

LIMITED DISTRIBUTION

RESEARCH DEPARTMENT

HIGHLIGHTS REPORT

FEBRUARY 1982

DISTRIBUTION

J.P. McAndrews	C.A. Riley
E.F. Barrett	L.J. Scott
E. Hooton, Jr.	W.H. Coleman, II
J.G. Williams	<u>C.B. Workman</u>
E.B. Beattie	C.A. Nash
R.A. Partnoy	

NOTE: Please destroy this report when it has served your needs.

FIREARMS

XSG/XPG Shotgun Design

Status of specific development items is as follows:

- Aluminum Receivers - samples will be completed by March 15.
- Rocker Arm Locking System - prototype scheduled for testing in April.
- Rear Locking System - prototype scheduled for testing in March.
- Carrier Release - sample of new design in test: results favorable after 4,500 rounds.

Model 7400/7600 Rifles

Nine rifles in 7mm Exp. Rem. caliber have been function tested with the altered barrel extension. Malfunction rate was less than 1%. Production was given the release to produce the 7mm Exp. Rem. utilizing this change.

Screw machine firing pins have been endurance tested to 6,240 rounds in one gun and 4,300 rounds in the second gun. No breakage or excessive wear observed.

Bolt Action Rifles

Five M/700 fire controls with blocked sears and blocked triggers are in the test lab or evaluation. Sample fire controls are complete without a connector to eliminate a part, insure a more positive life, and maintain proper clearance.

Two Model 7 New Generation bolt action rifles are now complete.

Bob Emmons Styling - Bolt Action Rifle

Two sample stocks were hand delivered to Ilion by Bob Emmons and reviewed by Research, Marketing and Production personnel. Based on modifications to facilitate Production operations, Emmons will prepare a third sample which will feature alterations to the stock, action, and barrel contour. That sample is scheduled for completion by April 1, 1982.

Research Department

-1-

February 1982

Bolt Action Carbine

A prototype stamped 308 caliber no-bind followers will be tested in March.

An aluminum former is still expected by March 1. Under our contingency plan a second generation master stock has been received and will be ready for the tool room February 24.

Model 870 Competition Trap Shotgun

Endurance testing of two guns with bolt-receiver clearance within the .035" limit established for Production has reached 34,500 and 32,000 rounds with no apparent cracking in the receivers. Those tests will continue in an effort to define receiver endurance life.

Model 700 Classic Long Action in 257 Roberts

Guns for this limited run of M/700 Classics will have a standard SAAMI chamber.

Options being investigated to solve the feeding problem of this short cartridge in the long action consist of design alternatives for magazine boxes, followers and springs. Coated boxes are also being considered.

Warning Rollmark for Rifles and Shotguns

Drawings are being transmitted to the Plant to add the following information to all models: "WARNING - Read Instruction Book for Safe Operation - Free from Remington Arms Company, Inc., Ilion, N.Y., U.S.A."

Model 700 No-Bind Follower

A larger sample of no-bind followers will be completed in March for additional testing of all M/700 Calibers.

Form-Rolling -

Rol-Flo Engineering, Inc. has completed the form-rolling dies for the M/1100 trigger plate pins. Material has been located, and blanks will be made in the N/C Shop. A pilot run at Rol-Flo is expected in April.

Research Department

-2-

February 1982

Cut Checkering

Modifications to the M/Four stock checkering pattern are being made to accommodate the limitations of the CO.RE.MA. machine.

Several companies have been contacted about laser checkering. To-date, all responses have been negative. The major concern is the brittleness of the points (diamond peaks) after burning with a laser.

CNC Vertical Machining Center

Delivery of the Matsuura machining center is now expected in March.

Model 979 Seismic Guns

The balance of two guns required to fulfill MAPCO's order will be shipped in March.

Injection Molding of Metal Ceramic Components

The Witec equipment has been received, and is in storage in Bldg. 75. Installation will begin approximately March 1. Witec equipment start up is expected by April 1.

The molding machine has been shipped, with delivery expected by the end of February.

Visits were made to the Powder Metal reps in Chicago and Detroit to discuss the injection molding venture.

"Complex Metal Powder Shapes by Injection Molding" - Battelle Program

A status review meeting to discuss the third progress report and more recent developments was held on February 9, 1982. All of the USA sponsors were in attendance for the first time - indicating the strong interest in the program.

AMMUNITION

Shotshell

New Unibody Shotshell Process

Initial quantities of 2-3/4" 12 gauge bodies from the Production body former met dimensional consistency goals. Quality is excellent with defects running less than 1%.

Production 20 gauge tooling is on hand and 8 gauge tooling will be ordered this month.

Polymer Support Program

Controlling extrusion die pressure by manipulating screw speed appears to produce product with less short term variation. The scrap level on the one extruder equipped with die pressure control appears significantly reduced but the reduction has not been quantified. Additional work is required to eliminate long term variation.

Primer Basics

Tests were conducted to establish primer charge weight tolerances for 1024 mixture made with DuPont "amber" nitrocellulose. While the analysis is not complete, the current specified average of .95 to 1.00 gr. (dry) with individual limits in the order of .82 to 1.12 gr. (dry) will be adequate for target loads using Hercules 257 powder.

Integral Anvil Battery Cup

A sample of the 12 gauge promotional shotshells loaded with ABC-202 primers by Lonoke PE&C has been shipped to Technical Services for evaluation. If the results are satisfactory, a Release to Ship will be initiated and Production will begin their four million round production run.

Preliminary efforts at Bridgeport indicate that increased flash hole area will allow use of larger pellet weights of priming mixture. The concept of elongated flash holes is being studied.

Extended Range Shotshell

A Task Force was formed to coordinate project implementation. A plan to meet the 1983 introduction requirement was presented to the February Operations Committee. The Task Force is reassessing their recommendations and establishing a minimum fall back position in light of the potential resource conflicts with the drop ship program and new unibody shotshell process introduction.

Research Department

- 4 -

February 1982

Shotshell - Cont'd

Asbestos Elimination

The Technical Data Package for the 8 gauge plastic basewad shell has been transmitted to Production. The Plant is now undertaking a 350M round trial and pilot run.

Center Fire

Extended Range Center Fire Ammunition

A revised informational project has been released for distribution. Technical data sheets and cartridge samples for use by Marketing to develop art work for the tube and advertising graphics are 90% complete. A firm quotation for 1983 introduction quantities of bullets has been received from Sierra.

To date, four samples of cartridges have been machine loaded with satisfactory ballistics: 30-06 Spfd, 7mm Rem. Mag, 243 Win and 223 Rem.

The bread-board device capable of cannelluring boattail bullets in-line with the duplex loader's bullet feed system has been demonstrated. This device will be upgraded to prototype design and coupled with the bullet feed and orient system which is 80% complete.

357 Rem Max 158 Gr. SJHP

Design of the vented test barrel has been revised to more adequately reflect Ruger's revolver design. The dimension which controls depth of the vent-gap has been increased by 88% over the conventional 357 Magnum dimension. This change does not affect our compliance with established SAAMI chamber dimensions.

The new test barrels are due from Ilion in March, at which time final testing of the cartridge will begin.

7mm Bench Rest Remington Case

The experimental sample was processed through packing after passing all ballistic tests. The process record has been revised and Production will be asked to comment on a second startup attempt. The component is difficult to produce; yield data for this experimental run is summarized:

7mm Bench Rest Remington Case - Cont'd

Cups	44,000	100%
Before taper	42,000	95%
After taper	26,000	59%
Packed	25,280	57.5%

JPGlas:j1
Attachments

Research Department

- 6 -

February 1982

RESEARCH PERSONNEL

Remington Roll

	<u>Actual</u> <u>1/31/82</u>	<u>Actual</u> <u>2/28/82</u>	<u>Forecast</u> <u>12/31/82</u>
Exempt	61	61	62
Nonexempt	21	21	20
Wage	<u>23</u>	<u>23</u>	<u>24</u>
Total	105	105	106

Research Department

- i -

February 1982

PATENTS & TRADEMARKS

Summary of Activity

February 1982

Patent Applications Filed

N O N E

Trademark Applications Filed

N O N E

Patents Received

ARMORED METAL TOOLS

(C. H. Dawson)

Patent Issued Nov. 17, 1981

Patent Received Jan. 22, 1982

40G- NETHERLANDS

Trademarks Received

N O N E

Inventions Reports

N O N E

Research Department

-ii-

February 1982