

Xc: R.E. Fielitz  
W.H. Coleman, II  
J.W. Bower  
E.O. Fini  
J.C. Hutton  
C.E. Ritchie  
J.R. Snedeker  
W.L. Tomek

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REMINGTON ARMS COMPANY, INC.

NEW PRODUCTS RESEARCH

MONTHLY PROGRESS REPORT - MAY 1985

## **FIREARMS RESEARCH**

### **SHOTGUN DEVELOPMENT**

#### **M/1100 Functional Improvements (1987 Introduction)**

The reduced radius gas cylinder design with a dog-leg style spring is undergoing extensive testing using high-speed photography and bolt velocity measurements. The previous, chaotic movement of the spring has been brought under control by the addition of a tab over the bottom of the spring. The locations and height of tabs to limit spring opening are being determined.

Development guns containing the other improvement items (stainless steel magazine tube, Special Field-type magazine detent system, wide extractor and two piece firing pin retractor spring) went to the Test Lab on May 24 for additional testing.

#### **M/870 Restyle (12 Ga. Introduction 2Q86; 20,28,410 Ga.- 1988)**

Introduction of the 12 Ga. has been delayed from January 1986. Correspondingly, introduction of the small gauges has been delayed until January, 1988.

Trial and Pilot barrels and choke tubes have been received from the vendor. The rate of turn-out of the choke tubes was very acceptable, ranging from 0 to 3/16 of a revolution in 100 rounds. Patterns have been shot and are being analyzed.

#### **M/1100 Restyle (12 Ga. Introduction 2Q86; 20,28,410 Ga.-1988)**

Introductions have been delayed consistent with the Model 870 Restyle.

All drawings and parts lists are complete to the latest revisions and include the choke tube design transmitted to Production for the Model 870 Restyle.

Research Department

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#### M/870 Functional Improvements (1987 Introduction)

The new ejector has been field functioned after approximately 5,000 rounds per gun of endurance shooting. There were no malfunctions. One steel and one Delrin ejector were further endured to 11,000 rounds with no parts breakage or malfunctions.

#### M/870 Special Purpose Magnum (1985 Introduction)

Research has requested Production prepare a sample lot of barrels, omitting chrome plate in the chamber. Barrels should be ready for evaluation by the end of May.

#### M/870 & 1100 Special Purpose Deer Gun (1986 Introduction)

Specifications for this gun are similar to the Special Purpose 1985 Magnums. Drawings have been issued to Production for estimating.

#### New Concept Shotgun

Meetings were held in Ilion on May 8 with representatives of F&FP Textile Fibers, and PPD to discuss applications of synthetic materials. Separate reports, listing action items, have been forwarded to the appropriate personnel.

#### International Over and Under

A consultant's contact is in place with Phil Haskell. He will visit Ilion shortly to begin the design investigation of the FIAS guns in Research.

#### RIFLE DEVELOPMENT

##### New Bolt Action Rifle (1988 Introduction)

Development of the exposed component fire control has been stopped in favor of a modified Model 700 design. This new design satisfies all program goals and capitalizes on the strong reputation of the Model 700. Design of the new fire control is complete and in the Model Shop for fabrication.

Research Department

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May, 1985

### M/700 Classic - 350 Rem. Mag. (2Q85 Introduction)

Trial and Pilot rifles have been delivered to Research for evaluation.

### Sportsman 78 - 223 Caliber

All drawings and parts lists are complete. Drawings have been turned over to Process Engineering for estimating. Transmittal can take place shortly after economics are approved by the Business Team.

### CAD/CAM Development

Approximately 50% of the Model 1100 parts have been modeled on the CV System. Modeling and detailing of the New Bolt Action Rifle is now being given priority, as well as modeling for the FMS.

Two additional contract designers have been hired, and a non-exempt engineering aide in PE&C has been offered a job as a CV detailer.

## **AMMUNITION RESEARCH**

### **SHOTSHELL PRODUCTS**

#### "Premier"

#### 12 Ga. 3" 1 7/8 oz.

All R&D handload development using Hercules HM85 Powder, F209 Primer and Gulf Buffer was completed, but 30 day - 150°F storage test results of experimental production loads indicated  $\bar{x} + 3\sigma$  pressures of 17,000 psi. Additional R&D tests are now underway using Du Pont powders, Remington 150X primer, "Microthene" (Federal Type) and "Paxon" (Winchester Type) buffers.

#### 12 Ga. 1 5/8 oz.

Although R&D handload development indicated acceptable loads with Hercules HM80 Powder and F209 Primers, experimental loading at Lonoke encountered unsatisfactory ballistics variations with HM80 Powder. Additional R&D tests are now underway using Du Pont powders and the Remington 150X Primer.

Research Department

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**SHOTSHELL PRODUCTS - Contd.**

**"Premier" - Contd.**

**12 Ga. 1 1/2 oz.**

Screening tests have identified Du Pont 8468 as the powder of choice. Environmental testing has confirmed this and a designed experiment is now underway using 8468, Gulf Buffer and the F209 Primer. Some additional development work will take place with the Remington 150X Primer.

**20 Ga. 1 1/4 oz.**

An experimental run using Hercules BS 530 Powder, F209 Primer and Gulf Fluff has been completed at Lonoke and acceptance testing is now underway.

**20 Ga. 1 1/8 oz**

Screening and environmental testing have identified Hercules HM90 as the powder of choice. A designed experiment with the candidate powder has confirmed the earlier results. An experimental production machine load is in progress. Backup screening tests using Du Pont Powders, Remington 150X Primer and other buffers are planned.

**Buck Loads**

**12 Ga. 3" 000 BK**

Experimental loading at Lonoke using Du Pont 8688, Remington 150X Primer and Soltex Fluff is complete and 5 day environmental storage test results were acceptable. Product is in transit to R&D for more comprehensive acceptance test.

**12 Ga. 3" 00BK, 1BK & 4BK**

Screenings tests have identified Hercules HM90 Powder, F209 Primer and Soltex Buffer as acceptable components for these loads. However, additional tests using the Remington 150X Primer and Du Pont Powders are underway because of ballistic variation observed at loading with Hercules powder.

**12 Ga. 2 3/4" 00BK**

R&D handload development is complete using Hercules HM85, F209 Primer and Soltex Buffer. Technical data package has been issued.

Research Department

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May, 1985

## SHOTSHELL PRODUCTS - Contd.

### Buck Loads - Contd.

12 Ga. 2 3/4" 1 BK

Screening tests are underway with Hercules and Du Pont Powders, F209 and Remington 150X Primers and Soltex Buffer.

### **STEEL SHOT**

12 Ga. 3" 1 1/4 oz., 2 3/4", 1 1/8 oz.

The Trial & Pilot production run, 30 day environmental storage, and R&D acceptance tests are complete and all results indicate products are fully acceptable.

### **REMINGTON TARGET LOADS**

#### Figure 8 Wad

Factory tooling for one cavity of an existing "RXP" mold was installed and a product molding run was made at the Osley and Whitney Plant. Cold temperature testing of this product indicated 0% breakup versus 100% breakup for "RXP" control wads.

### **PREMIER CENTERFIRE**

An appropriation request to purchase a modified bullet assembly machine was submitted and is awaiting business team approval.

A meeting was held on May 22 at R.H. Miller with Du Pont ETL consultants. A process to chemically polish brass cases has been demonstrated that gives satisfactory results and is within goal costs without waste treatment. Tests at Lonoke demonstrated successful treatment of wastes using existing plant equipment. Lonoke is currently developing a response to the EPA outlining new plans for managing existing waste water basins. A change in Lonoke's method of waste treatment could require a new process as yet undeveloped to treat waste waters from the chemical polish operation. ETL is preparing the technical data package for Remington review 7/1/85.

JWBower:js

Research Department

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May, 1985

RESEARCH PERSONNEL AS OF MAY 31, 1985

FIREARMS

Exempt 23

Non/Exempt 11

Wage Roll 15

Bauman, Thomas G.  
Bower, James W.  
Calkins, Kevin  
Coleman, Wm., H., II  
Curry, Wm. M.  
Douglas, Terry C.  
Findlay, David S.  
Franz, Scott R.  
Hand, Charles J.  
Hennings, James H.  
Hugick, Adam A.  
Hutton, James C.  
Lawrence, Jeffrey A.  
Martin, Fred E.  
Murphy, Randall S.  
Plunkett, Thomas J.  
Powers, Thomas P.  
Rankins, Edwin D.  
Rowlands, Kenneth C.  
Sanzo, Robert J.  
Saunders, Eugene L.  
Smith, Floyd H.  
Snedeker, James R.

Frost, Helen B.  
Jones, Raymond A.  
Martin, James S., Jr.  
Pickett, Wm. F.  
Saunders, Susan P.  
Schuster, Joyce M.  
Smithson, Ronald L.  
Stephens, Charles J.  
Supry, Fred L.  
Urtz, Donald J.  
Weaver, Harold E.

Baggetta, Joseph A.  
Beader, Robert W.  
Bedworth, Gary R.  
Butler, Richard G.  
Fiorentino, Dominick J.  
Harter, James D.  
Howe, Robert W.  
Jennings, Dale E.  
Kozakowski, Robert  
McManus, Owen  
Paslak, Wm. A.  
Starks, Gerry  
Truax, Irving E.  
Williams, Clifford  
Williams, Donald

Total Firearms Personnel - 49

AMMUNITION

Exempt 4

Non/Exempt 2

Wage Roll 2

Cole, Wm. T.  
desJardins, C.F.  
McDonald, Alexander D.  
Tomek, Warren L.

Conant, Paul  
Thomas, Dennis

Dunn, Timothy  
Selan, Jerry

Total Ammunition Personnel - 8

\* ESD Engineer - James Ronkainen

REMINGTON PERSONNEL

Remington Roll

Actual  
5/31/85

Exempt

Ammunition Research	4
Firearms Research	23
Firearms Modernization	6
Administration	<u>1</u>

Total Exempt 34

Non/Exempt

Ammunition Research	2
Firearms Research	11
Firearms Modernization	1
Administration	<u>1</u>

Total Non/Exempt 15

Wage Roll

Ammunition Research	2
Firearms Research	15
Firearms Modernization	<u>1</u>

Total Wage Roll 18

New Products Research 66