These graphs show the Power Spectrum of the acceleration curves in the range of 0-2000 HZ taken with a WaveTek/Rockland Model 5830A Spectrum Analyzer. The graph for the steel assembly shows that the resonant frequency of the floor plate base is 335 HZ and the peak acceleration is 348 g's at this frequency. The second graph shows that the aluminum assembly resonates at approximately the same frequency but the acceleration is approximately half that of the steel assembly.

#### TEST PROCEDURE - Contd.

#### F. Guard Screw Torque

The eight remaining rifles were used for this test. Screw Torque was set at seven different values and 20 rds. of Rem. 180 gr. ammo was fired per setting. After every 20 rds. screw torque was checked to determine if the screws had loosened up. The following torque settings were used: 1, 5, 10, 15, 20, 25 and 30 lb-in. No floor plate openings occurred at any of these values. Loosening of the assembly screws occurred at torques up to and including 15 lb.-in. No loosening occurred over the 15 lb-in level. This seems to contradict an earlier condition where the screws loosened after the field cycle test when they were pre-set at 25 lb-in. The difference between the two is that 150 rds. were fired on the field test and only 20 at the individual settings for this test. It should be stated here that the two endurance guns were fired 2000 rds. each without re-tightening the screws and no floor plate openings occurred. Although it seems that floor plate openings are not sensitive to screw torque, a torque of at least 30 lb-in is recommended.

#### G. Fit to Stock (Washers)

Production has stated that they cannot control the inletting depth for the floor plate assembly in the stock. This is true for all M/700 and Model Seven Lwt Calibers. To compensate for this lack of control they purposely inlet too deep and use spacers between the stock and the floor plate assembly to ensure a good looking fit to the stock. Using spacers in this way changes the interaction between the floor plate assembly and stock because support to the assembly is decreased. This test was designed to determine if this effects the performance of the floor plate assembly. Eight rifles were tested with no spacers and four spacers between the floor plate assembly and the stock. Each spacer was 0.015 in. thick. Twenty rds. of Rem. 180 gr. .308 cal. ammo was fired per condition and no floor plate openings occurred.

#### H. Latch Coverage

Initial measurements showed that latch coverage for this ten rifle sample was in a range of 0.065 to 0.085 in.

Latch coverage was decreased in four steps by filing away the floor plate edge on five rifles until each rifle had 0.005 in. coverage. At each increment 20 rds. of Rem. 180 gr. .308 Cal. ammo was fired. No floor plate openings occurred at any of the latch coverage increments. See data in Appendix.

#### TEST PROCEDURE - Contd.

#### I. Opening Force

The same five rifles used for the latch coverage test were used here. Two conditions were tested. 20 rounds of Rem. 180 gr. .308 cal. ammo was shot with the floor plate latch springs at full length and then reshot with the springs cut to 3/4 length. The latch spring could not be cut any shorter than this and still exert a force on the floor plate latch. We considered that a 3/4 length spring would be the worst possible condition that could occur with this design and still allow proper functioning. Latch opening forces were measured for the full length and 3/4 length springs with the cover opened and closed for comparison. These numbers can be seen in the Appendix. No floor plate openings occurred on any of the five rifles with the full or 3/4 length spring. To go one step farther two of the five rifles had their latch springs completely removed and 20 rounds of ammo was shot through each. In this way the only force on the floor plate latch was the force due to the floor plate cover and friction. One rifle opened 1 out of 20 rds. and the other opened 2 out of 20 rds.

#### J. Lubrication

All firearms should be cleaned and oiled periodically to ensure proper functioning. However the frequency and extent of cleaning depends on the individual. This lubrication test was designed to test the extremes of lubrication on the rifle in the floor plate and latch area. The two conditions tested were with no lubrication at all on the assembly (dry) and with the assembly saturated with Du Pont Teflon wet lubrication. Two Model Seven's were selected for this testing. In addition three competitor's rifles were also tested for controls. These rifles were: Win. M/70 in. .30-06 cal. Browning BBR in .30-06 cal. S&W M/1500 in .30-06 cal.

20 rds. of Rem. 180 gr. .308 cal. ammo was fired per condition in the Model Seven's and Rem. 180 gr. 30-06 cal. ammo was fired in the competitor's rifles. None of the rifles, Model Seven's or competitor's, experienced any malfunctions during this test. Latch opening forces were measured with and without lubrication on all the rifles tested. These measurements show little if any difference in opening forces between the two conditions. This data can be found in the Appendix.

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#### TEST PROCEDURE - Contd.

#### K. Temperature (Cold)

Firearms are used in all types of climates and temperature extremes. They, therefore, have to operate properly in these conditions. The cold test determines if firearms will operate properly in extremely low temperatures. The same two Model Seven's used in the lubrication test along with the three competitors listed above were stored overnight in the lab's freezer at -30 Deg. F. The following day they were removed and floor plate latch opening forces were measured. Following these measurements 20 rounds of ammo was shot through each rifle. After shooting latch opening forces were measured again. No floor plate openings occurred on any of the rifles. See Appendix for opening force data.

# M/ 7 SENS. ANAL.

# TESTING SEQUENCE

- o MEASUREMENTS
- o FIELD TEST ALL 10
- o MEASUREMENTS
- o PICK TWO FOR ENDURANCE
- o H.S. ONE ENDUR. GUN
- o ENDUR. 2 TO 2000 RDS.
- o H.S. AFTER ENDURANCE
- o GUARD SCREW TORQUE TEST
- o FIT TO STOCK (WASHERS)
- o OPENING FORCE
- o LATCH COVERAGE
- o 2 GUNS FOR:

TEMPERATURE TEST LUBRICATION TEST

#### APPENDIX

- o Measurements
- o Field Cycle Sheets
  o Endurance Sheets
  o Acceleration Data

- o Screw Torque Data
- o Fit to Stock Data

- o Latch Coverage Data
  o Opening Force Data
  o Lubrication Data
  o Cold Test Data
  o Floor Plate Assembly Parts List

## BEFORE TEST-O RDS

GUN NUMBER	OPENING FORCE (16)	COVERAGE	WOOD/COVER GAP (1n)	HEADSPACE MIN+	SCREW TORQ. FRONT.REAR
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## AFTER FIELD TEST- 155 RDS

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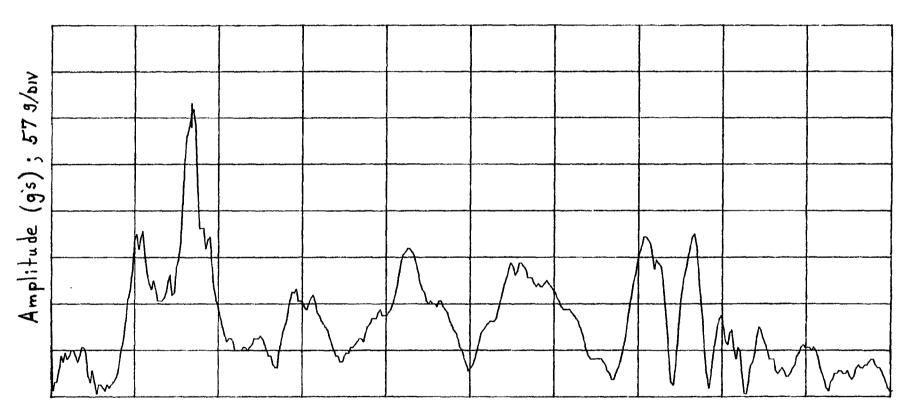
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# STEEL ASSEMBLY



Frequency (Hz)

AVG=

PWR SPECT A

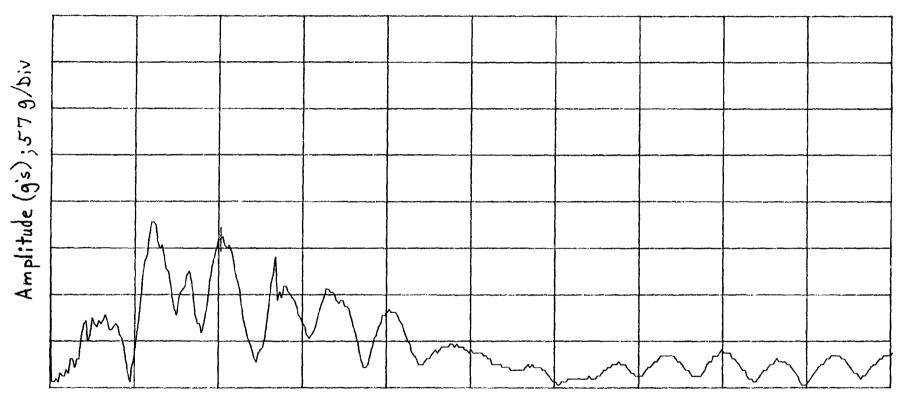
:3.48E+00R *100 g's

335. HZ

N: NONE P: 5HZ

SPAN: 0. 000000HZ-2. 00000KHZ SN: 7. 9-01V FS: 4. 6+00R *100 5. 7-01R/biv *100

# ALUMINUM ASSEMBLY



Frequency (Hz) AVG=

PWR SPECT A : 1.84E+00R */00 g's

405. HZ

N: NONE P: 5HZ

SPAN: 0. 000000HZ-2. 00000KHZ SN: 7. 9-01V FS: 4. 6+00R*100 5. 7-01R/biv*100

# SCREW TORQUE TEST

ERIAL NO	1 in-1b	5 in-lb	10 in-lb	15 in-1b	20 in-1b	25 in-1b	30 in-lb
4086	ок	OK	0K	OK	OK.	0K	OΚ
4091	ΟK	OΚ	OΚ	ÛK	ΘK	OΚ	θK
3907	0K	OK	0K	0K	0K	οĸ	Ok.
3187	οK	OK	OΚ	OΚ	OΚ	0K	ΩK
4201	ΘK	OK	οк	OΚ	OK	ok	٥٢
4244	0K	ΩK	ūΚ	OΚ	OK	ΩK	ŪΚ
3910	or:	OK	ок	or.	0K	OΚ	OK
3821	ΩK	ΟK	OΚ	OK	0K	OΚ	OK

20 rounds were fired per condition.

# FIT TO STOCK (WASHERS)

SERIAL NO 4086 4091 3907 3187 4201 4244 3910 3821	NO SPACERS (0.0") OK OK OK OK OK OK OK OK OK OK	4 SPACERS (,060")
---------------------------------------------------------------------------	-------------------------------------------------	-------------------

20 rds fired per condition.

# LATCH COVERAGE TEST

SERIAL NO	4086	4091	3907	3187	4244
COVERAGE	.075-0K .065-0K .055-0K .045-0K .035-0K .025-0K .015-0K	.050-0K .030-0K .010-0K .005-0K	.050-0K .030-0K .010-0K .005-0K	.060-0K .040-0K .020-0K .010-0K .005-0K	.055-0K .035-0K .015-0K .005-0K

20 rounds fired per condition.

# OPENING FORCE TEST

SERIAL NO 4244 3187 3907 4091 4086	3/4 LENGTH OK OK OK OK OK	FULL LENGTH  OK  OK  OK  OK  OK  OK  OK  OK  OK  O	onds fired or condition
	OPENING FORCES		
SERIAL NŪ	3/4 LENGTH OPEN CLOSED	FULL LENGTH OPEN CLOSED	
4244 3187 3907 4091 4086	.75 1.25 .75 1.25 .75 1.75 .75 2.75 .75 1.75	1.25 2 1.25 1.75 1.5 2.25 1.5 3 1.25 3	

# LUBRICATION TEST

MODEL	SERIAL NO.		RICATION
REM M/7 REM M/7 WINCHESTER M/70 BROWNING BBR S&W 1500	7603910 7603821 G1486933A 01185RP117 PN00862	FIRING OK OK OK OK OK	OPENING FORCE 2.25 2.50 6.00 4.00 5.25
		NO LU	JBRICATION
REM M/7 REM M/7 WINCHESTER M/70 BROWNING BBR S&W 1500	7603910 7603821 G1486933A 01185RP117 PN00862	FIRING OK OK OK OK OK	OPENING FORCE 2,25 3.50 6.75 4.00 5.25

20 rds fired per condition

# COLD TEST (-30 F)

MODEL	SERIAL NO.	ETDTNA	BEFORE FIRING
REM M/7 REM M/7 WINCHESTER M/70 BRCWNING BBR S&W 1500	7603910 7603821 G1486933A 01185RP117 PN00862	FIRING OK OK OK OK OK	OPENING FORCE 2.25 3.25 4.00 3.75 4.00
REM M/7 REM M/7 WINCHESTER M/70 BROWNING BBR S&W 1500	7603910 7603821 G1486933A 01185RP117 PN00862		AFTER FIRING OPENING FORCE 2.25 3.25 5.00 4.00 5.00

20 rds fired per condition

Prototype Aluminum
Floor Plate Assembly
Parts List

4-92909 TRICLER GUARD	92909	92909	
ASSEMBLY	92822	92822	
B-92848   Floor Plate Latch	92848	92848	
Floor Plate Latch Blank	92885	92885	
A-92847 Floor Plate Latch Spring	92847	92847	
A-92846 Floor Plate Latch Pin ,	92846	92846	
D-92889 Sub-Assembly	92889	92889	
A-16453   Floor Plate Pivot Pin	16453	16453	
D-92839 Floor Plate Cover	92839	92839	
D-92838   Floor Plate Cover Blank	92838	92838	
D-92837 Trigger Guard	92837	92837	
D-92836 Trigger Guard Blank	92836	92836	
B-92849 Front Guard Screw Spacer	92849	92849	
	993	92883	
B-92850 Rear Guard Screw Spacer	92850	92850	
Rear Guard Screw Spacer Blank	92884	92884	

### RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	ARE	A OF TESTING
	Safety Related	Litigation
Design Acceptance	Competitive Evalua	ation Warenouse Audit
Pre-Pilot	New Design	Cost Reduction
	Design Change	Stake
Production Acceptance	Plant Assistance	<u></u> Other
FIREARM STATS.  MODEL: 7 LINT  CAL or GAGE: 308  BARREL TYPE: CARRINE  PROOFED: YES V NO	FORMAL V TEST RESULTS ONLY	DATE REQUESTED: 9/26/83  DATE NEEDED BY:  REQUESTED BY: D.B./LL/S  WORK ORDER NO: C-/856-600
	TECT TYPE	
Strength Test Ammunitie  Function Test Environme Accuracy Test Customer	mital Test Measurement	Other SENSITIVITY TE
EXPLAIN IN DETAIL THE REASON FOR T	HIS TEST:	
SENSITIVITY TEST: +1	LEAVY LOAD	
1. AMOUNT OF LATCH EN  2-LATER RECEASE PROPERTY  3. TRIL GUARD ADJUSTED WAY  4. COUSE FOURTH OF MAX. RE  5. H.S. MOVIES OF MAX. RE  6. COUSE FORTION  7. LUOVISATION  8. ENVIYONMENT TEST: Con  9. Enarconce life of parts  10. Enarconce dissembly	CONCERC CO COURT DOCS A  CONC. HEAVY LOAD & LAC  OF PORT ASSET.	ik.
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-GUNS REQUIRED:		
-#54+15	•	•
NOTE: NO firearms or parts will be tested in	n the Labs unless they are	DATE COMPLETED:
accompanied by a Work Request, an		TEST COMPLETED BY:
the Labs by the designer or engineer	1	REPORT DATE:
to be filled out in detail. No Excepti	•	

# REMINGTON ARMS COMPANY, INC.

INTER-OGPARTMENTAL CORRESPONDENCE

Discribution: C. B. Workman

J. W. Brooks C. E. Ritchie

Remineton.

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"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

831291

830632

RESEARCH TEST and MEASUREMENT REPORT - Report No.

831791

MODEL SEVEN - .223 CALIBER - DESIGN ACCEPTANCE EVALUATION

Prepared by: _____C

C. Stephens

Date Precared:

July 11, 1983

Propried and Carred By:

J.H. Hennings

R.E. Nightingale,

Foreman-Test Lab Foreman-Measurement Lab

Signature Day Straturalle 7-21-83

C.E. Ritchie,

Sr. Supervisor - Testing,

Meas, & Mech. Analysis Lab

o Enan Tithue

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# TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	831791
REPORT TITLE:	Model Seven .223 Cal Design Acceptance Evaluation
MODEL(S):	Model Seven
GAUGE OR CALIBER:	.223
DATE:	7-11-83
WORK ORDER NO.:	C-1861-000
PART NAME:	
DESIGNER/ENGINEER:	J. W. Brooks
TEST TYPE:	
1.	PHOTO LAB
2.	STRENGTH TEST - NO. OF GUNS TESTED
3.	FUNCTION TEST - NO. OF GUNS TESTED 9
4.	ACCURACY TEST · NO. OF GUNS TESTED 5
5.	MEASUREMENTS - TYPE:
6.	ENVIRONMENTAL TEST
7.	Ammunition testing & evaluation - type:
8.	VISUAL EVALUATIONOUT OFGUN 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

Report No. 831291

830632 831791

July 11, 1983

TO:

R. E. NIGHTINGALE

FROM:

C. STEPHENS

REPORT TITLE:

MODEL SEVEN .223 CAL. - DESIGN ACCEPTANCE EVALUATION

## **ABSTRACT**

On 6-28-83, a request was received from J. W. Brooks, Supervisor, Current Products Design, to function test nine rifles from the shoulder and test five for accuracy.

## SCOPE

To evaluate the acceptability of the Model Seven .223 caliber into the Model Seven rifle line.

#### TEST RESULTS

The results show a malfunction rate of 1.8 with three malfunctions out of 162 rds. shot. The five rifles shot for accuracy were all within Remington Specs. which is 2.2 ins.

The nine rifles were previously used in two function tests and had feeding malfunctions (Report No.'s 831291 and 830632).

## REPORT TEXT

Nine Model Seven rifles used in a previous function test (Report No. 831291) were used in the test. Each rifle was shot a total of 18 rounds using slow, medium and fast rates of feed. The magazine box from Rifle No. 7600150 was used in all the rifles. Each magazine spring was checked to make sure it was forward in the follower and latch cover. A total of 162 rounds were shot with 3 malfunctions. Appendix"A" Data Sheets 1 - 10 contains the summary and individual information for each rifle.

After the function test, five rifles were tested for accuracy. Each rifle was shot for three five shot groups with each group and then one fouling shot fired after cooling. Each rifle bore was wire brushed with Hoppe's No. 9 solvent and patched dry. Each rifle was shot using a 10X Lyman Scope with a Tasco mount, Weaver Scope Rings and Remington 55 gr. pointed soft point ammunition.

The average group size was within Remington specifications for all five rifles. Data Sheets 11 - 15 contain the individual information for each rifle.

## TEST PROCEDURE

### A. Measurements

No measurements were taken.

#### B. Test Condition

1. Same code of ammunition to be used.

## C. Test

The function test was conducted in the R & D 50 yd. range by C. Stephens and F. Supry. Eighteen rounds shot per gun using slow, medium and fast feeding. The same magazine box was used for all rifles and each magazine spring checked to make sure it was all the way forward in the follower and latch cover.

The accuracy test was shot in the R & D 100 yd. range by R. Williams and C. Stephens. Three five shot groups were fired per rifle.

## D. Ammunition

1. Remington 55 gr. Pointed Soft Point (Code D3633).

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REPORT No. 831791 Page 13

ACCURACY: Minimum of 3 - 5-shot Groups

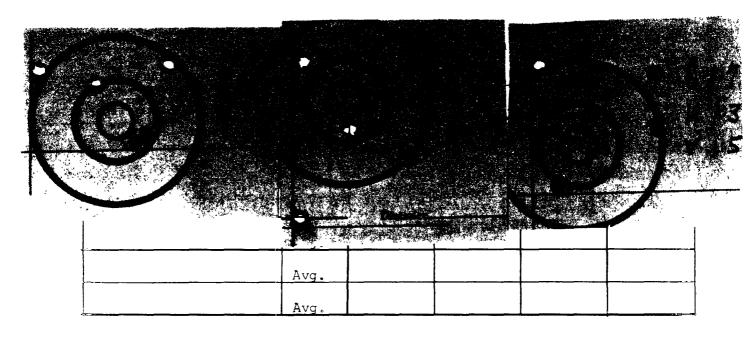
Gur # 4 7600150

Ammunition Used REM. CAL. 223
55 GI. Ptd. SOFT PT.
Previous Rounds INDEX R223 R1
Code D3633

	Group Size (in.)	Vertical Spread	Horizontal Spread
1	1.5	. 9	1.5
2	1.8	1.8	1.2
3	1.7	1.5	1.3
4			
5			

Tester R. Williams Avg. 1.6 1.4 7-8-83

Date



Date

Tester	

REPORT No. 83/79/

ACCURACY: Minimum of 3 - 5-shot Groups

Gun#6 7600157

Ammunition Used REM. CAL. 223
55 Gr. Ptd. SOFT PT.

Previous Rounds INDEX R223R1

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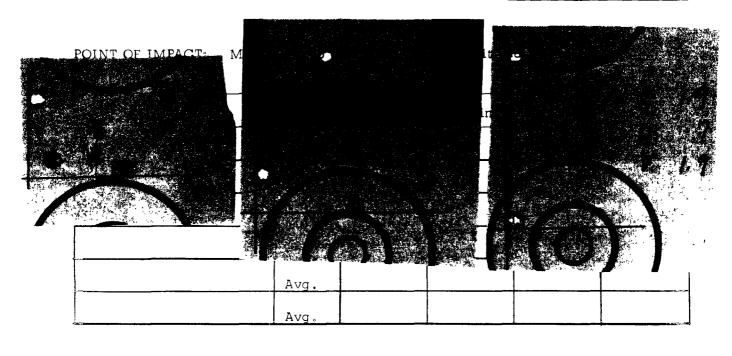
	Group Size (in.)	Vertical Spread	Horizontal Spread
1	1, 3	.8	1.0
2	1.7	1.7	1.0
3	1.9	1.9	.7
1			

1.4 Avg. 1.6

Tester

R. Williams

Date



Date

ACCURACY: Minimum of 3 - 5-shot Groups

Gur # 7 7600156

Ammunition Used

Previous Rounds

Previous Rounds

Previous Rounds

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	Group Size (in.)	Vertical Spread	Horizontal Spread
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2	1.1	, 9	1.0
3	, 9	.8	. 7
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Avg. 1.5 1.2 1.3 R. Williams Tester 7-8-83 Date 10-shot G igh (in.)

ACCURACY: Minimum of 3 - 5-shot Groups

Gur # 8

Ammunition Used <u>PEM. CAL.</u> 223 7600149 55 Gr. Ptd. SoFT PT.

Previous Rounds INDEX RAZ3 RI CODE D3633

	Group Size (in.)	Vertical Spread	Horizontal Spread
1	1.9	1.8	, 9
2	1.6	1./	1,1
3	1.7	. 8	1.7
4			
5			

Avg. 1.7 1.2 R. Williams Tester 7-8-83 Date 3 - 10-sho High (in

Date

ACCURACY: Minimum of 3 - 5-shot Groups

Ammunition Used REM, CAL, 223
55 Gr. PtJ. SOFT PT.

aur# 10 7600154

Previous Rounds INDEX R223 R1

CODE D3633

	Group Size (in.)	Vertical Spread	Horizontal Spread
1	1.1	.9	, 9
2	1.2	. 9	1.1
3	2.2	1.1	1.1
4			
5			

.96 Avg. 1.5

K. Williams Tester 7-8-83 Date - 10-shd High (in

Report No.	831791	
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## RESEARCH TEST & MEASUREMENT LAB WORK RECUEST

	ARI	ea of testing
Developmental	Safety Related	Litigation
Design Acceptance	Competitive Evalu	uation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilat	Design Change	Stake-
Production Acceptance:	Plant Assistance	Other
FIREARM STAT'S	REPORT REQ'O.	
MODEL: M	REPORT REGIO.	DATE REQUESTED: 6-28-83
	FORMAL	
CALORGAGE 223	TEST '	DATENEEDED BY: 6-38-83
BARRELTYPE	RESULTS	REQUESTED BY: V. W. Brooks
PROOFED: YESNO		WORK ORDER NO: (1861-000)
	TESTTYPE	•
Strength Test Ammuniti	on Test Dry Cyde 1	est ?hata/Videa
Function Test Sovironme	ental TestMeasuremen	Other
Accuracy Test Customer	Complaint Endurance	Test
XPLAIN IN DETAIL THE REASON FOR T	HIS TEST.	
Function Test	9 rifle from the she	+ stars. Fast, midlim
To determine also	Marine mas mas	+ stons. Fast, midlion
	a fair	,
+ slow feed.		
e) - + A	7100150	
. Shoot gan no		1-11
· Use mogazino	Seon gun 76001	50 in all other juns
and shoot 20	rounds par gum.	·
	su and get gette,	
· Mægagnie sprin	ey should be forward.	i followe + coule et sosaire.
UNS REQUIRED:		
7600152 7600	157 7600154	
, , ,	156	
	149	
OTE: NO firearms or parts will be tested i	· · · · · · · · · · · · · · · · · · ·	DATE COMPLETED:
accompanied by a Work Request, a		TEST COMPLETED BY:
the Labs by the designer or engineer		REPORT DATE:
to be filled out in detail. No Excent	rions.	

REMINGTON ARMS COMPANY, INC.	Distribution: < Bworkman
Reminston / PETERS	(Exatibre
"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"	
Test levult	s Only".
Model Seven 223 cal - Design	Current Vandore) Free Custing
- Prepare	d by: <u>C. Stephens</u>
Date Pr	epared:
. '	
Proofread and Cleared By:	•
J.H. Hennings , R.E. Nightingale, Foreman-Test Lab Foreman-Measurement Lab	
Signat	ure Date
C.E. Ritchie,	
Sr. Supervisor - Testing, Signat Meas. & Mech. Analysis Lab	re Date

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 83/24/
REPORT TITLE: Such as and
MODEL(S): 7
GAUGE OR CALIBER: 123 cal
DATE:
WORK ORDER NO.: C-1861-000
PARTNAME: Magazine Follower
DESIGNER/ENGINEER: D. Bullis
TEST TYPE:
1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED
3. Function test - No. of guns testedO
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: /O
NO. OF ROUNDS PER GUN: 126
TOTAL ROUNDS FIRED IN TEST: 1260
AMMO TYPE: MAGS; TARGET:

CENTER FIRE X

RIM FIRE____

Remington arms Co. Inc.	Report # 831291
arms Research Devision	1
1 June 1983	
To: D. Rullis	
From: C Steplens	_
From: C Steplens (Test Results Only)	
Text Title.	
Text Title:	)endor)
Reason For Test:	
Reason Fortest:  To function test new m/7 magazi	ne follower corrently
being vendor produced.	
Test Procedure.	
The ten refles were live round feed for	uncteon tested in
R&D tal, in slow, mederum, and fort or	
available types of amminition.	1 10 1 40
All ten rubles were also field brinct	ion tested at the
Show Fish & Dame Club ring the se	ven covaliable Types
of ommention.	
Test Perults:	
The results from the live feed and be	Id brunction test
indicate that the molfunction rate is of	
limits. Most molbunctions occured on the	
of the magazine and was a stem or shell	
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	831291
Test Results: (Con't)	
The percentage on the live feed text of on the first round out of the magazine was for the feeld function text 55.2	molfunctions 77.5 and
for the field function test 55. 2	
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REPROT NO.1 831291

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## RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

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Developmental	Safety Related	Litigation
Design Acceptance	Competitive Evel	ustion Werenouse Audit
Pre-Pilot	New Design	Cost Reduction
Pflot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S.	REPORT REQ'D.	
MODEL: 7 LWT	116	DATE REQUESTED: 5-9-83
CAL or GAGE: 223	FORMAL	DATE NEEDED BY: ASAP
	TEST	REQUESTED BY: BULLIS
BARREL TYPE:	RESULTS	
PROOFED: YESNO		WORK ORDER NO: (1-186)-000
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152 153	157 158	e e
NOTE: NO firearms or parts will be tested	`	DATE COMPLETED: 5-29-53
accompanied by a Work Request, a		TEST COMPLETED BY:
the Labs by the designer or enginee	r. All Work Requests are	REPORT DATE: 6/1/23 TRO
to be filled out in detail. No Except	tions.	

# RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

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Developmental	Safety Related	Litigation
Design Acceptance	Competitive Evalu	uation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pllot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S.  MODEL: 7607  CAL or GAGE: 223  BARREL TYPE: (usb.)  PROOFED: YESNO	FORMAL TEST RESULTS ONLY	DATE REQUESTED: 3-4-83  DATE NEEDED BY: A.S.A.P. (3-14-13)  REQUESTED BY: D. BUCLIS  WORK ORDER NO: 4-1856-000
	TEST TYPE	
Strength Test Ammuniti	ion Test Dry Cycle 1	TestPhoto/Video
V Function Test Environm	ental Test Messuremen	nts Other
Accuracy Test Customer	Complaint Endurance	Test
EXPLAIN IN DETAIL THE REASON FOR T	HISTEST: NEW PRODUCT	ACCEPTANCE
LEN CALIBER INTRODU	CTION TO M/TLWT	LING.
737 F. G. C. 1107	£ 40.44.	
TEST FOR FUNCTION	•	,
MAGAZINE FOLLOW.	ER # 6, !	
	•	23
	-	
	• • • • • • • • • • • • • • • • • • •	
-GUNS REQUIRED: 7600 149	7600156	
150	157 154	
153	155	
154	158	
NOTE: NO fireerms or parts will be tested	in the Labs unless they are	DATE COMPLETED:
accompanied by a Work Request, a	nd both are delivered to	TEST COMPLETED BY:
the Labs by the designer or enginee	r. All Work Requests are	REPORT DATE:
to be filled out in detail. No Except	tions.	

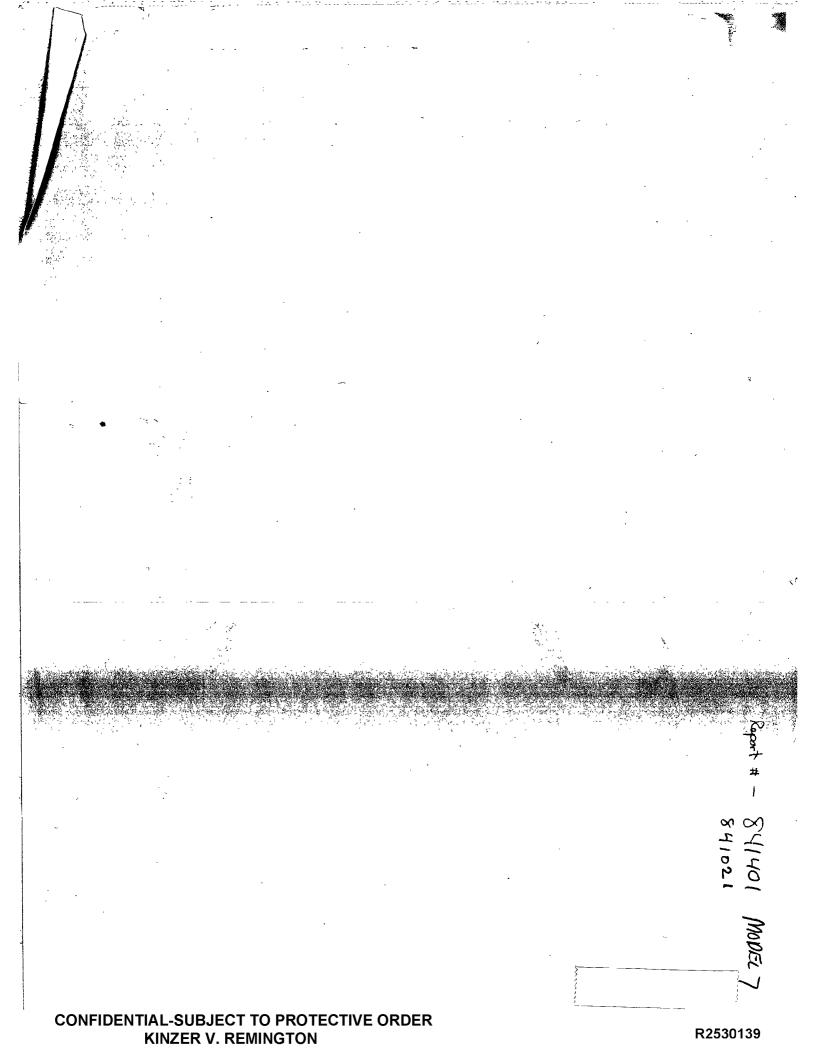
FIELD	CYCLE	TEST	 CENTERFIRE

REPROT NO.1 830632

PAGE	NO.	

PREVIOUS	INTE:	Model:	(AUTE) . 223	BERIAL NO.
ROUNDS	TEST TITLE: SUMMARY SHEET	S PER - RIFLE - AMMO TYPE -	- SHOOTER	TTL. RDS. FIRED: 180
***********		"Malfunctions	**	TTL. MALFUNCTIONS: 39 MALFUNCTION RATE: 76.1

SUMMARY SHEET BY		त्रत्याष्ट्र शायका		SPETIL	EJECT	BLOW BACK	LOCK OPER	FE FR MA	OM	STEMS MAG.	OVERRIDE	日日			'em Mbet	ı	JUMPS MAG.	R BINIS		OVERRIDE	THE CT.	TEACT	TO.	2 <u>1</u>	NATES.		IONS PER	E PER
RSIC	ELLOCHES	8 8	713136	Case Ver	DOM'T B	日子	L T'TICE	ł	i.cli Suq		POWER O	DON'T LOCK UP	HIGH	123	STEET.	T-SE-I	SHELL J	FOLLOWER	LOADING	BOLT OV	ACCION BANG UP	DON'T EXTRACT	BEDA KACES	ADJUSTMENTS	REFLACTMENTS		MALFUNCTIONS	MALF. RATE
7600149		18																		++++ 1							6	33.3
7600150	_	18				_																					$\bigcirc$	0
7600151		18																		<del>///</del>							5	27.7
7600153		18														1											0	0
7600153	_	18																									1	5.5
[1600154		18							_			<u> </u>								1111-			-				5	27.7
7600155		/8																·		11							-	11.1
7600156		18					_													1111						-		33.3
7600157		18				<u> </u>				_																	0	0
7600158	_	18			_	_														1111		,						32,2
	ļ			_	_																							
		<u> </u>	_				_									<u>.</u>												
TOTAL (FER MAL.)							<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>																	



PD-49-B

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PETERS

cc: W.H. Coleman, II

J.R. Snedeker

J.P. Linde

J.W. Bower

R.S. Murphy

D.J. Anderson

L.B. Bosquet Z.J. Kowalski

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

REPORT# 841021 WORK ORDER# 81343-929

TO: R.E. NIGHTINGALE

FROM: F.L. SUPRY

TITLE: TRIAL AND PILOT EVALUATION; MODEL 7 LWT. 308 CALIBER

WITH ALUMINUM TRIGGER GUARD ASSEMBLY.

#### ABSTRACT:

On April 10, 1984 a request was received to conduct a Trial and Pilot Evaluation on the Model 7 Lwt. 308 caliber rifle, assembled with the new design aluminum trigger guard assembly. The Trial and Pilot Evaluation consists of Visual Inspection, Accuracy, Field Function, and Endurance. All 35 rifles, from a sample lot of 35 rifles, will be utilized within the spectrum of the evaluation.

#### SCOPE OF TEST:

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

## TEST RESULTS:

The 35 rifle Trial and Pilot Evaluation was found to be unacceptable, due to the following:

- A. During the Preliminary Measurements, a burr was found on the tip of the firing pin on two of the rifles, serial# 7603193 and serial# 7604383.
- B. During the Field Function Test of the first ten rifles, one rifle, serial# 7603423 was leaving deep rings on the throat area of the fired brass.

#### COMMENTS:

The rifle, serial# 7603423 was returned to P.E. & C. The two firing pins were replaced with firing pins from from two of the rifles used in the visual inspection.

To obtain a good data base on the aluminum trigger guard, the testing that was scheduled on the remaining rifles will continue. A formal report, will be issued at the completion of the testing.

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Report No. 841021

## RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

·		
	ARE	A OF TESTING
Developmental	Safety Related	Litigation
Design Acceptance	Competitive Evalu	ation Warehouse Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S.  MODEL: 740T.  CAL or GAGE: 308  BARREL TYPE:	REPORT REQ'D.  FORMAL  TEST  RESULTS	DATE REQUESTED: 4-10-37  DATE NEEDED BY: 4-17-84  REQUESTED BY: 4 B ROOK 5
PROOFED: YESNO	ONLY	WORK ORDER NO: 81343 - 926
	TEST TYPE	
Strength Test Ammunition	on Test Dry Cycle To	est Photo/Video
Function Test Environme	ental Test Measuremen	ts Other
Accuracy Test Customer (	•	
—GUNS REQUIRED		d 308 Calibir with  1 assembly,  1050 3000 3000 31000
35 rifles -	See 2. Konskepilo	
NOTE: NO firearms or parts will be tested in	the Labs unless they are	DATE COMPLETED:
accompanied by a Work Request, an	d both are delivered to	TEST COMPLETED BY:
the Labs by the designer or engineer.	. All Work Requests are	REPORT DATE:
to be filled out in detail. No Excepti	ons.	

B-CP-CF

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

# RESEARCH TEST AND MEASUREMENT REPORT REPORT# 841401

MODEL SEVEN LWT. .308 CALIBER TRIAL AND PILOT EVALUATION

#### MODEL SEVEN LWT. .308 CALIBER TRIAL AND PILOT EVALUATION

#### ABSTRACT:

Research and Developement finds the Trial and Pilot Evaluation of the Model Seven Lwt. .308 caliber, assembled with the aluminum floor plate assembly, to be acceptable. However, eventhough there were no malfunctions related to the new design floor plate assembly, the following should be investigated:

- 1. During a Field Function Test on thirty (30) of the first Trial and Pilot rifles, ninety-nine (99) malfunctions occurred, for an overall malfunction rate of 2.4%. Seventy-two (72) malfunctions or 72.2% of the malfunctions, were "Don't Eject" malfunctions.
- 2. During a Field Function Test conducted on eight (8) of the second Trial and Pilot rifles, thirty-five (35) "Don't Eject" malfunctions occurred, for an overall malfunction rate of 3.2%. The "Don't Eject" malfunction accounted for 100% of the malfunctions occurring in the Field Test. Two (2) of the rifles, serial# 7603137 and serial# 7604294, had fifteen (15) and thirteen (13) malfunctions respectively. These two (2) rifles were turned over to PE & C. A note of explaination from PE & C is included in the appendix of this report.

Since the "Don't Eject" malfunction was so predominate during the evaluation, either greater care must be taken in production, to follow the established procedures or a change in the current procedures may be needed.

	Prepared by: Date Prepared:	
proofread and cleared by:		
R.E. NIGHTINGALE, Forem Test, Measurement & Mech		
J.R. SNEDEKER, Research Test, Measurement & Mech	-	
W.H. COLEMAN, II New Products Research Lab	o Director	

REP.#841401

W.O.#81343-926

### MODEL SEVEN LWT 308 CALIBER TRIAL AND PILOT EVALUATION

TO: R.E. NIGHTINGALE FROM: F.L. SUPRY

#### INTRODUCTION:

On May 16, 1984 a request to conduct a Trial and Pilot evaluation on the Model 7 Lwt. 308 caliber rifle, assembled with the new design aluminum trigger guard assembly, was recieved by the Research Test Lab. A forty (40) rifle, production run sample will be used.

Due to the favorable results of an extensive endurance, accuracy, preliminary measurements, and visual inspection completed on the last production run samples of the rifle this Trial and Pilot will be limited to Jack Function and Field Function.

The results of the testing done on Previous sample will be included in this report.

#### SCOPE OF TEST:

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

## TEST RESULTS: (Previous sample)

Thirty (30) rifles were subjected to a 135 round Field Function Test. Ninty-nine (99) malfunctions occurred, for an overall malfunction rate of 2.4%.

Fifteen (15) rifles were fired to 335 rounds, seven (7) rifles were fired to 1005 rounds, and three (3) rifles were fired to 2035 rounds. No breakages occurred. No floor plate openings occurred.

## TEST RESULTS: (New sample)

The forty (40) rifle sample was found to meet the Remington Specifications set by the Research Design Section.

All forty (40) rifles were subjected to twenty (20) rounds of Remington ammunition, in a Jack Function test. No malfunctions occurred.

Eight of the rifles were subjected to a 135 round Field Function test. Thirty-five (35) "don't eject malfunctions" occurred, for an overall malfunction rate of 3.2%.

-4-

## REPORT TEXT:

- 1. VISUAL INSPECTION: (5 rifles) (Previous sample)
  - A. The visual inspection committee found no major deterrent in the appearance of the rifles inspected.
  - B. The following general comments were made in overall reference to the rifles:
    - a. Several of the rifles had a dent on the top, rear of the stock, where the stock hit against the stop board of the gun truck.
    - b. The checkering over-runs were primarily located at the rear of the fore end pattern.
    - c. The rifles used in the visual inspection were as follows:

7603926 7603156 7603161 7603441 7603126

- d. Comments recorded for each individual rifle are located in the appendix of this report.
- 2. PRELIMINARY MEASUREMENTS: (30 rifles)(Previous sample)
  - A. During the Preliminary Measurements, a burr was found on the tip of the firing pin of two of the rifles. The firing pins were replaced with firing pins from two of the rifles used in the visual inspection.
  - B. The following averages were established for the 30 rifles:

a. Floor Plate opening force:
b. Trigger Pull:
c. Firing Pin Indent:
d. Headspace:
3.0 pounds
3.75 pounds
.024 inches
d. Headspace:
.003 inches

C. Preliminary Measurement results per individual rifle are located in the appendix of this report.

REPORT TEXT: (continued)

- 3. ACCURACY: (Previous sample)
  - A. Nineteen (19) rifles were tested for 100 yard accuracy and the following averages were established:

a. Group Size:
b. Horizontal Spread:
c. Vertical Spread:
1.69 inches

- B. Accuracy results per individual rifle are located in the appendix of this report.
- 4. FIELD FUNCTION: (Previous sample)
  - A. Thirty (30) rifles were subjected to a 135 round per rifle, Field Function Test and the following results were obtained:
    - a. Twenty (20) rifles experienced no malfunctions.
    - b. Ninety-nine malfunctions occurred, for an overall malfunction rate was 2.4%.
    - c. Seventy-two (72) of the malfunctions were "Don't Eject" malfunctions.
    - d. One rifle had a rough chamber. (Refer to report# 841021)
- 5. FIELD FUNCTION: (New sample)
  - A. All forty (40) rifles were subjected to the loading and firing of twenty (20) rounds of Remington, 180 grain soft point, ammunition, prior to the Field Function Test. There were no malfunctions on any of the rifles.
  - B. Eight of the 40 rifles were subjected to a 135 round per rifle, Field Function Test, and the following results were obtained:
    - a. Two (2) of the rifles had no malfunctions.
    - b. The overall malfunction rate was 3.2%.
    - c. The malfunctions were all "don't eject" malfunctions. At each occurance the plunger was found to be stuck down.
    - d. Two (2) rifles, serial# 7603137 and serial# 7604294, accounted for twenty-eight (28) of the malfunctions. These two (2) rifles were turned over to J.B. Willoughby for examination. A note of explaination is included in the appendix of this report.

## REPORT TEXT: (continued)

- 6. ENDURANCE: (Previous sample)
  - A. Fifteen (15) rifles were subjected to an additional 200 round endurance test, and the following results were obtained:
    - a. There were no floor plate openings.
    - b. The overall malfunction rate for this portion of the endurance test was 0.76%.
    - c. Twelve (12) of the rifles experienced no malfunctions.
    - d. The three rifles that experienced malfunctions, experienced them as follows:
      - i. 7604807 5 stem low (2.5% malfunction rate)
      - ii. 7603207 12 don't eject (6.0% malfunction rate) At each occurence, the ejector was stuck down due to shaved brass.
      - iii. 7603389 2 stem high 4 follower tip down (3.0% malfunction rate)
  - B. Seven (7) of the fifteen (15) rifles were subjected to an additional 700 round endurance test, and the following results were obtained:
    - a. There were no floor plate openings.
    - b. The overall malfunction rate for this portion of the endurance test was 0.8%.
    - c. Five (5) of the rifles had no malfunctions.
    - d. The two (2) rifles that experienced the malfunctions, experienced them as follows:
      - i. 7604098 4 stem high
        2 stem right
        1 bolt override (1.0% malfunction rate)
      - ii. 7603389 8 don't eject 2 stem high 7 stem low 1 stem right
        - 16 follower tip down (4.8% malfunction rate)

## TEST RESULTS: (continued)

- C. Three (3) of the seven (7) rifles were subjected to an additional 1000 round endurance test, and the following results were obtained:
  - a. There were no floor plate openings.
  - b. The overall malfunction rate for this portion of the endurance test was 0.2%.
  - c. Two (2) of the rifles had no malfunctions.
  - d. The rifle that experienced the malfunctions, experieced them as follows:
    - i. 7603153 2 stem high
      2 stem right
      1 follower tip down
      1 bolt override (0.6% malfunction rate)

## 7. JACK FUNCTION: (New sample)

- A. Each of the forty rifles were subjected to twenty rounds of Remington ammunition, and no malfunctions occurred.
- B. There were no rough chambers in any of the sample rifles.

## TEST PROCEDURE:

- 1. VISUAL INSPECTION: (Previous sample)
  - A. The Visual Inspection Committee consisted of Z. Kowalski, B. Bosquet, (P.E. & C.); J. Snedeker, F. Supry, (Research); and J. Brooks, (consultant).
  - B. Five (5) rifles were selected for the visual inspection, using random number tables, from a sample lot of 35 rifles.
  - C. 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: (Previous sample)
  - A. Each rifle was checked for magnaflux and proof stamps.
  - B. The headspace was checked on each rifle, using graduated headspace gauges.

## TEST PROCEDURE: (continued)

## 2. PRELIMINARY MEASUREMENTS: (continued)

- C. The floor plate opening force was checked, using a ten (10) pound push pull gauge. Three readings were taken on each rifle and an average calculated.
- D. Trigger pull force measurements were taken, using a ten (10) pound spring scale. Three readings were taken on each rifle and an average calculated.
- E. Firing Pin Indent measurements were taken, using annealed copper crushers and a calibrated dial indicator. Three measurements were taken on each rifle and an average calculated.

## 3. ACCURACY: (Previous sample)

A. The following nineteen (19) rifles were used in the 100 yard accuracy test:

7602999	7603374	7603110	7604374	7604807
7603362	7603323	7603340	7603609	7603482
7603389	7603003	7603153	7604098	7603155
7603357	7603342	7603326	7603430	

- B. The accuracy was shot by R. Williams, Research Test Lab, at the R & D 100 yard range.
- C. Weaver mounts and rings were used in conjunction with a Lyman All American 20X 1/8 inch dot scope.
- D. Remington ammunition, index R308W2; code W09F D4501, 180 grain 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 two (2), five (5) shot groups were shot with each rifle. 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, horizontal spread, and vertical spread. The averages were calculated for each rifle.

## 4. FIELD FUNCTION: (Previous sample)

- A. Thirty (30) of the rifles were subjected to the loading and firing of 135 rounds of Remington and competitive ammunition. The round robin method of firing the rifles was used. 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: R308W1 150-psp code# S22K D7069 R308W3 180-psp code# W17F D7743

b. Winchester: X3081 110-psp code# 79SE12 5Q X3085 150-sp code# 24UE81

X3085 150-sp code# 24UE81 X3086 180-sp code# 68TC90 83 X3084 200-st code# 52TF80

c. Federal: 308A 150-psp code# 5A 1245

308B 180-psp code# 5B 1104 P308C 165-bt code# 32A 3118

C. All malfunctions were recorded; per rifle, per ammunition type, per feeding cycle speed, and per shooter. Individual and overall malfunction rates were calculated.

## 5. FIELD FUNCTION: (New sample)

A. The same procedure, that was used on the Previous sample, was followed to conduct a field function test on eight (8) rifles from the New sample.

## 6. 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.
- e. A copy of the note explaining the findings of the examination of the two rifles, serial# 7603137 and serial# 7604294.
- f. A copy of Report# 841021

-10-

APPENDIX
MODEL 7 LWT. 308 CALIBER WITH ALUMINUM TRIGGER GUARD ASSEMBLY

## VISUAL INSPECTION:

#### **GENERAL:**

- 1. A slight mar was noticed on the top rear of the stocks, on each of the rifles, from the rifles hitting on the stop board of the gun truck.
- 2. The checkering over runs were primarily located at the rear of the patterns.

## COMMENTS PER INDIVIDUAL RIFLE:

- 1. 7603926 Some checkering over runs on all four points, at the rear of the fore end pattern.
- 2. 7603441 Dent in the stock, about an inch in front of the rear swivel screw.

The checkering in the grip area has slight over and under runs.

Bright spot on the rear of the trigger guard, from the head of the screw hitting the trigger guard.

The repaired crown appears rough.

- 3. 7603156 Polish scratches on the floor plate cover.
- 4. 7603161 White marks on the inside of the floor plate, on the side of the trigger bow.

Two dents on the left side of the stock, below the rear sight.

The repaired crown appears rough.

5. 7603126 - Dust in the finish.

Dent in the right side of the floor plate.

## PRELIMINARY MEASUREMENTS:

SERIAL#		D SPACE (in)	F	P INDENT	TRIGGER PUL	L	F PLATE O	PENING
7602160		000		000				
7603160		.002		.023	4.00		3.00	
7603374		.005		.0235	3.00		3.00	
7603423		.005		.0235	3.50		3.00	
7603323		.004		.0215	4.00		3.00	
7603340		.001		.0235	4.00		3.00	
7603207		.005		.024	3.25		3.25	
7603110		.004		.024	3.50		3.00	
7603616		.002		.0245	3.25		3.00	
7603153		.001		.025	4.50		3.00	
7603389		.004		.023	3.00		3.25	
7604264		.006		.0225	3.25		2.75	
7603882		.005		.021	3.75		3.00	
7603326		.003		.0245	3.75		2.75	
7603774		.003		.0225	3.25		2.75	
7603342		.004		.024	4.00		3.00	
7603003		.003		.023	3.25		3.00	
7603357		.002		.025	3.50		3.00	
7603155		.004		.023	3.75		3.25	
7603453		.002		.023	3.75		3.25	
7604374		.005		.024	4.25		3.00	
7604098		.005		.0245	4.00		3.00	
7604807		.001		.024	3.50		2.75	
7603482		.004		.023	3.75		3.00	
7603430		.005		.0255	4.25		3.00	
7603609		.002		.024	4.50		3.00	
7603362		.004		.025	4.75		2.75	
7603262		.002		.023	3.00		3.00	
7602999		.002		.0255	4.50		4.00	
7604283		.005		.024	3.75		3.00	
7603193		.002		.024	4.00		3.00	
AVERAGE	=	.003		.024	3.75		3.00	

## ACCURACY PER INDIVIDUAL RIFLE:

SERIA	L#	GROUP SIZE (in.)	HORIZONTAL (in.)	VERTICAL (in.)
76031	55	1.2 1.5	1.1 1.2	0.5 1.3
averag	ge =	1.35	1.15	0.9
760409	98	1.3	1.0	1.0
averaș	ge =	2.5 1.9	1.9 1.45	2.4 1.7
76033	57	1.9	1.7	0.8
avera	ge =	2.5 2.2	2.4 2.05	1.6 1.2
76033	26	2.1	1.0	1.9
avera	ge =	3.1 2.6	2.8 1.9	2.1 2.0
76034:	30	2.8	1.9	2.0
averaș		2.3 2.55	2.0 1.95	2.3
760334	42	2.6	2.1	1.9
avera		2.6	1.6 1.85	2.2 2.05
760348	92	2.3	1.8	1.7
averag		3.3 2.8	3.1 2.45	1.5 1.6
760348	0.0	1.7	1 /	1.1
700340	32	2.0	1.4 1.4	1.9
avera	ge =	1.85	1.4	1.5
76033	89	2.0 3.2	1.1 3.2	1.7 2.3
avera	ge =	2.6	2.15	2.3

ACCURACY PER INDIVIDUAL RIFLE: (continued)

SERIAL#		GROUP SIZE	HORIZONTAL	VERTICAL
7603003		2.1 3.2	2.0 3.1	1.2 1.5
average	=	2.65	2.55	1.35
7603153		2.3	2.1	1.1
average	=	3.0 2.65	3.0 2.55	1.3 1.2
7903323		2.2	1.9	1.9
average	=	2.0 2.1	1.1 2.0	1.9 1.9
7603362		2.9	2.8	1.4
average	=	2.5 2.7	1.8 2.3	1.9 1.65
7603340		2.8	2.6	1.1
average	=	2.2 2.5	1.0 1.8	2.0 1.55
7603110		2.3	2. 2	1 1
average	=	2.3 2.9 2.6	2.3 1.4 1.85	1.1 2.6 1.85
7404074				
7604374 average	=	1.6 2.7 2.15	1.4 0.6 1.0	1.3 2.6 1.95
			1.0	1.95
7603374	_	2.3	1.6 2.3	2.1 1.3
average	=	2.3	1.95	1.7
7604807		1.9	1.7 2.5	1.0 1.8
average	=	2.4	2.1	1.4
7602999		2.8 2.3	1.9 0.9	2.4 2.3
average	=	2.55	1.4	2.35

## DON'T SAY IT-WRITE IT

TO L.B. BOSQUET

From J.B. MILLOUENBY

Date 5-3/-89

RE: M/1 E. S.B.

BOTH BOLTS HAVE A NOTICEABLE BURE AROUND THE EJECTRE
HOLE THAT SHAVES BEASS FROM THE SHELL HEAD & DEPOSITS IT
IN THE HOLE BINDING THE EJECTOR. ALSO SER. # 3137 HAS THE
WORNG EJECTOR SPRING IN H, MID CALLS FOR A MIN. FREE LEWETH
OF 1.100 IN. THIS SPRING IS PP. 920. THE SPRING HAD BEEN CUT
OFF. I HAD IT BE ASSEMBLED WITH A FULL LEWETH SPRING # IT WORKED
FINE. THEHOLE FROM SER. # 3137 WAS NOT SCRIPPED AT THE
HEADING-TOR, # THE OTHER ONE WAS DONE IMPROPERCY. BOTH HOLE
DIAMETERS WERE O.A.
"DON'T TAKE A CHANCE, THINK SAFETY IN ADVANCE"

## RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

Developmental Design Acceptance Pre-Pilot Pilot Production Acceptance	Safety Related Competitive Evalue New Design Design Change Plant Assistance	EA OF TESTING  Litigation  Lation Warehouse Audit  Cost Reduction  Stake  Other
FIREARM STAT'S.  MODEL: Special Solution of GAGE: 308  BARREL TYPE:	FORMAL TEST RESULTS ONLY	DATE REQUESTED: 5-16-84  DATE NEEDED BY: AS AP  REQUESTED BY: LS. MURPAY  WORK ORDER NO: C-1856-000
Strength Test Ammunition  Function Test Environment Accuracy Test Customer	ntal Test Measuremen	Other
Please perform on the sample of		rial and Pilot lest
-GUNS REQUIRED: Synlice		
NOTE: NO firearms or parts will be tested in accompanied by a Work Request, and the Labs by the designer or engineer, to be filled out in detail. No Exception	d both are delivered to All Work Requests are	TEST COMPLETED BY: RW, FS REPORT DATE:

REPORT# 841021 WORK ORDER# 81343-929

TO: R.E. NIGHTINGALE

FROM: F.L. SUPRY

TITLE: TRIAL AND PILOT EVALUATION; MODEL 7 LWT. 308 CALIBER WITH ALUMINUM TRIGGER GUARD ASSEMBLY.

#### ABSTRACT:

On April 10, 1984 a request was received to conduct a Trial and Pilot Evaluation on the Model 7 Lwt. 308 caliber rifle, assembled with the new design aluminum trigger guard assembly. The Trial and Pilot Evaluation consists of Visual Inspection, Accuracy, Field Function, and Endurance. All 35 rifles, from a sample lot of 35 rifles, will be utilized within the spectrum of the evaluation.

## SCOPE OF TEST:

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

## TEST RESULTS:

The 35 rifle Trial and Pilot Evaluation was found to be unacceptable, due to the following:

- A. During the Preliminary Measurements, a burr was found on the tip of the firing pin on two of the rifles, serial# 7603193 and serial# 7604383.
- B. During the Field Function Test of the first ten rifles, one rifle, serial# 7603423, was leaving deep rings on the throat area of the fired brass.

## COMMENTS:

The rifle, serial # 7603423, was returned to P.E. & C. The two firing pins were replaced with firing pins from two of the rifles used in the visual inspection.

To obtain a good data base on the aluminum trigger guard, the testing that was scheduled on the remaining rifles will continue. A formal report, will be issued at the completion of the testing.

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 841401								
REPORT TITLE: MODEL SEVEN LWT308 CALIBER TRIAL & PILOT								
MODEL(S): SEVEN LWT.								
GAUGE OR CALIBER: .308								
DATE: 5/30/84								
WORK ORDER NO.: 81343-926								
PART NAME: RIFLE								
DESIGNER/ENGINEER: Requested by R.S. MURPHY								
TEST TYPE:								
IEST TIFE:								
1. PHOTO LAB								
2. STRENGTH TEST-NO. OF GUNS TESTED								
3. FUNCTION TEST-NO. OF GUNS TESTED 40								
4. ACCURACY TEST-NO. OF GUNS TESTED 19								
5. MEASUREMENTS - TYPE Preliminary								
6. ENVIRONMENTAL TEST								
7. AMMUNITION TESTING & EVALUATION-TYPE								
8. VISUAL EVALUATION 5 OUT OF 40° GUN SAMPLE								
9. ENDURANCE-NO. OF GUNS TESTED: 30,15,7,3								
NO. OF ROUNDS PER GUN 135,300,1000,2000								
TOTAL ROUNDS FIRED IN TEST 15,000								
AMMO TYPE: MAGSTARGET:								
RIM FIRE CENTERFIREX								

RD-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington QUPOND



cc: W.H. Coleman, II

K.W. Soucy D.J. Anderson

R.S. Murphy

J.W. Bower J.R. Snedeker

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

RESEARCH TEST AND MEASUREMENT REPORT REPORT# 841401

MODEL SEVEN LWT. .308 CALIBER TRIAL AND PILOT EVALUATION

## MODEL SEVEN LWT. .308 CALIBER TRIAL AND PILOT EVALUATION

## ABSTRACT:

Research and Developement finds the Trial and Pilot Evaluation of the Model Seven Lwt. .308 caliber, assembled with the aluminum floor plate assembly, to be acceptable. However, although there were no malfunctions related to the new design floor plate assembly, the following should be investigated, by production:

- 1. During a Field Function Test on thirty (30) of the first Trial and Pilot rifles, ninety-nine (99) malfunctions occurred, for an overall malfunction rate of 2.4%. Seventy-two (72) malfunctions or 72.2% of the malfunctions, were "Don't Eject" malfunctions.
- 2. During a Field Function Test conducted on eight (8) of the second Trial and Pilot rifles, thirty-five (35) "Don't Eject" malfunctions occurred, for an overall malfunction rate of 3.2%. The "Don't Eject" malfunction accounted for 100% of the malfunctions occurring in the Field Test. Two (2) of the rifles, serial# 7603137 and serial# 7604294, had fifteen (15) and thirteen (13) malfunctions respectively. These two (2) rifles were turned over to PE & C. A note of explaination from PE & C is included in the appendix of this report.

Since the "Don't Eject" malfunction was so predominate during the evaluation, either greater care must be taken in production, to follow the established procedures or a change in the current procedures may be needed.

Prepared by: F.L. SUPRY Date Prepared: 5/30/84

proofread and cleared by:

R.E. NIGHTINGALE, Foreman

Test, Measurement & Mech. Analysis Lab

J.R. SNEDEKER, Research Supervisor

Test, Measurement & Mech. Analysis Lat

W.H. COLEMAN, II

New Products Research Lab Director

-3-

REP.#841401

W.O.#81343-926

## MODEL SEVEN LWT 308 CALIBER TRIAL AND PILOT EVALUATION

TO: R.E. NIGHTINGALE FROM: F.L. SUPRY

## INTRODUCTION:

On May 16, 1984 a request to conduct a Trial and Pilot evaluation on the Model 7 Lwt. 308 caliber rifle, assembled with the new design aluminum trigger guard assembly, was recieved by the Research Test Lab. A forty (40) rifle, production run sample was used.

Due to the favorable results of an extensive endurance, accuracy, preliminary measurements, and visual inspection completed on the last production run samples of the rifle this Trial and Pilot will be limited to Jack Function and Field Function.

The results of the testing done on Previous sample will be included in this report.

## SCOPE OF TEST:

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

## TEST RESULTS: (Previous sample)

Thirty (30) rifles were subjected to a 135 round Field Function Test. Ninty-nine (99) malfunctions occurred, for an overall malfunction rate of 2.4%.

Fifteen (15) rifles were fired to 335 rounds, seven (7) rifles were fired to 1005 rounds, and three (3) rifles were fired to 2035 rounds. No breakages occurred. No floor plate openings occurred.

## TEST RESULTS: (New sample)

The forty (40) rifle sample was found to meet the Remington Specifications set by the Research Design Section.

All forty (40) rifles were subjected to twenty (20) rounds of Remington ammunition, in a Jack Function test. No malfunctions occurred.

Eight of the rifles were subjected to a 135 round Field Function test. Thirty-five (35) "don't eject" malfunctions occurred, for an overall malfunction rate of 3.2%.

-4-

#### REPORT TEXT:

- 1. VISUAL INSPECTION: (5 rifles) (Previous sample)
  - A. The visual inspection committee found no major items in the appearance of the rifles inspected.
  - B. The following general comments were made in overall reference to the rifles:
    - a. Several of the rifles had a dent on the top, rear of the stock, where the stock hit against the stop board of the gun truck.
    - b. The checkering over-runs were primarily located at the rear of the fore end pattern.
    - c. The rifles used in the visual inspection were:

7603926 7603156 7603161 7603441 7603126

- d. Comments recorded for each individual rifle are located in the appendix of this report.
- 2. PRELIMINARY MEASUREMENTS: (30 rifles)(Previous sample)
  - A. During the Preliminary Measurements, a burr was found on the tip of the firing pin of two of the rifles. The firing pins were replaced with firing pins from two of the rifles used in the visual inspection.
  - B. The following averages were established for the 30 rifles:

a. Floor Plate opening force:
b. Trigger Pull:
c. Firing Pin Indent:
d. Headspace:
3.0 pounds
3.75 pounds
.024 inches
d. Headspace:
.003 inches

C. Preliminary Measurement results per individual rifle are located in the appendix of this report.

REPORT TEXT: (continued)

- 3. ACCURACY: (Previous sample)
  - A. Nineteen (19) rifles were tested for 100 yard accuracy and the following averages were established:

a. Group Size:
b. Horizontal Spread:
c. Vertical Spread:
1.69 inches

- B. Accuracy results per individual rifle are located in the appendix of this report.
- 4. FIELD FUNCTION: (Previous sample)
  - A. Thirty (30) rifles were subjected to a 135 round per rifle, Field Function Test and the following results were obtained:
    - a. Twenty (20) rifles experienced no malfunctions.
    - b. Ninety-nine malfunctions occurred, for an overall malfunction rate of 2.4%.
    - c. Seventy-two (72) of the malfunctions were "Don't Eject" malfunctions.
    - d. One rifle had a rough chamber. (Refer to report# 841021)
- 5. FIELD FUNCTION: (New sample)
  - A. All forty (40) rifles were subjected to the loading and firing of twenty (20) rounds of Remington, 180 grain soft point, ammunition, prior to the Field Function Test. There were no malfunctions on any of the rifles.
  - B. Eight of the 40 rifles were subjected to a 135 round per rifle, Field Function Test, and the following results were obtained:
    - a. Two (2) of the rifles had no malfunctions.
    - b. The overall malfunction rate was 3.2%.
    - c. The malfunctions were all "don't eject" malfunctions. At each occurance the plunger was found to be stuck down.
    - d. Two (2) rifles, serial# 7603137 and serial# 7604294, accounted for twenty-eight (28) of the malfunctions. These two (2) rifles were turned over to J.B. Willoughby for examination. A note of explaination is included in the appendix of this report.

## REPORT TEXT: (continued)

- 6. ENDURANCE: (Previous sample)
  - A. Fifteen (15) rifles were subjected to an additional 200 round endurance test, and the following results were obtained:
    - a. There were no floor plate openings.
    - b. The overall malfunction rate for this portion of the endurance test was 0.76%.
    - c. Twelve (12) of the rifles experienced no malfunctions.
    - d. The three rifles that experienced malfunctions, experienced them as follows:
      - i. 7604807 5 stem low (2.5% malfunction rate)
      - ii. 7603207 12 don't eject (6.0% malfunction rate)
        At each occurence, the ejector was stuck down due to shaved brass.
      - iii. 7603389 2 stem high
         4 follower tip down (3.0% malfunction rate)
  - B. Seven (7) of the fifteen (15) rifles were subjected to an additional 700 round endurance test, and the following results were obtained:
    - a. There were no floor plate openings.
    - b. The overall malfunction rate for this portion of the endurance test was 0.8%.
    - c. Five (5) of the rifles had no malfunctions.
    - d. The two (2) rifles that experienced the malfunctions, experienced them as follows:
      - i. 7604098 4 stem high 2 stem right
        - 1 bolt override (1.0% malfunction rate)
      - ii. 7603389 8 don't eject
        2 stem high
        7 stem low
        1 stem right
        - 16 follower tip down (4.8% malfunction rate)

## TEST RESULTS: (continued)

- C. Three (3) of the seven (7) rifles were subjected to an additional 1000 round endurance test, and the following results were obtained:
  - a. There were no floor plate openings.
  - b. The overall malfunction rate for this portion of the endurance test was 0.2%.

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- c. Two (2) of the rifles had no malfunctions.
- d. The rifle that experienced the malfunctions, experieced them as follows:
  - i. 7603153 2 stem high 2 stem right 1 follower tip down 1 bolt override - (0.6% malfunction rate)
- 7. JACK FUNCTION: (New sample)
  - A. Each of the forty rifles were subjected to twenty rounds of Remington ammunition, and no malfunctions occurred.
  - B. There were no rough chambers in any of the sample rifles.

## TEST PROCEDURE:

- 1. VISUAL INSPECTION: (Previous sample)
  - A. The Visual Inspection Committee consisted of Z. Kowalski, B. Bosquet, (P.E. & C.); J. Snedeker, F. Supry, (Research); and J. Brooks, (consultant).
  - B. Five (5) rifles were selected for the visual inspection, using random number tables, from a sample lot of 35 rifles.
  - C. 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: (Previous sample)
  - A. Each rifle was checked for magnaflux and proof stamps.
  - B. The headspace was checked on each rifle, using graduated headspace gauges.

## TEST PROCEDURE: (continued)

## 2. PRELIMINARY MEASUREMENTS: (continued)

- C. The floor plate opening force was checked, using a ten (10) pound push pull gauge. Three readings were taken on each rifle and an average calculated.
- D. Trigger pull force measurements were taken, using a ten (10) pound spring scale. Three readings were taken on each rifle and an average calculated.
- E. Firing Pin Indent measurements were taken, using annealed copper crushers and a calibrated dial indicator. Three measurements were taken on each rifle and an average calculated.
- 3. ACCURACY: (Previous sample)
  - A. The following nineteen (19) rifles were used in the 100 yard accuracy test:

7602999	7603374	7603110	7604374	7604807
7603362	7603323	7603340	7603609	7603482
7603389	7603003	7603153	7604098	7603155
7603357	7603342	7603326	7603430	

- B. The accuracy was shot by R. Williams, Research Test Lab, at the R & D 100 yard range.
- C. Weaver mounts and rings were used in conjunction with a Lyman All American 20X 1/8 inch dot scope.
- D. Remington ammunition, index R308W2; code W09F D4501, 180 grain 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 two (2), five (5) shot groups were shot with each rifle. 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, horizontal spread, and vertical spread. The averages were calculated for each rifle.

## 4. FIELD FUNCTION: (Previous sample)

- A. Thirty (30) of the rifles were subjected to the loading and firing of 135 rounds of Remington and competitive ammunition. The round robin method of firing the rifles was used. 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: R308W1 150-psp code# S22K D7069 R308W3 180-psp code# W17F D7743

b. Winchester: X3081 110-psp code# 79SE12 5Q X3085 150-sp code# 24UE81 X3086 180-sp code# 68TC90 83 X3084 200-st code# 52TF80

c. Federal: 308A 150-psp code# 5A 1245 308B 180-psp code# 5B 1104 P308C 165-bt code# 32A 3118

- C. All malfunctions were recorded; per rifle, per ammunition type, per feeding cycle speed, and per shooter. Individual and overall malfunction rates were calculated.
- 5. FIELD FUNCTION: (New sample)
  - A. The same procedure, that was used on the Previous sample, was followed to conduct a field function test on eight (8) rifles from the New sample.

## 6. 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.
- e. A copy of the note explaining the findings of the examination of the two rifles, serial# 7603137 and serial# 7604294.
- f. A copy of Report# 841021

TandP_841401

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APPENDIX
MODEL 7 LWT. 308 CALIBER WITH ALUMINUM TRIGGER GUARD ASSEMBLY

#### VISUAL INSPECTION:

#### GENERAL:

- 1. A slight mar was noticed on the top rear of the stocks, on each of the rifles, from the rifles hitting on the stop board of the gun truck.
- 2. The checkering over runs were primarily located at the rear of the patterns.

#### COMMENTS PER INDIVIDUAL RIFLE:

- 1. 7603926 Some checkering over runs on all four points, at the rear of the fore end pattern.
- 2. 7603441 Dent in the stock, about an inch in front of the rear swivel screw.

The checkering in the grip area has slight over and under runs.

Bright spot on the rear of the trigger guard, from the head of the screw hitting the trigger guard.

The repaired crown appears rough.

- 3. 7603156 Polish scratches on the floor plate cover.
- 4. 7603161 White marks on the inside of the floor plate, on the side of the trigger bow.

Two dents on the left side of the stock, below the rear sight.

The repaired crown appears rough.

5. 7603126 - Dust in the finish.

Dent in the right side of the floor plate.

#### PRELIMINARY MEASUREMENTS:

SERIAL#	HD SPACE (in)	FP INDENT (in)	TRIGGER PULL (1bs)	F PLATE OPENING (1bs)
7603160	.002	.023	4.00	3.00
<b>7</b> 603374	.005	.0235	3.00	3.00
7603423	.005	.0235	3.50	3.00
7603323	.004	.0215	4.00	3.00
7603340	.001	.0235	4.00	3.00
7603207	.005	.024	3.25	3.25
7603110	.004	.024	3.50	3.00
7603616	.002	.0245	3.25	3.00
7603153	.001	.025	4.50	3.00
7603389	.004	.023	3.00	3.25
7604264	.006	.0225	3.25	2.75
7603882	.005	.021	3.75	3.00
7603326	.003	.0245	3.75	2.75
7603774	.003	.0225	3.25	2.75
7603342	.004	.024	4.00	3.00
7603003	.003	.023	3.25	3.00
7603357	.002	.025	3.50	3.00
7603155	.004	.023	3.75	3.25
7603453	.002	.023	3.75	3.25
7604374	.005	.024	4.25	3.00
7604098	.005	.0245	4.00	3.00
7604807	.001	.024	3.50	2.75
7603482	.004	.023	3.75	3.00
7603430	.005	.0255	4.25	3.00
7603609	.002	.024	4.50	3.00
7603362	.004	.025	4.75	2.75
7603262	.002	.023	3.00	3.00
7602999	.002	.0255	4.50	4.00
7604283	.005	.024	3.75	3.00
7603193	.002	.024	4.00	3.00
AVERAGE	<b>=</b> .003	.024	3.75	3.00

#### ACCURACY PER INDIVIDUAL RIFLE:

SERIAL#		GROUP SIZE (in.)	HORIZONTAL (in.)	VERTICAL (in.)
7603155	=	1.2 1.5 1.35	1.1 1.2 1.15	0.5 1.3 0.9
average	_	1.33	1.13	, ,
7604098		1.3 2.5	1.0 1.9	1.0
average	=	1.9	1.45	1.7
7603357		1.9	1.7	0.8
average	=	2.5 2.2	2.4 2.05	1.6 1.2
7603326		2.1 3.1	1.0	1.9. 2.1
average	=	2.6	1.9	2.0
7603430		2.8 2.3	1.9	2.0 2.3
average	=	2.55	1.95	2.25
7603342		2.6	2.1 1.6	1.9 2.2
average	-	2.6	1.85	2.05
7603482		2.3 3.3	1.8 3.1	1.7 1.5
average	*	2.8	2.45	1.6
7603482		1.7	1.4 1.4	1.1 1.9
average	=	1.85	1.4	1.5
7603389		2.0 3.2	1.1 3.2	1.7 2.3
average	=	2.6	2.15	2.0

ACCURACY PER INDIVIDUAL RIFLE: (continued)

SERIAL#		GROUP SIZE	. HORIZONTAL	VERTICAL
7603003		2.1	2.0	1.2
		3.2	3.1	1.5
average	=	2.65	2.55	1.35
J			2.00	
7603153		2.3	2.1	1.1
		3.0	3.0	1.3
average	=	2.65	2.55	1.2
J			2.00	
7903323		2.2	1.9	1.9
		2.0	1.1	1.9
average	=	2.1	2.0	1.9
				1.,
7603362		2.9	2.8	1.4
		2.5	1.8	1.9
average	=	2.7	2.3	1.65
				2,03
7603340		2.8	2.6	1.1
		2.2	1.0	2.0
average	=	2.5	1.8	1.55
_				
-				
7603110		2.3	2.3	1.1
7003110		2.9		
			1.4	2.6
average	•	2.6	1.85	1.85
7604374		1.6	1.4	1.3
		2.7	0.6	2.6
average	#	2.15	1.0	1.95
7603374		2.3	1.6	2.1
7003374				
		2.3	2.3	1.3
average	=	2.3	1.95	1.7
7604807		1.9	1.7	1.0
		2.9	2.5	1.8
****	_			
average	=	2.4	2.1	1.4
7/0-000				
7602999		2.8	1.9	2.4
		2.3	0.9	2.3
average	=	2.55	1.4	2.35
6 -			=- · ·	2.22

REPORT# 841021 WORK ORDER# 81343-929

TO: R.E. NIGHTINGALE

FROM: F.L. SUPRY

TITLE: TRIAL AND PILOT EVALUATION; MODEL 7 LWT. 308 CALIBER WITH ALUMINUM TRIGGER GUARD ASSEMBLY.

#### ABSTRACT:

On April 10, 1984 a request was received to conduct a Trial and Pilot Evaluation on the Model 7 Lwt. 308 caliber rifle, assembled with the new design aluminum trigger guard assembly. The Trial and Pilot Evaluation consists of Visual Inspection, Accuracy, Field Function, and Endurance. All 35 rifles, from a sample lot of 35 rifles, will be utilized within the spectrum of the evaluation.

#### SCOPE OF TEST:

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

#### TEST RESULTS:

The 35 rifle Trial and Pilot Evaluation was found to be unacceptable, due to the following:

- A. During the Preliminary Measurements, a burr was found on the tip of the firing pin on two of the rifles, serial# 7603193 and serial# 7604383.
- B. During the Field Function Test of the first ten rifles, one rifle, serial# 7603423, was leaving deep rings on the throat area of the fired brass.

#### COMMENTS:

The rifle, serial# 7603423, was returned to P.E. & C. The two firing pins were replaced with firing pins from two of the rifles used in the visual inspection.

To obtain a good data base on the aluminum trigger guard, the testing that was scheduled on the remaining rifles will continue. A formal report, will be issued at the completion of the testing.

#### DON'T SAY IT-WRITE IT

From J. B. MILLOUGUSY

Date 5-3/-81

RE: M/1 E. S.B.

BOTH BOLTS HAVE A NOTICEABLE BIBL AROUND THE EJECTOR HOLE THAT SHAVES BLASS FROM THE SHELL HEAD & DEPOSITS IT IN THE HOLE BINDING THE EJECTOR. ALSO SER. # 3137 HAS THE WADN'S EJECTOR SPRING IN 17, MID CALLS FOR A MIN. FREE LENGTH OF 1.100 IN. THIS SPRING IS P. 920. THE SPRING HAD BEEN CUT IFF. I HAD IT BE ASSEMBLED WITH A FULL LENGTH SPRING # IT WORKED FINE. THEHOLE FROM SER. # 3137 WAS NOT SCAMPED AT THE HEADING HOR, # THE OTHER ONE WAS DONE IN PROPERCY. BOTH HILE DIAMETERS WELL QX.

"DON'T TAKE A CHANCE, THINK SAFETY IN ADVANCE"

#### RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

Pri Pri MC	evelopmental esign Acceptance a-Pilot lot roduction Acceptance  FIREARM STAT'S.  ODEL:	Safety Related	Litigation  Litigation  Warehouse Audit  Cost Reduction  Stake  Other  DATE REQUESTED: 5-7-4  DATE NEEDED BY: ASAP  REQUESTED BY: FILL SECTION  WORK ORDER NO: C-1856-00
¥ Fu	rength Test Ammunition stated in Test Environment to IN DETAIL THE REASON FOR TO  lease per form  The sample of	Measurem Complaint Endurance	TestOther
NOTE:	NO firearms or parts will be tested in accompanied by a Work Request, and the Labs by the designer or engineer.	the Labs unless they are delivered to	DATE COMPLETED: 5/25/84  TEST COMPLETED BY: RW. FS  REPORT DATE:

#### TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 841401	
REPORT TITLE: MODEL S	EVEN LWT308 CALIBER TRIAL & PILOT
MODEL(S): SEVEN LWT.	
GAUGE OR CALIBER:	.308
DATE: 5/30/84	
WORK ORDER NO.: 81	343-926
PART NAME: RIFLE	
DESIGNER/ENGINEER: R	equested by R.S. MURPHY
TEST TYPE:	
1.	PHOTO LAB
2.	STRENGTH TEST-NO. OF GUNS TESTED
3.	FUNCTION TEST-NO. OF GUNS TESTED 40
4.	ACCURACY TEST-NO. OF GUNS TESTED 19
5.	MEASUREMENTS - TYPE Preliminary
6.	ENVIRONMENTAL TEST
7.	AMMUNITION TESTING & EVALUATION-TYPE
8.	VISUAL EVALUATION 5 OUT OF 40 GUN SAMPLE
9.	ENDURANCE-NO. OF GUNS TESTED: 30,15,7,3
	NO. OF ROUNDS PER GUN 135,300,1000,2000
	TOTAL ROUNDS FIRED IN TEST 15,000
	AMMO TYPE: MAGS. TARGET:

RIM FIRE _____CENTERFIRE __X

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington **OPPORD** 

Distribution: W.H. Coleman, II

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RESEARCH TEST AND MEASUREMENT REPORT - Report No.

840971

MODEL SEVEN .308 CALIBER PRE-PILOT EVALUATION

Prepared by:

J. BAGGETTA

Date Prepared: 4/6/84

Proofread and Cleared by:

R.E. Nightingale,

Foreman - Test, Measurement Lab

J.R. Snedeker, Research Supervisor Testing, Measurement & Mech. Analysis Lab

#### TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 8409/I
REPORT TITLE: MODEL SEVEN .308 CALIBER PRE-PILOT EVALUATION
MODEL(S): SEVEN
GAUGE OR CALIBER: .308
DATE: 4/6/84
WORK ORDER NO.: C-1809
PART NAME: MODEL SEVEN .308 CALIBER PRE-PILOT
DESIGNER/ENGINEER: J.W. BOWER
TEST TYPE:
1. PHOTO LAB
2. STRENGTH TEST-NO. OF GUNS TESTED
3. FUNCTION TEST-NO. OF GUNS TESTED 6
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 105
TOTAL ROUNDS FIRED IN TEST 630
AMMO TYPE: MAGSTARGET:

RIM FIRE _____CENTERFIRE X

Report No. 840971 Page 1

TO:

J.W. BOWER

FROM:

J.A. BAGGETTA

REPORT TITLE: MODEL SEVEN .308 CALIBER PRE-PILOT EVALUATION

#### ABSTRACT

On April 6, 1984 a request was received from J.W. Bower, R&D Firearms Research Manager to evaluate Model Seven .308 Caliber pre-pilot samples.

#### SCOPE OF TEST

To field function six (6) Model Seven .308 caliber rifles, checking for floor plate latch openings and other malfunctions.

#### TEST RESULTS

#### A. Field Function

Six (6) Model Seven .308 Caliber rifles were fired a total of 630 rounds. No malfunctions or opening of the floor plate latch occurred while firing.

#### REPORT TEXT

Six (6) Model Seven .308 Caliber rifles were fired a total of 630 rounds (105) rounds each experiencing no malfunction or opening of the floor latch while firing.

#### TEST PROCEDURE

#### A. Test Conditions

- o The field test was conducted at the Ilion Fish & Game Club 100 yard rifle range.
- o Four men were used, incorporating the "round-robin" system.
- o The men would take fifteen rounds (15) to the line and load one in the chamber and four (4) in the magazine, firing slow, medium and fast.
- o Three (3) ammunition brands were used, Remington, Winchester and Federal. All ammunition was shot from the shoulder.

The rifles used in the Field Function Test were Model Seven, .308 Caliber. Serial Numbers are listed below:

7603349	7603287
7603818	7603386
7603104	7604048

#### B. Ammunition Types

Remington - 150 Grain Pointed Soft Point Remington - 180 Grain Pointed Soft Point

Winchester - 150 Grain Soft Point Winchester - 180 Grain Soft Point Winchester - 200 Grain Silver Tip

Federal - 150 Grain Pointed Soft Point Federal - 180 Grain Pointed Soft Point

Report No. 84091//

#### RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	ARE	A OF TESTING
Developmental	Sefety Related	Litigation
Design Acceptance	Competitive Evalu	ation Warehouse Audit
Pre-Pflot	New Design	Cost Reduction
Pilot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STAT'S.  MODEL: ゴミマミン  CAL or GAGE: 子の名	REPORT REQ'D.	DATE REQUESTED: 4/4/84  DATE NEEDED BY: ASAP
BARREL TYPE: ろか	TEST	REQUESTED BY: SUNGOWEL
PROOFED: YESNO	RESULTS ONLY	WORK ORDER NO: _ C - /809
PROOFES. 123		WORK ONDER NO
,	TEST TYPE	
Strength Test ` Ammuniti	on Test Dry Gydle T	est Photo/Video
Function Test Environme	<del></del>	Other
Accuracy Test Customer	Complaint Endurance '	Test
EXPLAIN IN DETAIL THE REASON FOR T	HIS TEST:	
no wixual		relat sample,
NOTE: NO fireerms or parts will be tested in	n the Labs unless they are	DATE COMPLETED:
accompanied by a Work Request, as		TEST COMPLETED BY:
the Labs by the designer or engineer	. · · · · · · · · · · · · · · · · · · ·	REPORT DATE:
to be filled out in detail. No Except	·	

To Bill Coleman	Date 4/13/84
a Oi Same	
From Jane Source.	
Le: Trial + Pilat Recept ance	
Model Seven - , 308 Cali	hen

The trial and poiled acceptance of the M/Seven - 308 caliber has been rejected. One am had a defection chamber which caused fire-forming of the chamber. He cartridge separations occurred. In addition, two guns had poorly younted firing pins. Net mich howers Eng this morning they will supply another sample.

We will continue to text guns from the first sample to all least weight the floor plate latel design.

"DON'T TAKE A CHANCE, THINK SAFETY IN ADVANCE"

## The Lightest Of T

Ranging from six to 7½ pounds in weight, these featherweight production hunting rifles carry more than a little weight with hunters due to qualities like speed of handling and excellent accuracy.

#### By Clair Rees

ONLY A FEW years ago, buying a production bolt-action hunting rifle weighing less than 7½ pounds was almost impossible. Most models nudged the eight-pound mark from one side or the other. To get a really lightweight deer or sheep rifle, you had to take a standard model to a custom gunsmith and let him whittle away to achieve the desired shape and weight.

I'm one shooter who's glad this is no longer the case. The concept of a lightweight, easy-carrying hunting rifle has become so popular that the major gun manufacturers are finally producing a fine selection of such firearms. Browning, Smith & Wesson, and Winchester offer lightweight bolt models ranging from just under to just over seven pounds, while Ruger and Remington have introduced a pair of new ultralight rifles in the six-pound range.

All these rifles represent a significant reduction in weight compared to what was available, they are available in a variety of chamberings suitable for deer-sized and larger game, and in spite of their weight, they are capable of excellent accuracy.

Ruger's new Model 77 Ultra Light is the lightest of the new breed. To get a lighter hunting rifle, you'd have to go the full custom route or at least add a fiberglass stock. The Ultra Light sells for \$455. This six-pound rifle is available in both short and long action lengths to chamber seven popular cartridges: .22-250, .243, .250-3000, .308, .257 Roberts, .270, and .30-06. Ruger's other lightweight offering is the Model 77 International, which is four ounces heavier than the Ultra Light and features a wood-to-muzzle stock. Other than the stock configuration, the rifles are identical.

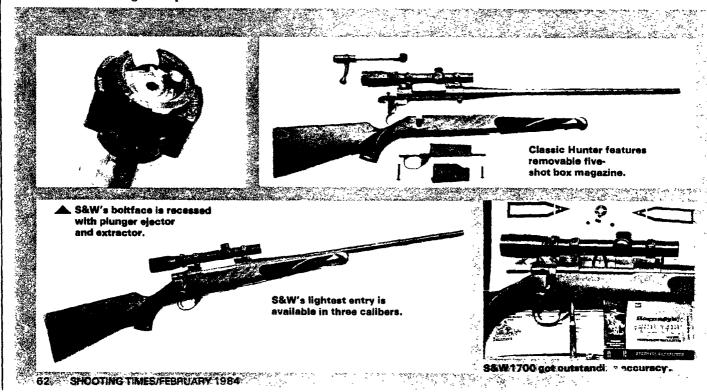
The test gun I had was chambered for the .243 Winchester round and tipped the scales exactly at the advertised six pounds. Overall length was 39% inches with the 20-inch barrel. In addition to shortening the Model 77 barrel a couple of inches, Ruger has drastically tapered it. The barrel of my test rifle measures barely a half-inch across at the muzzle.

The lighter and shorter Ultra Light also differs from other Model 77s by featuring a black forend tip. The butt-stock is of the classic design, with a straight comb dropping only ¼ inch along its length. The stock also sports a %-inch-thic rubber recoil pad.

The Model 77's Mauser-inspired bolt retains the large extractor claw with its external spring arm. This time-proven system provides excellent reliability and extracts even stubborn cases with authority. The ejector is a spring-powered plunger.

Another Model 77 feature shared by the new Ultra Light is the front mounting screw which angles forward. Tightening this screw pulls the barreled action back and down into the stock to provide positive bedding. I've found this system can be temperamental at times, but most Model 77s are capable of excellent accuracy when the tension is properly adjusted.

My .243 Winchester test rifle proved finicky, but it delivered minute-of-angle accuracy when fed the right loads. With factory loads, group size varied between 11/8 and more than two inches



# ie lightweigh

## SPECIFICATIONS Smith & Wesson Model 1700LS Classic Hunter .270 Bolt-Action Rifle

Manufacturar	Howa Machinery Co.
Manufacturet	Japan
	Japan
	1700LS Classic Hunter
Туре	Bolt-action repeater
Operation	
Caliber	
Barrel length	
	42½ inches
Stack	American walnut
Orog at comb	
Drop at heel	
	7 pounds

 	-
Safety Racking thumb safety	
Sights	
Burris mounted	
Riffing 4 graaves, 1:10 RH twist	
Magazine capacity 5	
Finish	
Variations Available in .30-06	
and .243 Win.	
Distributor Smith & Wesson	
2100 Roosevelt Ave.	
Springfield, MA	
01101	
Price	

across. Frontier's 100-grain loads gave the best results. Handloading shrank the groups to one inch at 100 yards.

The next lightest mass-produced rifle on the market is Remington's new Med el Seven. This short-action beauty is o fered in .222, .243, 7mm-08, 6mm Re ington, and 308 Winchester caliber

and is advertised as weighing 61/4 pounds. Individual rifles will vary in weight, primarily because of differences in wood density, and the test rifle I received tipped the scales at 61/2 pounds four ounces over the specified weight.

Several years ago, Remington offered another short-action carbine called the Model 600. When this rifle was discontinued, the action brought howls of protest from those sportsmen who appreciated its fine handling qualities. When Remington announced its intentions to introduce a new bolt-action carbine, some people were betting it would be a facelift of the old Model 600. But when the Model Seven was finally unveiled, shooters saw a brand-new rifle. The jeweled, highly polished bolt features twin front-locking lugs and a completely recessed face to enclose the cartridge case head. The extractor claw assembly is completely contained within the inside rim of the boltface. A plunger ejector is used.

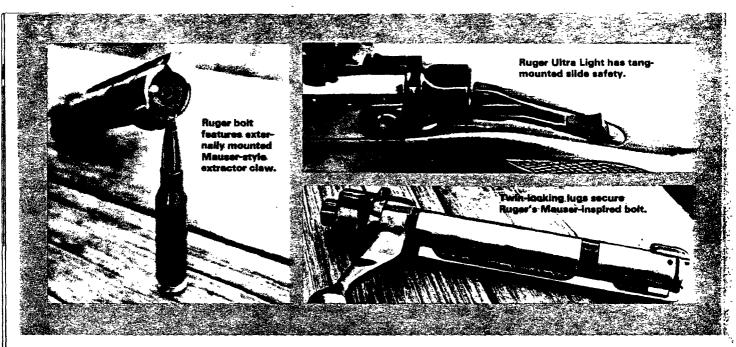
The bolt knob is smoothly elliptical, and the stubby length of the bolt provides a very short throw. The floorplate and trigger guard are blued steel not lightweight alloy. The release for the hinged floorplate is located in the forward part of the trigger guard and projects inside the guard to allow the catch

#### **SPECIFICATIONS**

Remington Model Seven 7mm-08 Bolt-Action Rifle

Manufacturer Remington Arms Co. Inc.
Bridgeport, ET 06601
Model Seven
Type Bolt action
Operation Manual
Caliber,
Barrel length 18½ inches
Overall length
Stock Checkered walnut
Drop at comb % inch (from center
. line_of bore)
Drop at heel
Length of pull
Weight, empty
Safety
Sights Rear sight adjustable for
windage and elevation; bead-
on post ramp front sight;
11/2-41/4X Bushnell ScapeChief
VI mounted
Rifling 6 graaves, 1:9.25 RH twist
Magazine capacity
Finish Blued Variations Available in .222 Rem.,
.243 Win., 6mm Rem., and .308 Win.
Distributor Remington Arms Co. Inc.
Price\$449.95





to be pushed fully into position for positive lockup. The front takedown screw is located under the hinged floorplate.

This rifle was designed from scratch for lightweight portability without sacrificing strength. The 18½-inch barrel is free floated except for a single pressure point near the forend tip. The entire rifle is just 37½ inches long, and it balances very well in the hands.

Like most new rifles, the Model Seven sports a straight, classic-style stock which drops ¾ inch from comb to heel. A rubber recoil pad is standard, as are quick-release sling swivel studs. The forend and pistol grip carry a generous amount of cut checkering, while the forend tip sports a schnabel profile.

The trigger was set for a five-pound release as it came from the box. It featured a crisp, single-stage letoff. The two-position rocking safety locks the trigger-but not the bolt-when engaged, allowing the chamber to be loaded without first placing the rifle in firing condition.

Chambered for the 7mm-08 Remington round, my test rifle proved to be a pleasure to fire, with recoil being no problem. Accuracy was very good with factory loads, with groups averaging

## SPECIFICATIONS Ruger Model 77 Ultra Light .243 Bolt Action Rifle

Manufacturer	Sturm, Ruger & Co. Inc.
*	Southport, CT 06480
Model	
	Bolt-action repeater
	243 Winchester
Stock	
Drop at comb	% inch (from center
•	line of bore)
Brog at heef	
	6 pounds

1% inches across at 100 yards.

The rifle carries a recommended price of \$449.95.

U.S. Repeating Arms' Winchester Model 70 XTR Featherweight is a modern revival of the long-discontinued Model 70 Featherweight first introduced in 1952. At 6¾ pounds, this rifle is a true lightweight in spite of its standard 21¾-inch barrel and relatively conventional design.

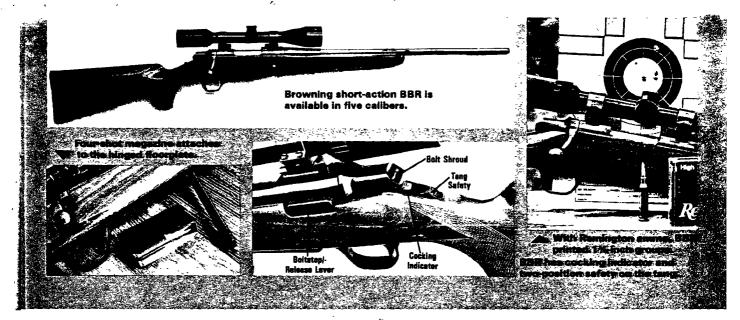
Retailing at a nickel under \$500 with iron sights or \$469.95 without, the Win-

Safety	Two-position tang
Sights	None supplied; Leupold
	16X scope mounted
	1:10 RH twist
Magazine capacity:	
Variations:	Available in .257 Roberts,
	.270, .30-06, .22-250,
	.250-3000, .308 Win.;
	Manmicher-styled Model
	77 RSI weighs 6% pounds
	Sturm, Ruger & Co. Inc.
	\$455

chester Featherweight is at the top of the Model 70 lineup. Appropriately enough, it sports a highly distinctive stock, complete with the schnabel forend. The checkering has the pattern of cut diamonds interrupted by a gracefully curving inset of smooth wood. A red rubber buttpad and quick-release sling swivels are standard equipment. Overall length is 42% inches.

The Featherweight is available in six excellent hunting calibers: .243 Winchester, .257 Roberts, .270 Winchester,





7x57mm Mauser, .308 Winchester, and .30-06 Springfield.

The Model 70 belt is jeweled and features a fully recessed face. The ejector is a spring-loaded plunger; the extractor claw is inset into the face of one of the twin locking lugs. The three position wing type safety leaves the triple locked but allows the bolt to be opened in the intermediate position. The intermediate position of safety is relatively expansive to manufacture, but it's a longtime favorite of

experienced riflement

While the Model 70's trigger guard is made of alloy, the hinged floorplate is blued steel. The action is bedded in a thermoplastic management of the stock carries an attractive sealing finish.

I had the chance to put a 7x57mm Featherweight through its paces, and the rifle performed admirably. With Federal 140-grain factory loads, the streamlined Winchester delivered 1½-

13% inches

inch groups at 100 yards. A Redfield 4X Tracker scope was mounted, and it made a fine match for the rifle.

Smith & Wesson's actor into the Bat veight rifle masks is the Classic Ruster, which is made in Japan to S&W specifications. While the Standard and Deluxe model S&W bolt rifles average between 7½ pounds and seven pounds, 10 ounces in weight, the Classic Hunter weighs seven pounds in .270 and .30-06 chamberings. The model chambered in .243 Winchester is listed in the specifications at six pounds, 15 ounces. My test rifle digested .270 Winchester loads and was right on the money at seven pounds. It was fitted with a 1¾-5X Burris; no factory sights are supplied.

The Classic Hunter sports a classic stock and has a schnabel forend. The cut checkering is also interrupted, giving the S&W stock an appearance very similar to the Model 70 Winchester Featherweight's. It has a red rubber buttpad. The stock is fitted with sling swivels from Michaels of Oregon, and these are flush mounted to avoid spoiling the smooth lines.

Unlike other S&W bolt rifles, the Classic Hunter has a removable five-(Continued on Page 95)

## SPECIFICATIONS U.S.R.A. Winchester Model 70 XTR Featherweight 7x57mm Bolt-Action Rifle

U.S. Repeating Arms Co.	Le
275 Winchester Ave.	W
New Haven, CT 06511	Se
Winchester 70	Si
XTR Featherweight	
	Ri
	M
	Fit
	Va
% inches	Pi
	275 Winchester Ave. New Haven, CT 06511

	Length at part
	Weight, empty: 6% pounds:
	Safety Three-position wing
	Sights None supplied; Redfield
	4X Tracker mounted
	Riffing 4 grooves, 1:8.25 RH twist
	Magazina capacity
	Finish
	Variations Available in .243 Win.,
	.257 Roberts, .270 Win., .30-06,
	and .308 Win.; iron sights
į.	available:
-	DistributorU.S. Repeating Arms Co.: \$469.95
ŕ	Price









SHOOTING TIMES/FEBRUARY 1984

## The Lightest Of The Lightweights

(Continued from Page 65)

shot clip in place of the integral magazine with hinged floorplate. The magazine release lever is located in the trigger guard, just like the floorplate release found on the other models. The trigger guard is alloy, while the magazine is blued steel.

The bolt is jeweled and features a blued cocking piece shroud. The bolt-



Author found all the lightweight rifles pleasant to shoot.

face is recessed with a generously proportioned plunger ejector. The handle of the bolt is knurled and blued. The two-position rocking safety alongside the receiver leaves the bolt fully operable when engaged.

Like the Model 70 Featherweight, the

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Manufacturer Miss	iku Firenras Mfg. Inc.
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Model	888
Timer.	Kochi, Japan Bakwation repeates
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Operation	
Calibon	Jihrneliss 7mm (15 Hemigrum
Promise and the second	
Sauce military	418 mag
Overall lengths	4 Theretes
Stanle	American almost
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Orop at comb.	
Dromat had	Winches.
Lauren alauelli	13% inches
rendru or brus	1374 (Hallet)
Weight, empty	. 7 pounds; 4 ounces
Safatse	Two continue tong
Mainthean waterpares against	Two position tang
Sights	us anbined: hanscu or
Lo	ne supplied; Bausch &
Riffing	Commune Diktoriet
ranary,	o floores utranst
Magazine capacity	
Finish,	Rhads
. Variations 7. Bindful	LI OCCUPATION
Variations Availal	
Roberts: .24	13, and .22-250 Rem: 🧻
Distributor	DIUMININ
- 1	Rte. 1
	Morgan, UT 84050
Price	
FIRE	\$469.95~`

Manufactures	Sturm: Ruger & Co. inc.
5.0	Southport, CT 06490
Model	. International Model 77
Type:	Bolt-action rifle
Operation	
Cather	
Barrel length	181/2 inches
	38% inches
Charles .	the sale and the sale and the
	American walnut
Drop at combi	£ inch
Orop at heel	American walnut Linch 11½ inches 13½ inches Stiding tang locks
Length of pull	13½ inches
Weight, empty	6% pounds
Safaty	And the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of t
	both trigger and bolt
Sights :	olding rear leaf adjustable
	for elevation and drift-
	adjustable for windage:
	amped base on post front
	ight: Leopold M8:4X Com-
	pact scope mounted
Sight Hadius	13% inches
Hithing	6 granves, f: 10 RH twist
Magazine capacity;	5 rounds
Finish	Blued
Vanetions	Also available in
20 March 1988年 1988年 1988年 1988年 1988年 1988年 1988年 1988年 1988年 1988年 1988年 1988年 1988年 1988年 1988年 1988年 1988年	CONTRACTOR OF THE PROPERTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF T
UISTABLITE	Stume Ruger & Co. Inc.
- ノ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	AND THE RESERVE OF THE SAME OF

S&W Classic Hunter is a full-sized rifle. Sporting a 22-inch barrel, it runs 42½ inches from muzzle to butt. At \$479.95, the Classic Hunter is the most expensive bolt rifle offered by S&W. I think it's also the most attractive.

Accuracy was exceptional, with Hornady-loaded 140-grain Frontier factory ammo yielding sub-minute-of-angle groups measuring ¾ inch across.

At 7¼ pounds, Browning's Japanesemade BBR bolt rifle is the heaviest of the new lightweight rifles evaluated. This is still a very light sporter by any standard, and when introduced in 1978, it ranked among the lightest production rifles then on the market.

The BBR I've been using is one of the short-action models chambering the 7mm-08 Remington cartridge. Other calibers offered include the .243 Winchester, .22-250 Remington, .257 Roberts, and .308 Winchester. The short-action BBR has a 22-inch barrel, two inches shorter than barrels on the longer Browning bolt rifles. The short BBR is also six ounces lighter and features a classic, straight-combed stock; the standard model has a Monte Carlo comb with a raised cheekpiece.

The BBR rifle is also known as the "Lightning Bolt," as the bolt handle travels through a short, 60-degree arc to lock or unlock the action. The Browning centerfire also features an antiwarp forend with an eight-inch-long section of ½-inch-thick aluminum channel ma-

terial inletted below the barrel channel. Its purpose is to stiffen the forend and prevent warpage.

Releasing the hinged floorplate lowers a detachable box magazine that clips to the swing-down floorplate. The magazine can be loaded in place or removed to make loading easier.

Nine forward locking lugs are arranged in triple rows for a very strong design. The boltface is deeply recessed. The magazine is cleverly designed to make sure each cartridge is properly seated all the way to the rear as the magazine is loaded. The same tapered feeding lip that nudges each round rearward during the loading process ensures positive feeding when it's time to chamber a round.

The bolt action is very smooth and slick, and very little effort is required to cycle the bolt. The trigger sported a clean, 3½-pound letoff, but it can be adjusted between three and six pounds.

The BBR Browning comes without sights. I mounted a new Bausch & Lomb 4X scope on mine. The rifle delivered 1½-inch, three-shot groups with Remington's 140-grain PSP factory loads. The short-action BBR lists at \$469.95.

I am very favorably impressed with the lineup of lightweight factory rifles being offered. I've toted my share of overweight firearms afield, and now that I'm older and wiser, I'm glad there are finally some slimmed-down production hunting rifles available across the counter.

These new rifles will be my first choice on future hunts. I'm betting a lot of other sportsmen will feel the same way.

110





SHOOTING TIMES/FEBRUARY 1984

RD-49-19

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Xc: C.B. Workman T.L. Capeletti

J.W. Brooks



PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

Ilion, New York March 10, 1981

TO:

J. S. MARTIN

F. E. MARTIN - S. A. FANELLI

SUBJECT: M-7 SCHEDULING

The program for M-7 Bolt Action Development, with the rifle as shown with no or minor alterations, can be as follows:

6-81 Design Verification (Drawing Completion)

8-81 Hi-Spot Cost Review

1-82 Product Acceptance (Models for Acceptance)

1-82 Design Transmittal

Future dates dependent on Marketing decision.

FEM:SAF:T

Firearms Research Division

### REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

September 2, 1981

To:

I. S. Martin

From:

F. E. Martin

Subject: M/7 Design Specification

The M/7 proto-type was conceived with these specifications:

Octagonal Receiver

Light Weight Firing Pin (reduced lock-time)

Fully Enclosed Bolt Plug with Cocking Indicator — Enclosed Michael No Bolt Lock — Need bolt Pol

Blocked Trigger and Sear - Need "sats and " !!

New "No Drag" Follower (to enhance action smoothness) - //s- - fample Tennis.

A Truly "Classic" Stock - No Montelan of Treckpier, make former of

A Functional Checkering Pattern

No Sights

Classic Calibers i.e., .257, 7 x 57, .35 Whelen, etc.

Limited Production of Calibers 3,000 - 4,000

+ Scope Mounts
+ Option of Floorplete on Letochobit Myrin Gin

) + New Extractor

Description required

9/11/81 E

#### M/7 DESIGN SPECIFICATION

This is a composite listing of features provided on the M/7 proto-type and those desired by Research:

- Octagonal Receiver
  - Investigate the use of octagonal stock
  - Heavier barrel lug
- Walnut Stock
  - True Classic
  - No Monte Carlo
  - Cheekpiece
  - Cut functional checkering
  - Sling swivel studs
- Hammer Forged Barrel
  - No turn or polish
  - Program to determine possible benefits i.e., accuracy vs. finish
  - Lightweight slimmer contour
  - Clean no sights
- Fire Control
  - Blocked trigger and sear
  - Bolt lock
  - New safety configuration or location
  - With safe adjustments
- Improved (Reduced) Locktime
  - Lightweight firing pin
  - Investigate pierced primer gas flow around firing pin and head
- Additional Desired Features
  - Scope mounts
  - New bolt handle
  - Teweled
    - follower
    - bolt body
- New Extractor
- New Feeding System
  - To be smoother
  - To be functionally superior
  - To be detachable with integral magazine box

- Classic Calibers
- Limited Production 3,000 4,000 per year

F. E. Martin:ws September 11, 1981

T Capilette

file#53

February 25, 1982

Mr. Paul Holmberg Marketing Mgr. Firearms Remington Arms Co., Inc. Bridgeport, Conn. 06602

Dear Paul:

For what its worth, I'd like to say that I was absolutely flabergasted and smitten with your Model 7. Its in very good taste aesthetically by a gun connoiseur's standards; deviating from what might be considered conventional, or normal, just enough to be highly interesting. Its approaching, if not indeed, trend setting and some comments I guess I made relative to Winchester and Ruger squirming weren't merely rhetoric but heartfelt and sincere.

I suppose I have to be a bit presumptious to say so but my advice would be to take the ball and run.

I enjoyed my stay and tour of the plant immensely. Very educational in so many ways. I was glad to see you and Tom again and will look forward to seeing you both at Fhiladelphia.

Best wishes,

Bob Emmons 238 Robson Road Grafton, Chio 44044 RD-89-B

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

F-82

Kc: <u>T. L. Capeletti</u>

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

February 23, 1983

TO:

J. S. MARTIN

FROM:

F. E. MARTIN

SUBJECT:

M/7 LWT TRIGGER GUARD ASSEMBLY

This item has been turned over to the Current Firearms Design Group for follow up and testing. Present status with this group is unknown. Advantages for implementation would be its:

- Lightweight
- Stronger Assembly
- Rust Resistance

#### Disadvantages:

- Not Steel
- Coloring Problem
- Cannot be Recolored Easily

テハ FEM:ws SALES

CEPARTMENT

# Remington 255 Remington Remington

Quick Facts About REMINGTON PRODUCTS

cc: House Force

Bridgeport, Connecticut March 24, 1983

#### TO THE FIELD FORCE:

You have already received a request to contact your jobber customers, instructing them to hold further delivery of any Model Seven rifles on hand and to supply you with a list of dealers who have received delivery of Model Seven rifles.

Our ultimate intention is to update all Model Seven rifles shipped to date by means of a return to the nearest Remington warranty gunsmith service location or to Arms Service in Ilion.

We have discovered that if a Model Seven rifle is disassembled after it leaves the factory, it is possible for the rifle to be reassembled incorrectly, producing off-center trigger alignment that might cause subsequent malfunction of the trigger and accidental firing of the rifle. The updating service on the rifle will eliminate the possibility of such incorrect reassembly.

To accomplish this, you are requested to obtain:

- 1. A list of all Model Seven rifles and matching serial numbers still in an individual jobber's inventory.
- 2. A list from the jobber of the names and addresses of dealers to whom Model Seven rifles have been shipped, including serial numbers.

Both jobbers and dealers will then be contacted by Product Service with instructions on how to have the rifles updated. Consumer purchasers of Model Seven rifles will also be contacted by Product Service with a request and instructions to have the rifles updated.

### REMINGTON ARMS COMPANY, INC., BRIDGEPORT 2, CONN.

Form No. RD 451

Printed In U.S.A.

Field Force Page 2 March 24, 1983

In all contact with jobbers, dealers, and retail customers on this subject, it is important to emphasize that the potential malfunction is remote, can occur only on a Model Seven rifle that has been disassembled and subsequently reassembled outside the factory, and that the update applies only to Model Seven rifles and not to any other Remington models.

This update is being incorporated into all Model Seven rifles to be shipped in the future.

Sincerely,

E. J. Conroy Director of Sales

EJC/dr

Remington.

F-82.

### REMINGTON ARMS COMPANY, INC.

TELEX 964-201 STRATFORD CT SPORTING ARMS-AMMUNITION-TARGETS-TRAPS

939 BARNUM AVENUE P.O. BOX 1939

**BRIDGEPORT, CONNECTICUT 06601** 

March 31, 1983

TELEPHONE 203-333-1112

#### TO OUR DISTRIBUTORS:

Remington Arms Company has discovered a problem that may develop with the Model Seven rifle and is requesting you hold further delivery of the Model Seven that remain in your inventory until notified. This letter provides you with the necessary details regarding this request.

We have discovered that if a Model Seven rifle is disassembled after it leaves the factory, it is possible for the rifle to be reassembled incorrectly, producing off-center trigger alignment that might cause subsequent malfunction of the trigger and accidental firing of the rifle.

Since a rifle may be disassembled at any time in the future for one of several reasons, we wish to update all Model Seven rifles with a preventative modification that eliminates the possibility of such incorrect reassembly. As a result, if you have not already done so, we are requesting your assistance with the following actions:

- 1. Please hold any Model Seven rifles still in your inventory.
- 2. Please send to us (c/o Remington Arms Co., Inc., 939 Barnum Avenue, P. O. Box 1939, Bridgeport, CT 06601, Attention J. D. Glenn) or provide your Remington Field Representative with a list of the names and addresses of dealers to whom you have shipped Model Seven rifles with matching serial numbers for those rifles. We will then contact those dealers with instructions for the updating modification.

3. Please return any Model Seven rifles still in your possession to the Remington warranty gunsmith service location nearest you for the updating modification. A list of such locations is enclosed. If it is inconvenient or difficult for you to return Model Seven rifles to a warranty service location, you may also ship them to:

Remington Arms Co., Inc. Arms Service Division Ilion, NY 13357

To expedite, shipments should be made prepaid. Upon receipt of a copy of your freight bill, Remington will issue a check for same. Your receipt should also be referred to J. D. Glenn (c/o Remington Arms Co., Inc., 939 Barnum Avenue, P. O. Box 1939, Bridgeport, CT 06601) for handling.

In returning Model Seven rifles to either location, please include your company name and return mailing address inside each box. The updating of your rifles and return to you will be accomplished as quickly as possible. While the possibility of the described malfunction is remote and it can occur only if the rifles are disassembled after they leave the factory, we believe it is in the best interests of the eventual owner to have this preventative modification performed.

We apologize for whatever inconvenience this may cause you. This update applies only to Remington Model Seven rifles shipped prior to this date and not to any other Remington models. The corrective action will be incorporated into all Model Seven rifles to be shipped in the future.

If you have any further questions, or if any of your dealers have questions concerning this request, please feel free to call us on the following toll free number, 800-243-2953 (operational after April 8, 1983), between 8:00 a.m. and 4:30 p.m. Eastern Standard Time.

Sincerely

E. J. Conroy Director of Sales

EJC/dr Enc.

#### PRODUCTS SCHEDULED FOR 1984 INTRODUCTION

Cepeus Mdg 6/17/83

July M/Seven

#### MODEL SEVEN . 223 REM. . /

#### Marketing Comments

The domestic market for rifles in .223 Rem. has increased as a result of the availability of low cost ammunition. Since the Model Seven was introduced, we have had numerous requests from distributors and dealers to add this caliber. We believe the addition of the .223 offers the potential for increased Model Seven sales and will help improve dealer relations. The short, light weight of the Model Seven is appropriate for the .223 Rem. caliber.

High spot economics will now be presented to the Committee (Exhibit 1).

#### Research Comments

Design test of no bind follower in progress. If satisfactory, transmit June 10.

#### Production Comments

Trial and pilot operations have commenced on the barrel. Assembled guns should be ready for Research acceptance testing in August. Production will start in September with guns going to the warehouse in November.

IV. Development Responsibility (Check One) X Research Production

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER KINZER V. REMINGTON

Marketing Approval

Director Finance

Director Legal

Director Marketing _____

Director Production

Director R & D

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#### IMPROVEMENTS TO EXISTING PRODUCTS

#### MODEL SEVEN

#### Research Comments

The short-term modification of this design includes the items shown on Exhibit I.

The material thickness in the floor plate cover and the floor plate base has been increased from .050" to .062" to increase rigidity and facilitate production assembly operations. The material thickness of the trigger guard plate has been increased from .050" to .080" and the width has been increased from .625" to .750" for the same reason.

The latch spring may require modification to optimize latch opening force. This remains to be determined. The modifications should be limited to a material thickness change and/or a slight change in shape.

It has been demonstrated that brazing the trigger guard to the trigger guard plate plays a major role in preventing floor plate opening. This operation would be difficult to perform in production so an alternative method of maintaining a tight joint is being pursued. This involves an interference fit that can be easily monitored by the final assembler.

Finally, a sensitivity analysis is in process that addresses each of the factors that has at one time or other appeared to contribute to the problem. These factors are shown on Exhibit II.

- o Opening Force: The opening force required to disengage the latch should be in the neighborhood of 7 lb. minimum. This requires additional verification.
- o Latch Coverage: A minimum of 50% latch coverage on the floor plate cover must be maintained.
- o Bedding of Assembly to Stock: The amount of contact between the assembly and the stock has proven to be an insignificant factor. This fact may allow for a more positive method of maintaining latch coverage at final assembly with the use of spacers.
- o Tightness of Trigger Guard: Tests so far indicate that this may be one of the most important factors. The joint between the front of the trigger guard and the trigger guard plate must be tight.
- o Angle at the Rear of the Guard Bow: Variations in this angle within a wide tolerance band have proven to be insignificant.

Addendum A-1

- O Clearance Between Floor Plate and Stock: This is still in test.
- o Soft vs. Heat Treated Bow: The trigger guard must be heat treated to prevent the interference fit from becoming loose during customer use and to prevent distortion if the gun is dropped or bumped. Soft trigger guards are easily distorted with rough handling.
- o Floor Plate and Latch Design: It has also been demonstrated that bending the assembly to establish latch coverage at final assembly is an unsatisfactory procedure since the bent part does not maintain its shape or location.

At the conclusion of the sensitivity analysis, a sample of 25 guns will be assembled by Research and tested to verify the findings. Pending satisfactory results and no complications, our earliest transmittal date for the revised design is June 10.

#### Production Comments

Production is continuing on the Model Seven in the .222, .243, and 6mm calibers. At the current rate of production, 1983 demand requirements for these calibers will be completed by about September 1. Production for the remainder of the year will build 1984 inventory.

The best case situation to resolve the floor plate opening malfunction would be a design change allowing production to start assembly of the 7mm-08 and .308 by September 1. This would permit continuous production against 1983 requirements. To accomplish this, design release would be required no later than mid-June 1983.

The worst case would be a major design revision entailing the use of die cast or investment cast components. This would require six to nine months to complete after release of the design. The casting schedules are based on a best effort basis by the vendors.

Based on the latest information from Research, Production will follow these steps to institute the design changes to the Model Seven LWT rifle.

One hundred to two hundred rifles will be assembled utilizing trigger plate assemblies fabricated from heavier stock. These trial and pilot parts will be made on temporary vendor tooling. All of the critical dimensions and performance characteristics will be checked on vendor and production parts to verify vendor and process controllability.

The rifles will be assembled and the critical factors from Research's sensitivity analysis will be checked. The rifles

Addendum A-2

will be tested in the Gallery and turned over to Research for product verification testing.

With positive test results, the vendors will develop permanent tooling and start running production quantities of parts. Initial production of rifles would start in September.

#### Marketing Comments

When the Model Seven was announced, we provided estimated availability dates by caliber to the trade through the field force. The full line catalog also contained these dates to advise retail customers when the various calibers would be available. The .308 and 7mm-08 were originally scheduled for January and March respectively. With the production delay on these calibers, it will be necessary to notify our customers of the revised availability dates.

Should the delay be three months, the field and our distributors will be contacted and advised of the new delivery date. Under these conditions no significant increase in distributor orders for 7mm-08 and .308 can be expected prior to initial delivery. A forecast reduction will be necessary.

A comparison of orders and shipments indicates that 45% of total orders are 7mm-08 and .308. A three month delay would place initial shipments of these calibers in September. There would be approximately 30 days available to ship the 8,000-9,000 current orders prior to the start of fall hunting seasons. Production planning estimates this quantity represents in excess of two months' production. Beyond September, distributors will not take in sizeable firearms shipments and some cancellations are expected. We estimate lost sales at 5,000-6,000.

In the event of a delay in excess of three months, product would not be available to the trade in advance of the hunting season. In this case, 45% of the Model Seven forecast would be lost for 1983. We would make every effort to write additional business for the three calibers in production. If we were successful in selling 3,000-4,000 additional rifles, the reduction in forecast would be approximately 10,000 guns. If there is an extended delay, it will be necessary to advise the field force and our distributors. In addition, a public relations release would be required to update the status of the Model Seven. (See Chart III.)

#### EXHIBIT I

## MODEL SEVEN SHORT TERM MODIFICATION

- HEAVIER MATERIAL
- WIDER TRIGGER GUARD BASE
- MODIFIED LATCH SPRING
- INTERFERENCE FIT
- SENSITIVITY ANALYSIS

#### SCHEDULE

- DESIGN TESTING JUNE 8
- TRANSMIT DESIGN REVISION JUNE 10

#### EXHIBIT II

#### MODEL SEVEN

#### SENSITIVITY ANALYSIS

1)	OPENING FORCE	Min. 7 lb.
2)	LATCH COVERAGE	Min. 50%
3)	BEDDING - ASSY. TO STOCK	Insignificant
4)	TIGHTNESS OF TRIGGER GUARD	Must be tight
5)	ANGLE AT REAR OF GUARD BOW	Insignificant
6)	CLEARANCE BETWEEN FLOOR PLATE & STOCK	?
7)	SOFT Vs. HEAT TREATED BOW	Heat Treated

Cannot bend to adjust for coverage

#### EXHIBIT III

## MODEL SEVEN ORDERS & SHIPMENTS (Total Company 5/9/83)

	Orders	% of Total	Shipments	% of Orders	Balance to be Shipped
•					
222	2,213	11.3			2,213
243	6,529	33.2	3,069	47.0	3,460
6mm	2,048	10.4	1,257	61.4	791
Onen	2,040	10.4	1,23,	02.4	7,52
7mm-08	2,875	14.6			2,875
308	5,973	30.4			5,973
		<del></del>			
TOTAL	19,638	100.0	4,326	22.0	15,312

- Total orders (19,597) are 68.5% of Forecast (28,605).
- 45% of orders are 7mm-08 and 308 (8,833).
- Total Forecast for 7mm-08 and 308 = 12,925
- Probable loss of 5,000-6,000.

## MODEL 7 CAL. .308 AND 7MM-08

## Production Comments

Designs have been transmitted and the casting supplier has started die fabrication.

Samples are expected the week of February 3 and Trial and Pilot machining operations will begin immediately upon receipt. Tool delivery will be a key factor in timely completion of the Trial and Pilot phase. Each tool will be individually prioritized by need date before submitting to Purchasing for handling.

If the design is confirmed by Research, production to the warehouse will commence in July, 1984.

Addendum L

## Comments:

- Both designs are successful thus far and cost nearly the same.
- Production estimates trial and pilot for either design can be completed by January 1984.

Action: Committee requests the Model 1100 12 Gauge Special Field not appear in the 1984 firearms catalog.

Reference: Research and Production comments and exhibits in Addendum G.

## Item: Model Seven Calibers .308 and 7mm-08

Problem: Premature opening of floor plate in heavy calibers.

Impact: Delay shipment of these products until second quarter, 1984.

Solution: Aluminum floor plate and trigger guard assembly.

### Status:

- Sensitivity tests of new design commenced on caliber .308.
- First steps of design review started by Production.
- Casting dies and sample parts ordered for trial and pilot.
- Production to warehouse targeted for second quarter, 1984.

Action: Committee requests the Model Seven in caliber .308 and 7mm-08 not appear in the 1984 catalog.

Reference: Research and Production comments in Addendum H.

## GENERAL

## Item: Cut Checker Capacity

Objective: Determine cut checkering capcity needs relative to the No. 1-1984 Sales Forecast and planned new product programs.

Status: Production is pursuing equipment manufacturers' quotes expected by 10/15/83.

## KEY ISSUES

## #2 - ACHIEVE 30% RETAIL MARKET SHARE

## MODEL SEVEN CALIBERS .308 and 7mm-08

## **Production Comments**

Advance prints of the new aluminum trigger guard components were received in early July. Proposed processing techniques were developed and reviewed with Research to refine both the design and the process. the casting supplier was also consulted to assure that the design was producible on a continuing basis, and that gauging characteristics and quality criteria were realistic. This is the first step of the design review to insure the parts will perform as intended. A purchase order has been placed for casting dies and sufficient sample parts to support trial and pilot operations.

Tooling lead times have extended since mid-summer, creating a tight schedule for second quarter warehouse date. Trial and pilot completion is contingent on timely tool deliveries and acceptable die castings on the first attempt by the vendor.

Production quantities to the warehouse could start approximately 8-10 weeks after completion of design confirmation testing by Research (Exhibit 1).

## Research Comments

Ten prototype aluminum trigger guards and covers will be completed the week of September 19 for assembly. Complete .308 caliber rifles with the prototype trigger guard assemblies will be furnished to the test lab for sensitivity the following week.

Drawings of this trigger guard and cover were transmitted to the plant on September 1. The stock drawing and other component required for this change will be transmitted to the plant the last week of September.

Addendum H

# MODEL SEVEN LIGHTWEIGHT ALTERATIONS IMPLEMENTATION SCHEDULE

	AUG, SEP, OCT, NOV, DEC, JAN, FEB, MAR, APR, MAY, JUN,
TOOL DESIGN	<del>V2 ************************************</del>
TOOL BUILD	·
VENDOR SAMPLES	
TRIAL & PILOT	
DESIGN VERIFICATION	· · · · · · · · · · · · · · · · · · ·
VENDOR PRODUCTION	
PLANT PRODUCTION	
	1

**WAREHOUSE** 

file MI Seven

> 8-19-83 J.W. BROOKS

## MODEL SEVEN LIGHTWEIGHT

(Decision of Operations Committee to use Aluminum Trigger Guard - 6-83)

ITEM	S TO COMPLETE	COMPLETED BY
0	Casting Drawing Dimensioning decisions	8-25
0	Drawings completed and send to vendor	9-1
0	12 model prototypes complete -(trigger guards)	8-31
0	Stocks complete (M. Monteau for program - Parker for complete Stock)	
0	Trigger Guard screws (if needed)	
0	Sensitivity test (Use .308 Cal.) (10 Models) (Design verification)	
0	Design verification - 7mm-08 (5 models)	
0	Pre-transmittal Field review 5308 Cal. and 5 - 7mm-08 Cal.	
0	Transmittal drawings and parts list	
0	Post transmittal Field review (Same rifles used in pre-transmittal review)	

## MODEL 870 LOW COST

TEM	S TO COMPLETE	COMPLETED BY
0	Receive report on ejection testing of 2 3/4 shells from 3" chambers	8-24
0	Larger test sample on ejection testing of 2 3/4 shells from 3" chamber (Std. 2 3/4 control Extractor clearance	e) 9 <b>-</b> 15
0	Decision on ejection tests	9-22
	Rollmarking required on Receiver and Barrel. (Marketing)	8-25
0	Build 10 models	
0	Pre-transmittal field review	-
0	Transmittal of drawings and parts list	

## MODEL 700 LOW COST

ITEM	5 TO COMPLETE	COMPLETED BY
o	Receive report on 10 gun function test on .243 caliber	8-18
0	Redesign and retest magazine, follower, spring and spacer (or other options)	
0	Rollmarking of Barrel and Receiver (Marketing)	8-25
0	Complete drawings and parts list (preliminary drawings and parts list to Process)	9-2
0	Test rifles with M/788 Rem. sight and M/700 front sight (100 Gr. Bullets) P.O. I 243 ready for test 8-26	9-16
0	Build models 5-270 5-30-06	
0	Design verification (270, 30-06)	
0	Design verification (.243)	
0	Pre-transmittal Field Review	
٥	Transmittal drawings and parts list	

## MODEL 870/1100 WATERFOWL

ITEM	COMPLETE BY	
MODE	L 870	
0	Model requirement agreement (Marketing)	8-15
0	Design verification (5 Models)	
0	Build 10 models	
0	Pre-transmittal Field Review	
0	Transmittal of drawings and parts list	
MODE	L 1100	
0	Model requirement agreement (Marketing)	8-25
0	Test 5 models (does parkerize effect function)	
0	Build 25 models	
0	Design verification (25 models)	
0	Pre-transmittal (10 models) (Use 10 from above)	
0	Transmittal of drawings and parts list	

## MODEL 700 CLASSIC .338 MAG.

## ITEMS TO BE COMPLETED

COMPLETED BY

- o Build 5 models (Need new Mandrel and Chamber reamer)
- o Design verification
- o Transmit drawings and parts list

## MODEL 870 COMPETITION TRAP SET

## ITEMS TO COMPLETE

COMPLETED BY

- o New Stock
- o Field test of 16 yd. Barrels (Marketing)
- o Packaging
- o Transmittal of drawing and parts list

8-19-83 J.W. BROOKS

## MODEL 1100 LOW COST

## ITEMS TO COMPLETE

## COMPLETED BY

- o Define model requirements
- o Build 5 models (each gauge)
- o Design verification (5 models)
- o Pre-transmittal Field Review (10 models any mix)
- o Transmit drawings and parts list
- O Post transmittal Field Review
  (10 models any mix)

R**D-69-B** 

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Copy & Evan Ritchia 
Clean medide in a

future wouldness and it.

File - M/ Seven.

xc: R.A. Murphy

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"___

Ilion, New York December 8, 1983

TO:

J.W. BOWER

FROM:

J.A. LAWRENCE TL

SUBJECT:

MODEL SEVEN SAFETY BUTTON,

BOLT PLUG CONTACT

This morning Bill Warren informed me that the safety button is contacting the bolt plug on the Model Seven rifle in approximately 60% of the guns inspected in a Warehouse Audit, comprised of all of October production and all .223 cal. Model Sevens.

Testing in P E & C has indicated that this situation does not pose a problem with the proper operation of the safety. However, it does create unsightly lines on the bolt plug that are astatically unacceptable.

Bill feels the contact is a result of using the Model 700 projection welding fixture (used to weld the safety button to the safety level) instead of the Model Seven fixture. This cants the safety button allowing it to contact the bolt plug. Bill's opinion is, there is no reason to believe the correct fixture was ever used, indicating all Model Sevens may be affected by this contact.

Bill assured me that the correct fixture will be used for all Model Seven safeties manufactured in the future. All Model Sevens previously manufactured will be screened for contact before shipments are made, pending a decision on what to do with the contact situation on the existing rifles.

JAL: js

File M/Seveen

RD-49-8

## REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Xc: J. W. Bower
J. A. Lawrence

Remington.

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

December 12, 1983

TO:

W. A. WARREN

FROM:

R. S. MURPHY 23M

SUBJECT:

MODEL SEVEN BOLT PLUG/SAFETY BUTTON CLEARANCE

Based on Fred Martin's layout of the Model Seven, the clearance between the bolt plug and the safety button can range from +.037" to -.008". This represents a .045" range with a mean figure of +.0145.

RSM:ws Ilion Research Division

# Loading For Th

BY CLAY HARVEY

The current craze in rifles is the trend toward the lightweights. Clay Harvey secured a batch of them and worked up 41 handloads in five calibers in an effort to expose some of the more popular misconceptions.



# e Lightweights





(Turn Page For Story)

LIGHTWEIGHT hunting rifles are making a strong comeback. It's a good thing. Within given and easily established parameters, the lighter the hunting gun the better. The current crop of airweight rifles includes notables like the Remington Model Seven, the Winchester Model 70 Featherweight, the Ruger Model 77 International and Ultra Light, the Smith & Wesson Classic Hunter, and the new Browning BBR short action.

Actually, some of the rifles in this group are not as lacking in heft as you might think. The two Rugers and the Remington Model 7 are the only true lightweight models, although the others are lighter than the standard rifles offered by the same firms. In addition, the Winchester, Browning, and Smith & Wesson carry normal-length barrels of 22 inches, although barrel contours are slimmer than usual. The Ruger International and the Remington Seven both sport 18.5-inch barrels; the Ruger Ultra Light has a 20-inch tube.

Various misconceptions have slipped into the public's mind over the years, many of them concerning the handloading and accuracy aspects of light, short-barreled rifles. Here's a sampling: short-barreled rifles are less accurate than their standard-length counterparts; light, "whippy" barrels do not shoot well, regardless of length; will not shoot well; short-tubed rifles lose so much velocity that the resulting ballistics are inadequate for hunting; if you must use

a short-barreled rifle, you should burn a fast-burning rifle powder in an effort to salvage as much velocity as possible.

In order to demonstrate the fallacies of each of these "truisms," I secured a representative batch of test rifles from several manufacturers. All had trim, whippy barrels, and one was full-stocked. The guns and calibers were: Remington's Model Seven in 6mm Remington, Ruger's International in .250-3000, U.S.R.A.'s Winchester Model 70 Featherweight in 7x57 Mauser, Smith & Wesson's Classic Hunter in .243 Winchester, and Browning's BBR in 7mm-08.

Let's expose some myths . . . .

## **Inaccurate Short Barrels**

You can decide for yourself whether my short-barreled test rifles were inaccurate, but let me point out a few facts. Competitive benchrest shooters have proven short tubes are accurate—more accurate than longer, less-rigid barrels. Remington's 40X-BR bench rifles are sold with 20-inch barrels and used to win the NBRSA's Light Varmint classes regularly. (Remington also makes a 24-inch 40X-BR, but it is designed for the Heavy Varmint class and is no more accurate than the 20-incher.)

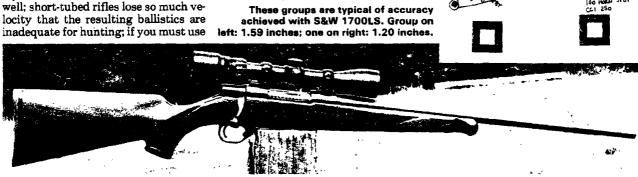
Remington's short-tubed Models 600 and 660 of nearly 20 years ago were noted for their accuracy, particularly in .222 Remington. That same firm mar-

kets a handgun (the XP-100) based on the identical action which has a 10.5inch barrel and will group five shots inside one inch with good loads and a practiced hand. That's better than 99 out of 100 sporter-weight rifles – regardless of barrel length or configuration.

My Remington Model Seven in 6mm was tested with five handloads and two factory loads. Of the seven loads, only three would not group under two inches for five-shot strings at 100 yards; those three averaged around 21/4 inches. The best load in my 6mm consisted of the Hornady 75-grain hollowpoint varmint bullet and 46.0 grains of Winchester W760 powder. The average for three five-shot groups was 1.55 inches. Next best was a mild load of 36.0 grains of IMR-3031 and the Speer 80-grain softpoint. Groups ran 1.70 inches, although the velocity was low. Bumping the charge level to 39.5 grains kicked the muzzle speed up to 3060 feet per second (fps), turning it into an acceptable load for varmints.

The overall average of all the loads tried, good as well as mediocre, was a tidy 1.95 inches. No groups were dis-

Overall average for all loads tested was 1.73 inches.



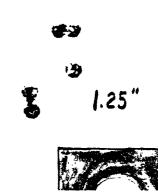
			:		odel 17 Winche					
Bullet	Pews Oynek	ier (Grad	Pelimon	Case	Muzzles Velocity (fps)	Mazzia Energy (ft./lbe.)	Extreme: Spreed	Standerd Deviation	Group Average!	
Hornady 75-gr. HP	MRP	50.2	8%-120	Fed.	3290	1800	47	20	1.96	Fastest load tested
Hornady 75-gr. HP	H380	40.0	81/2-120	Fed.	2957	1455	94	44	1.92	Mild load
Speer 85-gr. SPBT	IMR-4350	45.0	CC1 250	Fed.	3110	1822	61	24	1.34	Most accurate load tested
Sierra 100-gr. SPBT	IMR-3031	35.5	CC1 200	Fed,	2779	1715	36	14	1.76	Consistent velocity
Siarra 100-gr. SPBT	IMR-4350	42.0	CC1 250	Fed.	2837	1787	97	38	1.62	·
Hornady 100-gr. SPBT	MRP	46.0	8%-120	Fed.	2935	1912	42	17	2.21	
Hornady 100-or, SPBT	MRP	47.5	CCI 250	Fed.	2960	1945	55	24	1.59	Fine deer load; accurate
Federal 80-ur, PSP		Factor	y Load		3200	1815	67	27 .	1.42	Very accurate
Hornady 100-gr. SPBT		Factor	y Load		2700	1619	25	10	1.74	Accurate and consistent

SHOOTING TIMES/FEBRUARY 1984

*This is the average for two or three five shot groups, benchest, 100 yards.

			Re		on Mod Remin		n			
<b>Dellar</b>	Poved (Typek	(Gra)	Primer:	Cases	Mazzie Velocity (fps)	Muzzie Energy (ft./lbs.)	Extreme Spread:	Standard Deviation	Group: Average* (Inches)	Remarks
Hornady 75-gr. HP	W760	46.0	Rem. 91/2	Fed.	3200	1702	94	37	1.55	Most accurate load tested
Speer 80-gr. SP	IMR-3031	36.0	Fed. 210	Fed.	2880	1474	102	46	1.70	Second most accurate; mild
Spear 80-gr. SP	IMR-3031	39.5	CCI 200	Fed.	3060	1663	81	33	2.27	Do not increase
Sierra 85-gr. HPBT	H205	47.0	CCI 250	Rem.	. 3135	1851	62	23	2.24	Good velocity
Speer 85-gr. SPBT	IMR-4350	45.7	8½-120	Fed.	3125	1839	82	34	2.29	,
Federal 80-gr. SP		Factor	y Loed		3213	1830	82	32	1.73	Most accurate factory load
Remington 80-gr. SP		Factor	y Load		3320	1954	74	32	1.87	Fine varmint load; very fast





Model Seven 6mm produced this group. The load: 46.0 grains of W760, Hornady 75-grain HP, Rem. 91/2 primer, Federal case.

counted due to flyers, conditions, or phase of the moon. The most accurate rifle tested had a longer barrel, but it averaged only a couple of tenths better than the Remington.

The short Model Seven will shoot.

## Inaccurate Mannlicher-Style Rifles

I saved my other shorty, the Ruger International, for this section. Certainly the stubby 18½-inch barrel didn't affect accuracy. The Ruger was as accurate as the Remington with its best load. More importantly, the wood-to-muzzle mode didn't appear to hurt it much.

My first experience with a full-stocked rifle came in the mid-1970s, when I used a Harrington & Richardson Model 301 fabricated by H&R on a Sako action with a 20-inch Douglas barrel and put up in a Fajen Mannlicher stock. Chambered for the .308 Winchester, it would group five shots under 1½ inches all day with four different loads in three bullet weights from four manufacturers. Its worst performance was a 2.11-inch average with one factory load.

Not quite as accurate as the H&R, my test International in .250 Savage clustered three five-shot groups into 1.55 inches with the Remington 100-grain factory softpoint. Its pet handload, 40.0 grains of Hodgdon's H205 under the Speer 100-grain hollowpoint, would not group any better, but it was

155 fps faster. The runnerup handload was the same charge of H205 pushing the Nosler 100-grain solidbase (with groups running 1.75 inches).

A fine varmint load for the International was 41.5 grains of Winchester W760 and the Sierra 87-grain softpoint. Velocity was over 2900 fps, despite the abbreviated barrel, and accuracy was 1.87 inches. A real fine load.

The petite Ruger showed a 2.40-inch overall average for all loads tried (nearly 30 five-shot strings).

Inaccurate? Hardly.



IMR-4350 was the propellant author used most frequently in his testing.

## Inaccuracy Of "Whippy" Barrels

All five test guns had thin, whippy barrels. Naturally, the longer the barrel, the more whip it has, given a basic tube profile. Following this logic, none of my long-barreled test guns should have grouped well or consistently. I miked the muzzle diameters of all five guns, and none exceeded .56 inch. If a barrel can be described as whippy, my rifles certainly met the criteria. Were they inaccurate? Not so you'd notice.

The Smith & Wesson Classic Hunter. designated the Model 1700LS, was the most accurate of the batch when best loads are considered, but only by a very small margin over the Model 70 Featherweight. The Smith favored the Speer 85-grain softpoint boattail pushed by 45.0 grains of DuPont IMR-4350 and sparked by a CCI 250 primer. Groups ran 1.34 inches, and the muzzle velocity exceeded 3100 fps. The next best handload was 47.5 grains of Norma MRP and the Hornady 100-grain softpoint boattail for a 1.59-inch average. The reliable Federal 80-grain softpoint factory load averaged 1.42 inches for three five-round strings.

The Classic Hunter's overall average from its lightweight, whippy, inaccurate barrel was only 1.73 inches. Best of the batch. I have fired a bunch of heavy, stiff, "accurate" barrels into averages much larger than this figure.

The Model 70 Featherweight was al-



These .25-caliber bullets were tested in Ruger M77 International.

Author uses lightweight CF rifles for varmint hunting.

This group is typical of accuracy Model 77 International is capable of producing.

					l 77 Inte 000 Sav		ıal			
	Phone					forgy:		A		
Sierra 75-gr. HP	H380	40.3		Win	3055	1555	S	42		
Speer 87-gr. SP	IMR-3031	34.5	Rem. 91/4MI CC1 200	Win.	2812	1528	114 92	33	3.71 2.35	Fastest load tested
Sierra 87-gr. SP Sierra 90-gr. HPBT	W760 IMR-4350	41. <del>5</del> 41.0	Fed. 210 Fed. 210	Win. Win.	2902 2875	1627 1652	42 44	17 17	1.87 2.55	Very accurate and fast
Sierra 90-gr. HPST	W760	41.4	Rem. 9%M	Win.	2990	1787	63	23	3.29	Very high velocity
Sierra 90-gr. HPBT Spear 100-gr. SPBT	H205 W760	42.0 40.0	CCI 200 ⁻ Fed. 210	Win. Win.	2920 2875	1704 1835	19 [.] 31	7 13	2.02 2.88	Extremely consistent Very high muzzle energy
Speer 100-gr. HP Speer 100-gr. SPBT	W760 H205	40.0 40.0	Rem. 91/2 Rem. 91/2	Win. Rem.	2838 2715	178 <b>6</b> 1639	29- 91	10 38	3.81 1.96	Consistent velocity
Sierra 100-gr. SP	H205	40.0	Rem. 91/2	Rem.	2717	1640	70-	26.	1.90	Accurate Accurate
Space 100-gr; HP Nosier 100-gr; S&	H20 <del>5</del> H205	40.0 40.0	Rem. 91/2 Rem. 91/2	Rem. Rem.	2745 2733	1673 1659	89 39	37 18	1.55 1.75	Most accurate handload Very accurate
Remington 100-gr. PSP			ory Load		2590	1489	65	25	1.55	Extremely accurate

most as good with its favored load, printing a tight 1.38-inch average when fed Hodgdon's H4831 in a 51.0-grain dose and plugged by the streamlined Sierra 160-grain softpoint boattail. Speeds ran 2608 fps on my Oehler Model 33 Chronotach. Bridesmaid was the same charge and powder pushing the Nosler 162-grain solidbase, with groups running 1.72 inches for the average.

Both the Remington and Federal 140grain factory loads grouped around 15% inches (five shots) which is very good. Muzzle speeds with the factory ammo were in the 2600 range. Overall average for the Featherweight was 2.21 inches. after group under two inches, its best going 1.63 for the average. The load: Speer 115-grain hollowpoint, 46.0 grains of IMR-4064, CCI 200, and a Remington case. (I've used the same load in my Model Seven 7mm-08, and it is also this gun's preferred load.) Muzzle speed is 3100 fps in the Browning, making it a crackeriack varmint load.

The second-place load in the BBR was 43.3 grains of Hodgdon H380 and the Nosler 140-grain Partition. It printed just under 1% inches. The overall average for the Browning was 2.33 inches.

These five rifles, waspish barrels and all, averaged 1% inches or less with their favorite loads. Two of the five

printed just over 1½ inches, and two of them would go approximately 1% inches.

## Short-Barrel Velocity Loss

Many sage and otherwise knowledgeable shooters think the velocity loss necessitated by abridging a rifle barrel renders the gun useless as a hunting tool. Let's examine this view and see if it will hold up.

My short-tubed Remington Model Seven clocked 3320 fps with the Remington 80-grain softpoint factory load. A Remington Model 700 Varmint Special I tested averaged 3346 fps from the 80-grain Power-Lokt. I realize this is a

The new BBR 7mm-08 dumped group

# Winchester Model 70 Featherweight 7x57 Mauser

	Strate City Broke	2 78 2 75		3.5	Muzzier	Muzzie			Group	Contract of
Reference on the second	Powds	(Gra.)	Primee.	Case		Energy (ft.)	Extreme Spread	Standard Deviation		Romarks
Hornady 139-gr. SPBT	MR-4320	45.0	Rem. 91/2	Rem.	2920	2631	39	15		Best deer/antelope load
Nasier 140 gr. SB	MR-4064	41.8	Rem. 91/2	Rem.	2705	2274	52	18	3.31	
Speer 145-gr. HPBT-M	H414	48.4	CCI 200	Win.	2795	2515	27	11	2.86	Excellent velocity
Sierra 150-gr. HPBT-M	IMR-4350	46.0	Rem. 91/2	Rem.	2595	2243	61	23	2.10	
Nosler 150-gr. Partition	H4831	52.3	Rem. 91/2	Rem.	2677	2386	55	22	2.98	Good velocity
Sierra 160-gr. SPBT	H4831	51.0	CCI 200	₩in.	2608	2416	65	24	1.38	Most accurate load tested
Nosier 162-gr. SB	H4831	51.0	CCI 200	Win.	2510	2266	61	21	1.72	Accurate
Remington 140-gr. PSP		Factory	Losdi		2595	2093	68	27	1.65	Very accurate
Federal 140-gr. PSP		Factory	Load		2613	2122	63	22	1.62	Most accurate factory load

Mail 55 County verse charactery applied verify an Oelsian Model, 35 Chromotach Skysergen system. The riff
Chasis, the american for two to lose the shot groups, benchests, 100 years. Overall

Une milispias a 22 inchi barret. Diverall groups average for all loads tested was 2.21 inches.

different load fired in a different gun, but consider this: my Model Seven is only 26 fps slower with a load comparable to one fired in a gun sporting a barrel 5½ inches longer!

In a Savage Model 111 .250-3000 with a 22-inch barrel, I clocked 40.0 grains of H205 under the Nosler 100-grain solidbase at 3010 fps. The same load (different lots of components, of course) chronographed 2733 fps in my Ruger International. This represents a loss of 79 fps per inch of barrel. Forty grains of Winchester W760 pushes the Speer 100-grain softpoint boattail to 2875 fps in the International. The same charge behind a Sierra 100-grain softpoint yields 3020 in a 22-inch Ruger Model 77. That figures the loss per inch

to 41 fps. An old batch of Winchester 87-grain softpoints reaches only 2830 fps in the 22-inch Ruger; the identical load (from the same box) clocks 2712 in the International for a 34 foot-per-second/per-inch deficit.

While these numbers aren't exactly insignificant, they certainly aren't alarming. In a rifle to be used primarily for whitetail or black bear hunting, walking after varmints, or scaling precipitous peaks in search of sheep or goats, I'll gladly trade 35 to 50 fps of velocity per inch of barrel for the added convenience (less weight).

And how much trajectory disadvantage will you be acquiring? Well, a Nosler 140-grain Partition starting at 2800 fps shows a 23.1-inch drop at 400 yards

from a 200-yard zero. The same bullet drops 27.3 inches when kicked off at 2600 fps. This is only 4.2 inches more drop at 400 yards! Disastrous? No way.

## **Short Tubes And Fast Powders**

If you must have a short barrel, the savants say, handload it with a fast powder and retain as much of that elusive velocity as possible. Unfortunately, this advice is incorrect. Despite the fact you do realize a more serious velocity loss with a slow propellant than a faster one, the slow burner still provides higher muzzle speeds.

I eased up to maximum in my Model Seven 6mm, starting below and moving up slowly and cautiously with IMR-3031. My top load was 39.5 grains be-

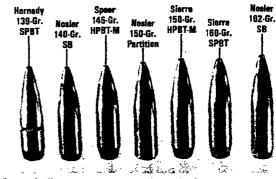
# Fastest load in 7x57 Featherweight utilized 45.0 grains of IMR-4320.

/60 SIERRA SPBT 51.0 /H 4831 CCI 200 WIN CASE



Featherweight turned in this group.





Seven bullets were employed in 7x57 Featherweight loads.



Chambered for the 7x57 Mauser, the Winchester Model 70 Featherweight averaged 1.38 inches with its best deer/antelope load.

SHOOTING TIMES/FEBRUARY 1984

### **Browning BBR** 7mm-08 Remington Muzzie Muzzin Energy Cas (ft./he.k (fps) CCI 200 3100 2448 34 IMR-4064 Rem. 1.63 Most accurate load: fast Speer 115-gr. HP 46.0 15 Nosler 120-gr. SB IMR-4064 44.0 CC1 200 Rem. 2964 2340 45 18 1.91 Okay for varmints Nosier 120-gr. SB H380 46.2 Rem. 9%M 2820 2119 43 1.89 Rem 18 Sierra 140-gr. SPBT IMR-4064 42.0 CC1 200 Rem. 2739 2331 73 3.31 78 IMR-4064 2325 28 1.98 Nosler 140-gr. Partition 42.0 CC1 200 Rem. 2735 Nosler 140 gr. Partition H380 43.3 Rem. 9%M Rem 2580 2089 52 20 1.73 Second most accurate load LOA 2.80: accurate Nosier 140-gr. Partition W760 47.0 Fed. 215 Rem. 2783 2408 31 12 1.79 Nosler 140-gr. Partition W760 47.0 Fed. 215 2809 2452 59 25 3.19 LOA 2.75; note differences Rem. Sierra 170-gr. RN IMR-4350 42.0 **CCI 200** 2335 2058 93 38 3.29 Rem. Sierra 170-gr. RN IMR-4831 45 B CC1 200 2453 2273 35 13 2.03 Fine heavy-game load Rem Remington 140-gr. PSP 2807 2449 62 24 2.89 **Factory Load**

NOTES: Loads were chronographed, with an Genher Model 33 Chronotech/Skyacoen system. The rife haz a 22 teek to This is the average for two five-shot groups, benchest, 190 years. Overall group agisting for

Overall group medage the all leads tested were 2.33 meters.



hind the Speer 80-grain softpoint. The velocity? A mediocre 3060 fps. The factory-loaded Remington 80-grainer, which uses a powder much slower than 3031, clocked 3320 fps, a full 260 fps more. Burning the slow Hodgdon H205 under the Sierra 85-grain hollowpoint boattail produced 3135 fps, 75 fps higher than the 3031 load and with a bullet five grains heavier.

In the limited-capacity .250-3000, where the quicker propellants look better due to the small case size, a top load of 3031 was 34.5 grains when coupled with the Sierra 87-grain softpoint. Velocity was 2812. Loading the same bul-

let over 41.5 grains of slow-burning Winchester W760 produced 2902 fps.

The moral of all these figures? If you want high muzzle speeds in cartridges of compatible capacity, use medium/slow to slow-burning powders. Save the quicker propellants for other purposes.

## **Advantage Of The Fast Burners**

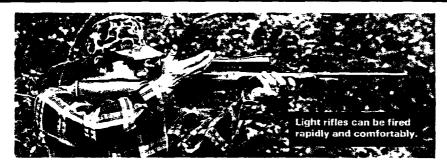
Quicker propellants like IMR-3031 and either DuPont or Hodgdon 4895 do have an advantage over the slower stuff for use in a lightweight: they kick less. There are two reasons. First, velocities are not up to those produced by the slower propellants with bullets of

the same weight loaded to top pressures; lower velocity yields lower recoil energy, all else being equal. Secondly, from a recoil standpoint, the less powder you use the better.

If you take a rifle and load it to a given velocity and pressure with a certain bullet using two powders of different burning rates, the faster propellant will always yield less felt recoil. When figuring the recoil energy of a load, part of the mathematical formula includes the "weight of ejecta." The "ejecta" includes everything coming out of the barrel, including the powder charge. The heavier the charge, the heavier the ejecta. In addition, the powder charge is multiplied by 1.75 to give it greater significance due to the phenomenon known as the "jet effect." This "jet effect" is what happens when the bullet, upon exiting the muzzle, is passed by the hot powder gases it had been preceding down the bore. The gases accelerate so violently the effect is exactly like that of a jet engine and causes the gun to come back into your shoulder with more authority.

So there is a viable use for the faster powders after all, particularly in a lightweight rifle, where recoil is more noticeable.

60 SHOOTING TIMES/FEBRUARY 1984



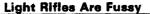
### Reduced-Load Accuracy

One other "truism" I explored briefly during my firing tests was this old bromide: many propellants do not perform well at reduced levels, most specifically the ball types. I'm not speaking of loads reduced to the level of small-game application but loads about 10 percent below the maximum working level to make shooting easier on barrel steel and the shooter's shoulder.

The second most accurate load in the Model Seven 6mm utilized such a load

(36.0/IMR-3031 Speer 80-grain combination). The load was accurate, pleasant to shoot, and relatively quiet; I wouldn't hesitate to use it as a 200-yard chuck or crow load.

In the Smith & Wesson .243, I tried 40.0 grains of Hodgdon H380, which is a spherical propellant. Hodgdon's manual goes to 43.0 grains with this bullet; the Speer book goes to 44.0 grains with its bullet of the same weight. The Smith grouped it into 1.92 inches. A very pleasant and accurate load, this one would also make a nice 200-yard varmint load.



One overlooked facet of lightweight rifles is worthy of mention. They are fussy. They respond well to some loads and poorly to others. Only the Smith & Wesson was atypical, shooting nearly everything well. The Smith was not an especially light rifle as .243s go, however, so don't let it cloud your objectivity.

The Model Seven did not shoot drastically large groups, but it did display a distinct preference for certain recipes. Note the 2.29-inch average with the Speer 85-grain boattail, a bullet it didn't seem to like.

The Ruger .250-3000 was a classic case. With the load it favored least, this rifle averaged nearly four inches. Another group went 3.71. Its favored loads cut those group averages by more than

half! The Browning was another example. It shot into 1.63 inches with its choice load and 3.31 with its least suitable. Two other loads grouped well over three inches.

Even the Featherweight, which was the heaviest gun of the clutch (despite its extremely slender barrel contour), was fussy, stoutly refusing to shoot well with any handload using a bullet weighing less than 160 grains. I doubt whether its extremely fast twist of 1:8½ inches was the reason. It shot well with both of the 140-grain factory loads while refusing to group less than 2.06 inches with any of the three heavy-bullet factory loads tried.

In closing, let me separate the grain from the chaff. When loading for light rifles, choose a fairly fast powder only if you wish to reduce recoil or barrel wear. If you want optimum ballistics from your short tube, forget the fast burners and load the same slow propellants you would choose for a long-barreled rifle.

Don't worry about the accuracy of your short, light, whippy little rifle. If the bedding is okay, it will shoot just fine. You might have to work a tad harder at finding a pet handload, but that's part of the charm. It's worth not lugging a heavyweight around in the deer woods.

NOTE: All load data should be used with caution. Always start with reduced loads first and make sure they are safe in each of your guns before proceeding to the highest loads listed. Since Shooting Times has no control over your choice of components, guns, or actual loadings, neither Shooting Times nor the various firearms and components manufacturers assume any responsibility for the use of this data.



Lightweights are built for field work.

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	Downrange Ballistics Of Top Loads													
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Bolice (Californ		T.	20E		400.	Messie	100		300.			(inches)		Perpens
Hornady 75-gr. HP (.243)	3300	2960	2639	2342	2069	1814	1459	1160	914	713	+1.3	may constitute as a		Varmints
Speer 85-gr. SPBT (.243)	3100	2854	2622	2400	2190	1813	1537	1297	1087	905	+1.4	- 6.5	-19.0	Varmints, antelope
Sierra 85-gr. HPBT (.243)	3100	279 <del>5</del>	2475	2178	1901	1813	1474	1156	895	682	+1.5	- 7.2	-21.7	Varmints
Hornady 100-gr. SPBT (.243)	2950	2710	2480	2266	2064	1934	1631	1367	1141	947	+1.7	- 7.4	-21.7	Deer, antelope
Sierra 87-gr, SP (.257)	2900	2582	2277	1993	1727	1624	1288	1001	767	576	+1.9	- 8.6	-26.0	Varmints, antelope
Sierra 90-gr. HPBT (.257)	3000	2640	2286	1960	1638	1798	1393	1044	768	536	+1.8	- 8.5	-26.0	Varmints
Speer 100-gr. HP (.257)	2800	2438	2103	1797	1525	1741	1320	982	717	516	+2.2	-10.1	-31.1	Varmints .
Speer 115-gr. HP (.284)	3100	2727	2384	2066	1774	2453	1899	1451	1090	804	+1.6	- 7.8	-23.7	Varmints
Nosler 140 gr. Partition (.284)	2800	2586	2383	2192	2011	2438	2079	1766	1494	1258	+1.8	<b>→</b> 7.9	-23.1	Medium big game
Speer 145-gr. HPBT (.284)	2800	2615	2438	2267	2103	2524	2201	1914	1654	1424	+1.8	- 7.7	-22.1	Target, silhouette
Sierra 160-gr. SPBT (.284)	2600	2432	2271	2116	1987	2401	2102	1832	1590	1374	+2.2	- 8.9	-25.6	Big game
Sierra 170-gr. RN (.284)	2450	2173	1915	1691	NŁ	2267	1783	1385	1079	NL	+2.9	-12.5	NL	Big game in timber
NOTES Valuations were rounded to the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back of the back									NE.	Nor tiste			12.	

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REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.

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"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_

7/ wish

stribution: C.B. Workman C.E. Ritchie

J.W. Brooks R.S. Murphy

File

RESEARCH	TEST	and	MEASUREMENT	REPORT	_	Report	No.	832691	

MODEL SEVEN LWT - PROTOTYPE ALUMINUM FLOOR PLATE SENSITIVITY ANALYSIS

Prepared by: S.R. FRANZ

Date Prepared: 11/30/83

Proofread and Cleared by:

R.E. Nightingale, Foreman - Test, Measurement Lab Signature Mughlyals 12-283

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

Signature kitches

Date

## TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 832691

REPORT TITLE: PROTOTYPE ALUMINUM FLOOR PLATE SENSITIVITY ANALYSIS

MODEL(S): MODEL SEVEN LWT

GAUGE OR CALIBER: .308

DATE: 11/30/83

WORK ORDER NO.: C-1856-000

PART NAME: FLOOR PLATE ASSEMBLY

DESIGNER/ENGINEER: J.W. BROOKS/D.E. BULLIS

## TEST TYPE:

⊥•	PHOTO LAB
2.	STRENGTH TEST-NO. OF GUNS TESTED
3.	FUNCTION TEST-NO. OF GUNS TESTED 10
4.	ACCURACY TEST-NO. OF GUNS TESTED Acceleration, Coverage, Opening
5.	MEASUREMENTS - TYPE Force, Screw Torque, Headspace
6.	ENVIRONMENTAL TEST COLD
7.	AMMUNITION TESTING & EVALUATION-TYPE
8.	VISUAL EVALUATIONOUT OFGUN SAMPLE
9.	ENDURANCE-NO. OF GUNS TESTED: 2
	NO. OF ROUNDS PER GUN 2,000
	TOTAL ROUNDS FIRED IN TEST 4,000
	AMMO TYPE: MAGSTARGET:
	RIM FIRECENTERFIRE .308
	180 gr.

REMINGTON ARMS CO., INC. Firearms Research Division

Report No. 832691 Page 1

November 30, 1983

TO:

R. NIGHTINGALE

FROM:

S.R. FRANZ

REPORT TITLE:

MODEL SEVEN LWT PROTOTYPE ALUMINUM FLOOR PLATE SENSITIVITY ANALYSIS

## ABSTRACT

A previous sensitivity analysis on the steel floor plate assembly showed that this design was sensitive to a number of variables and dimensions. In order to assure no floor plate openings with this design it would require 100% inspection of all floor plate assembly parts; a very costly and time consuming process. Because of this a new aluminum floor plate assembly was designed that would be cheaper to make and be less sensitive to manufacturing tolerances. (See Appendix for the Floor Plate Assembly Parts List) Prototypes were made and initial testing confirmed that the design was better from a functional standpoint. Production reviewed this design and recommended that some changes be made to allow for their manufacturing process. These design changes were made and 10 prototypes were built and assembled on .308 cal. actions. The Test and Measurement Lab received a work request from D.E. Bullis, Current Firearms Design, to run a sensitivity analysis on these prototype rifles.

## SCOPE OF TEST

To determine the sensitivity of the new aluminum floor plate assembly to floor plate openings during live fire.

## TEST RESULTS

Testing has proven that the new aluminum floor plate assembly is not as sensitive to floor plate openings as the steel assembly. The Report Text section contains a detailed explanation of the tests that were run as well as their results. Testing did show, however, that a condition exists that could adversely effect the functioning and appearance of the rifle. This condition is discussed below.

Report No. 832691 Page 2

TEST RESULTS - Contd.

Initial observations showed that the front trigger guard screw on all 10 rifles interfered with the floor plate when the floor plate was closed. This interference caused the floor the floor of out.

Not only does this detract from the appearance out it also increases the load on the floor plate late.

Could also increase the sensitivity of the floor plate openings because of this additional less. J.W. Brooks and D.E. Bullis were made aware of this condition so that corrective action could be taken. After this condition was found the lads were filed down to eliminate this interference.

Although this testing has proven that the aluminum assembly is a good design we must remember that these were prototype parts machined in the Research N/C area and the Model Shop, not vendor parts handled by production. As soon as vendor parts are received another sensitivity analysis similar to this one will be run to increase our confidence level before production begins with this assembly.

## REPORT TEXT

A total of ten newly designed aluminum floor plate assemblies were tested for sensitivity to floor plate openings. Sensitivity to the following parameters were considered:

- Part Wear (endurance)
   Guard Screw Torque
   Fit to Stock (washers)
- Latch Coverage
- Opening Force
- 6. Lubrication
- 7. Temperature (cold)

In addition, measurements, high speed movies and accelerometer measurements were taken to compare the aluminum to the steel assembly. An explanation of each test and the results follow.

Note: See last page in Appendix for prototype Floor Plate Assembly Parts List.

## TEST PROCEDURE

## A. Measurements

Before any testing was done some preliminary measurements were taken on all the rifles. A listing of the measurements made and the range of values measured are listed below. (See Appendix for the complete data listing).

Opening Force: 2.25 --- 3.50 lbs.
Latch Coverage: 0.065 -- 0.085
Headspace; min + .004 -- min. +.005 in.
Screw Torque: pre-set at 25 lb-in
Stock to Floor Plate Cover Gap: 0.008--0.031 in.

## B. Initial Shooting

After initial measurements all ten rifles had five rounds of Rem. 180 gr. .308 cal. ammo shot through them in the Test Lab jacks.

## C. Field Cycle Test

After the initial jack shooting all ten rifles were brought up to the Ilion Fish and Game Club for a full field function test. Each rifle was shot a total of 150 rds. of Rem. and Competitive ammo.

## D. Measurements

The initial measurements were repeated after the Field Test to determine if any changes had occurred. A summary of the results are listed below. (See Appendix for complete data listing.)

Opening Force 2.25 -- 3.25 lbs.

Latch Coverage 0.064 -- 0.084

Headspace: min + .004 -- min. + .005 in.

Screw Torque: front 10 -- 25 lb. - in.

Rear 20 -- 25 lb - in.

Stock to Floor Plate Cover Gap 0.010 -- 0.031 in.

This data shows that the assembly screws did loosen slightly and that the front screw loosened more than the rear. This is explained under the Screw Torque Test.

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## TEST PROCEDURE - Contd.

E. Part Wear (endurance), High Speed Movies, Accelerometer Measurements

Two rifles were selected from the ten guns supplied for endurance testing. The rifles selected were:

Ser. No. 7603854 Ser. No. 7603221

Both of these rifles were shot 2000 rds. each using Rem. 180 gr. .308 cal. ammo. The floor plates on both rifles were opened and closed every 20 rounds throughout this test. Rifle No. 7603854 had high speed movies taken both before and after endurance. High speeds were taken to determine if the aluminum assembly moves during live firing and to determine if this movement increases as rounds are put on the rifle.

No rifle experienced their pists phenings furing shooting. In addition, the high speed movies indicated that the assembly does move slightly downward (out of stock) but that it is considerably less that the steel assembly. There was also no noticeable increase in this movement in the second high speed taken after the 2000 rounds were fired. No floor plate latch movement was detected in either of the high speeds. This indicates that the slight movement of the floor plate housing is not enough to initiate latch movement during live firing. (These high speed movies are available for viewing in the Research Photo Lab.)

Accelerometer measurements were also made to confirm the movement of the floor plate assembly in the stock during live shooting. These measurements were taken with a PCB miniature accelerometer, Model No. 303A02, powered by a PCB power supply, Model No. 482A04. The accelerometer was mounted on the bottom of the floor plate housing to measure vertical acceleration. Similar measurements were also made on a rifle with a steel assembly for comparison. These measurements showed that the aluminum assembly had one-half of the downward acceleration of the steel assembly. This can be seen in the two graphs in the Appendix. These graphs show the Power Spectrum of the acceleration curves in the range of 0-2000 HZ taken with a WaveTek/Rockland Model 5830A Spectrum Analyzer. The graph for the steel assembly shows that the resonant frequency of the floor plate base is 335 HZ and the peak acceleration is 348 g's at this frequency. The second graph shows that the aluminum assembly resonates at approximately the same frequency but the acceleration is approximately half that of the steel assembly.

## TEST PROCEDURE - Contd.

## F. Guard Screw Torque

The eight remaining rifles were used for this test. Screw Torque was set at seven different values and 20 rds. of Rem. 180 gr. ammo was fired per setting. After every 20 rds. screw torque was checked to determine if the screws had loosened up.

mis seems to contradict an earlier condition where the screws loosened after the field cycle test when they were pre-set at 25 lb-in. The difference between the two is that 150 rds. were fired on the field test and only 20 at the individual settings for this test. It should be stated here that the two endurance guns were fired 2000 rds. each without re-tightening the screws and no floor plate openings occurred. Although it seems that floor plate openings are not sensitive to screw torque.

## G. Fit to Stock (Washers)

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Production has stated that they cannot control the inletting depth for the floor plate assembly in the stock. This is true for all M/700 and Model Seven Lwt Calibers. To compensate for this lack of control they purposely inlet too deep and use spacers between the stock and the floor plate assembly to ensure a good looking fit to the stock. Using spacers in this way changes the interaction between the floor plate assembly and stock because support to the assembly is decreased. This test was designed to determine if this effects the performance of the floor plate assembly. Eight rifles were tested with no spacers and four spacers between the floor plate assembly and the stock. Each spacer was 0.015 in. thick. Twenty rds. of Rem. 180 gr. .308 cal. ammo was fired per condition and no floor plate openings occurred.

## H. Latch Coverage

Initial measurements showed that latch coverage for this ten rifle sample was in a range of 0.065 to 0.085 in.

Latch coverage was decreased in four steps by filing away the floor plate edge on five rifles until each rifle had 0.005 in. coverage. At each increment 20 rds. of Rem. 180 gr. .308 Cal. ammo was fired. No floor plate openings occurred at any of the latch coverage increments. See data in Appendix.

## TEST PROCEDURE - Contd.

## I. Opening Force

The same five rifles used for the latch coverage test were used here. Two conditions were tested. 20 rounds of Rem. 180 gr. .308 cal. ammo was shot with the floor plate latch springs at full length and then reshot with the springs cut to 3/4 length. The latch spring could not be cut any shorter than this and still exert a force on the floor plate latch. We considered that a 3/4 length spring would be the worst possible condition that could occur with this design and still allow proper functioning. Latch opening forces were measured for the full length and 3/4 length springs with the cover opened and closed for comparison. These numbers can be seen in the Appendix. No floor plate openings occurred on any of the five rifles with the full or 3/4 length spring. To go one step farther two of the five rifles had their latch springs completely removed and 20 rounds of ammo was shot through each. In this way the only force on the floor plate latch was the force due to the floor plate cover and friction. One rifle opened 1 out of 20 rds. and the other opened 2 out of 20 rds.

## J. Lubrication

All firearms should be cleaned and oiled periodically to ensure proper functioning. However the frequency and extent of cleaning depends on the individual. This lubrication test was designed to test the extremes of lubrication on the rifle in the floor plate and latch area. The two conditions tested were with no lubrication at all on the assembly (dry) and with the assembly saturated with Du Pont Teflon wet lubrication. Two Model Seven's were selected for this testing. In addition three competitor's rifles were also tested for controls. These rifles were: Win. M/70 in. .30-06 cal. Browning BBR in .30-06 cal. S&W M/1500 in .30-06 cal.

20 rds. of Rem. 180 gr. .308 cal. ammo was fired per condition in the Model Seven's and Rem. 180 gr. 30-06 cal. ammo was fired in the competitor's rifles. None of the rifles, Model Seven's or competitor's, experienced any malfunctions during this test. Latch opening forces were measured with and without lubrication on all the rifles tested. These measurements show little if any difference in opening forces between the two conditions. This data can be found in the Appendix.

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## TEST PROCEDURE - Contd.

## K. Temperature (Cold)

Firearms are used in all types of climates and temperature extremes. They, therefore, have to operate properly in these conditions. The cold test determines if firearms will operate properly in extremely low temperatures. The same two Model Seven's used in the lubrication test along with the three competitors listed above were stored overnight in the lab's freezer at -30 Deg. F. The following day they were removed and floor plate latch opening forces were measured. Following these measurements 20 rounds of ammo was shot through each rifle. After shooting latch opening forces were measured again. No floor plate openings occurred on any of the rifles. See Appendix for opening force data.

# M/ 7 SENS. ANAL.

# TESTING SEQUENCE

- o MEASUREMENTS
- o FIELD TEST ALL 10
- o MEASUREMENTS
- o PICK TWO FOR ENDURANCE
- o H.S. ONE ENDUR. GUN
- o ENDUR. 2 TO 2000 RDS.
- o H.S. AFTER ENDURANCE
- o GUARD SCREW TORQUE TEST
- o FIT TO STOCK (WASHERS)
- o OPENING FORCE
- o LATCH COVERAGE
- o 2 GUNS FOR:

TEMPERATURE TEST LUBRICATION TEST

## APPENDIX

- o Measurements
- o Field Cycle Sheets
  o Endurance Sheets
  o Acceleration Data
  o Screw Torque Data
  o Fit to Stock Data

- o Latch Coverage Data
  o Opening Force Data
  o Lubrication Data
  o Cold Test Data
  o Floor Plate Assembly Parts List

## BEFORE TEST-0 RDS

GUN NUMBER	OPENING FORCE (16)	COVERAGE	WOOD/COVER GAP (in)	HEADSPACE MIN+	SCREW TORG. FRONT.REAR
7604086 7604091 7603907 7603854 7603187 7604201 7604244 7603221 7603910 7603821	4.5 2.75 3.5 2.75 3.5 2.75 2.25 2.5	.075 .077 .066 .073 .068 .081 .065 .068 .085	.018 .01 .018 .008 .016 .02 .016 .03 .031	.004 .005 .004 .004 .005 .004 .005	25,25 25,25 25,25 25,25 25,25 25,25 25,25 25,25 25,25

## AFTER FIELD TEST- 155 RDS

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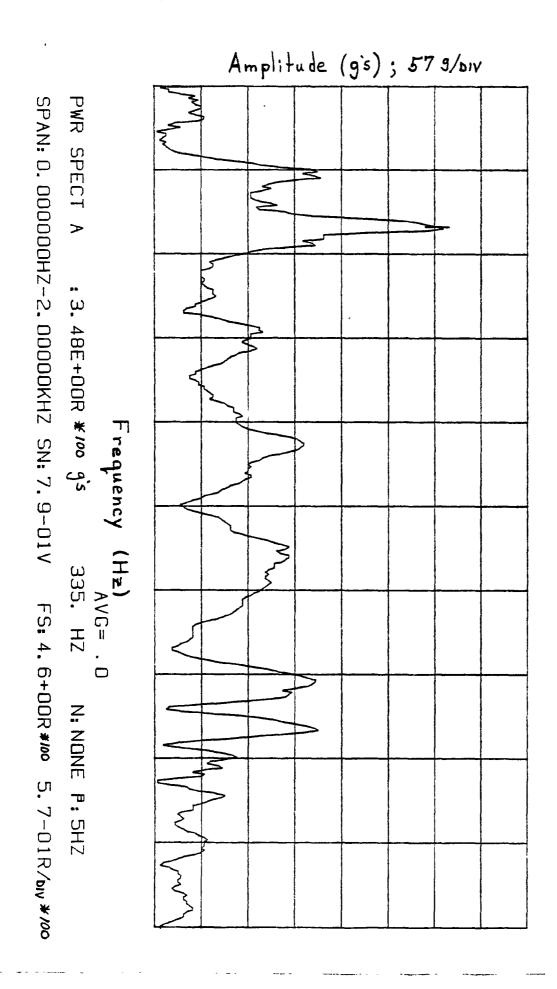
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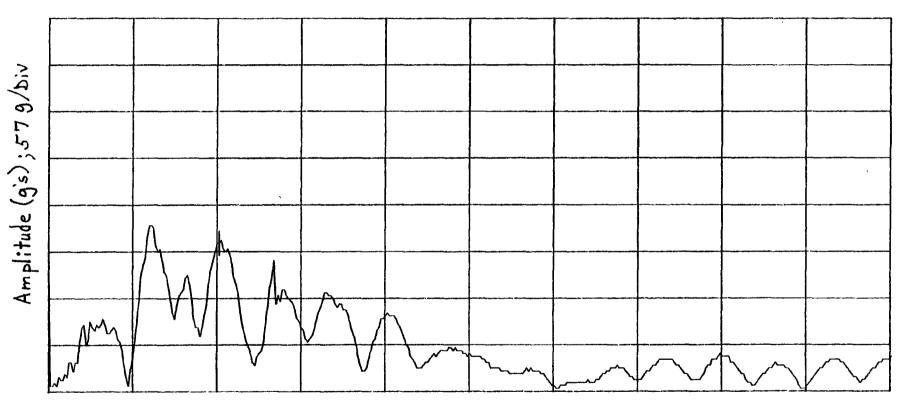
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# ALUMINUM ASSEMBLY



Frequency (Hz)

AVG=

PWR SPECT A

: 1.84E+00R */00 g's

405. HZ

N: NONE P: 5HZ

SPAN: 0. 000000HZ-2. 00000KHZ SN: 7. 9-01V FS: 4. 6+00R*/00 5. 7-01R/biv */00

# SCREW TORQUE TEST

ERIAL NO	l in-lb	5 in-lb	10 in-lb	15 in-1b	20 in-1b	25 in-1b	30 in-1b
4086	OK	<b>o</b> K	OK	OK	<b>8</b> K	OΚ	OK
4091	OK	OK	OK	ÛK	OK	OK	DK
3907	OK	OK	0K	OΚ	ΟK	OK	OK
3187	0K	OΚ	OK	OK	OΚ	ΘK	OK ·
4201	0K	OK	OK	OK	<b>O</b> K	DΚ	OK
4244	OK	ūΚ	OΚ	ΟK	ΩK	ΩK	0K
3910	<b>O</b> K	OK	OK	OK	OK	OK	0K
3821	0K	OK	ΟK	OK	OK	OK	OK

20 rounds were fired per condition.

### FIT TO STOCK (WASHERS)

SERIAL NO 4086 4091 3907 3187 4201 4244 3910	NO SPACERS OK OK OK OK OK OK	(0.0") 4	0K 0K 0K 0K 0K	(.060")
3910 3821	DK DK		OK OK	

20 rls fired per condition.

#### LATCH COVERAGE TEST

SERIAL NO	4086	4091	3907	3187	4244
COVERAGE	.075-0K .065-0K .055-0K .045-0K .035-0K .025-0K .015-0K	.050-0K .030-0K .010-0K .005-0K	.050-DK .030-DK .010-DK .005-DK	.060-0K .040-0K .020-0K .010-0K .005-0K	.055-0K .035-0K .015-0K .005-0K

20 rounds fired per condition.

# OPENING FORCE TEST

SERIAL NO 4244 3187 3907 4091 4086	3/4 LENGTH OK OK OK OK OK	FULL LENGTH OK OK OK OK OK OK	20 rds fired per condition
	OPENING FORCES		
SERIAL NO	3/4 LENGTH OPEN CLOSED	FULL LENGTH OPEN CLOSED	
4244 3187	.75 1.25 .75 1.25	1.25 2 1.25 1.75	
3907	.75 1.75	1.5 2.25	
4091 4086	.75 2.75 .75 1.75	1.5 3 1.25 3	

### LUBRICATION TEST

MODEL	SERIAL NO.	LUE FIRING	RICATION OPENING FORCE
REM M/7 REM M/7 WINCHESTER M/70 BROWNING BBR S&W 1500	7603910 7603821 G1486933A 01185RP117 PN00862	OK OK OK OK	2.25 2.50 6.00 4.00 5.25
			JBRICATION_
REM M/7	7603910	FIRING OK	OPENING FORCE 2.25
REM M/7 WINCHESTER M/70	7603821 G1486933A	OK OK	3.50 6.75
BROWNING BBR	01185RP117	ÓΚ	4.00
S&W 1500	PN00862	OK	5.25

20 rds fired per condition

# COLD TEST (-30 F)

MODEL  REM M/7 REM M/7 WINCHESTER M/70 BRCHNING BBR S&W 1500	7603910 7603821 61486933A 01185RP117 PN00862	FIRING OK OK OK OK OK	BEFORE FIRING OPENING FORCE 2.25 3.25 4.00 3.75 4.00
REM M/7 REM M/7 WINCHESTER M/70 BROWNING BBR S&W 1500	7603910 7603821 G1486933A 01185RP117 PN00862		AFTER FIRING OPENING FORCE 2.25 3.25 5.00 4.00 5.00

20 rds fired per condition

Prototype Aluminum
Floor Plate Assembly
Parts List

-92909 TRIGHER GUARD	192909	92909	
ASSEMBLY	92822	92822	
B-92848   Floor Plate Latch	92848	92848	
Floor Plate Latch Blank	92885	92885	
A-92847   Floor Plate Latch Spring	92847	92847	
A-92846   Floor Plate Latch Pin	92846	92846	
D-92889 Sub-Assembly	92889	92889	
A-16453   Floor Plate Pivot Pin	16453	16453	
D-92839 Floor Plate Cover	92839	92839	
D-92838   FloorPlate Cover Blank	92838	92838	
D-92837 Trigger Guard	92837	92837	
D-92836 Trigger Guard Blank	92836	92836	
B-92849 Front Guard Screw Spacer	92849	92849	
Front Guard Screw Spacer Blank 929		92883	
B-92850 Rear Guard Screw Spacer	92850	92850	
Rear Guard Screw Spacer Blank	92884	92884	

#### RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	AREA OF TESTING	
Developmental	Safety Related	Litigation
Design Acceptance	Competitive Evalua	etion Warenouse Audit
Pre-Pilot	New Design	Cost Reduction
Pllot	Design Change	Stake
Production Acceptance	Plant Assistance	Other
FIREARM STATS.  MODEL: 7 LINT  CAL or GAGE: 308	FORMAL	DATE REQUESTED: 9/26/83 DATE NEEDED BY:
BARRELTYPE: CARRINE	TEST RESULTS	REQUESTED BY: D. BULLIS
PROOFED: YES V NO	ONLY	WORK ORDER NO: 0-1856-600
TEST TYPE		
Strength Test Ammunition Test Dry Cycle Test Photo/Video		
V Function Test Environmental Test V Measurements V Other SELSITIVITY TE.		
Accuracy Test Customer	Complaint Endurance T	•
THE AND A STAN THE REACTION FOR THE STATE.		
EXPLAIN IN DETAIL THE REASON FOR THIS TEST:		
SENSITIVITY TEST: HEAVY LOAD		
1. AMOUNT OF LATCH ENGAGEMENT 15 quns		
3 TRU GUARD ADJUSTED IN SEASONS to COVER HOLD NOT TOWN WOOD , CONTING		
4. COURT TOUCHUS WAS		
5. 11.6. MOVIES OF MAX. RECOIL. HEAVY LOAD & LACK.		
R. Environment Test: Coid P. Hot		
2) 9. Enduronce life of parts & effect on operation		
1 100 2 10 10 10 10 10 10 10 10 10 10 10 10 10		
-GUNS REQUIRED:		;
-11. Corrosion	•	
-F.5+ 7/6		
	· · · · · · · · · · · · · · · · · · ·	
NOTE: NO firearms or parts will be tested in the Labs unless they are		DATE COMPLETED:
accompanied by a Work Request, and both are delivered to		TEST COMPLETED BY:
the Labs by the designer or engineer. All Work Requests are		REPORT DATE:
to be filled out in detail. No Exceptions.		
		•