

xc: R.E. Fielitz  
C.B. Workman  
~~J.W. Bower~~  
W.L. Tomek  
R.L. Sassone  
J.R. Snedeker  
J.C. Hutton  
E.O. Fini

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CONFIDENTIAL

REMINGTON ARMS COMPANY, INC.

NEW PRODUCTS RESEARCH

MONTHLY PROGRESS REPORT - FEBRUARY, 1985

**FIREARMS RESEARCH**

**SHOTGUN PRODUCT DEVELOPMENT**

**Model 1100 Functional Improvements**

Circumferential springs, of 6150 material and .037 in. thick, are being altered in the Model Shop. The preload was 9-10 lbs. as a result of cupping of the material during forming. Altering the free radius should lower the preload to the 6 lb. design specification. Testing of modified springs should begin the week of February 25.

Other modifications to the Model 1100 include a stainless steel magazine tube, a thicker extractor, a more rigid carrier, a new magazine cap detent system, and a two-piece firing pin retractor spring. To date, 6,800 total rounds have been shot on four of the twenty test guns and 3,000 rounds on two of the ten control guns. Malfunction rates on the test guns are significantly lower than the control guns. No part breakages have occurred on the test guns versus one broken extractor on the control guns.

**Model 1100 Restyle - 12 Gauge**

Drawings are being revised and updated to include the latest revisions agreed to by Marketing, Production, and Research. Drawings will be ready to transmit by February 28.

**New Concept Shotgun**

PDS has successfully fired standard percussion primers using ultrasonic energy and spark discharge. A number of electronic trigger sensing and sear release mechanisms have also been demonstrated. A study is being conducted to determine which of the concepts will best meet our design specifications.

Research Department

February, 1985

New Concept Shotgun - Contd.

Instrumentation for continuous bolt velocity measurements has been built by EDL and successfully demonstrated at Ilion.

Potential composite materials are being investigated.

Model 870 Restyle - 12 Gauge

Heat treating of the choke tube has eliminated yielding of the material when shooting steel shot. The choke tube thread has been redesigned to a 32 TPI standard V-thread, located at the rear of the tube. The amount of rotation during use has been reduced to approximately 3/16 of a revolution in 100 rounds, which is comparable to Briley and Winchoke, and considerably better than Browning. Additional redesigns are being tested in an effort to reduce the amount of rotation even further. A transmittal is expected by the end of February.

RIFLE PRODUCT DEVELOPMENT

New Bolt Action Rifle

Testing is in progress on three short-action prototype guns. Initial measurements (head space, trigger pull, etc.) have been taken. Accuracy is being measured now. Function testing, drop and jar-off testing, and endurance testing will follow.

A meeting was held with P.E. & C. to review product specifications. Follow-up meetings will be held to better define hard-to-process parts.

Research participated in a series of consumer focus panels held during the week of February 10 in Phoenix, Denver, and Houston. A separate report of the findings will be published shortly.

Research Department

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February, 1985

AMMUNITION RESEARCH

SHOTSHELL PRODUCTS

"Premier"

- 12 Ga. 3" 1 7/8 oz. SP (Two Piece Plastic Basewad)  
Large Volume Body

Experimental machine loaded product has passed function and casualty and 10 day environmental ballistics testing. 30 day environmental test results will be available in early March.

Confirmation of this load using a production HM85 powder blend is planned in a designed experiments (results due in late February).

Wads using LLDPE recovered after -20F firing showed significantly less breakup compared to the standard LPDE wad.

The Trial & Pilot run will begin as soon as components are available.

- 12 Ga. 3" 1 5/8 oz. SPLV

Screening experiments have identified HM80 powder as a satisfactory candidate. Expro powders are being evaluated also as a backup. Short term environmental testing and wad recovery will be conducted the week of 2/25.

- 20 Ga. 3" 1 1/4 oz. RC

An experimental machine loading is planned for early March using Hercules 527 and gulf buffer based upon good results from a Designed experiment using extreme charges and conditions. Hercules 526 powder may give a better load (faster powder) and the designed experiment with 526 will be complete prior to the March loading. This loader is also scheduled to run rifled slugs which could conflict with the development timing.

Research Department

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February, 1985

"Premier" - Contd.

- 20 Ga. 2 3/4" 1 1/8 oz. RC

Screening experiments have identified HM90 powder as a satisfactory candidate. Product for the designed experiments and long term environmental storage will be hand-loaded starting the week of 2/25.

- Shot Weight Control

ERD is developing improved methods of charging hard lead and steel shot and lower density shot buffers on production loading machines.

New Unibody Shotshell

- Development Plans

The Research and Production plans for completing the Trial and Pilot has been reviewed and updated as shown below:

	<u>Original</u>	<u>Revised</u>
8 Ga.	----- 2/85	Complete
12 Ga. TGT	----- 5/85 (R209 Primer)	4/85
12 Ga. 3"	----- Increased volume required	
	----- Development delayed	
	----- SPLV body to be used	
20 Ga.	----- 5/85 ("Premier")	5/85
20 Ga. 3"	----- 6/85 ("Premier")	6/85
28 Ga.	----- 3Q85	3Q85
.410 Bore	----- 3Q85	3Q85
16 Ga.	----- 4Q85	4Q85
10 Ga.	----- 4Q85	4Q85

Body development responsibility has been assigned to the newly formed MDV group in Lonoke reporting to P.F. Cunningham.

Steel and Buck Shot

- Screening tests are in progress at Bridgeport and Ilion consistent with the priority list developed by Lonoke. This list is based on when the forecasted inventories of sourced product will be deleted.

1 1/4 oz. steel load development has been delayed due to unavailability of the wad. Lonoke is putting in the mold to make the wad the week of 2/25.

Remington Target Load

A "Figure 8" factory wad design has been sent to Osley & Whitney for design and fabrication of mold tooling to fit an existing "RXP" mold in Lonoke. This approach will significantly reduce cost, give us production capability at Lonoke and minimize fabrication timing. A decision on the component wad (flared) design will depend on the results obtained with the factory wad design.

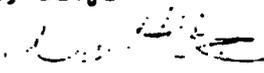
CENTERFIRE PRODUCTS

"Premier" Centerfire

Thin mouth jackets for .30 caliber bullets have been delivered. The first nose cut bullet dies have been made in Ilion. Dies for 7mm bullets have also been started. 7mm jacket design has been given to EDL for fabrication.

A project is being prepared for modifying a bullet assembly machine for R&D use in Ilion. Current costs are projected at \$160,000 plus site preparation.

WHColeman, II:js



Research Department

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February, 1985

RESEARCH PERSONNEL AS OF FEBRUARY 28, 1985

FIREARMS

Exempt 25

Non/Exempt 11

Wage Roll 16

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

Eskoff, Sophie S.  
 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 J.  
 Paslak, Wm., A.  
 Sohns, Wm., A.  
 Storne, Ramon  
 Truax, Irving, E., Jr.  
 Williams, Clifford G.  
 Williams, Donald M.  
 Williams, Ronald R.

Total Firearms Personnel - 52

AMMUNITION

Exempt 4

Non/Exempt 3

Wage Roll 2

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

\*Buccitti, Dominick C.  
 Conant, Paul  
 Thomas, Dennis

Dunn, Timothy  
 Selan, Jerry

\* Bridgeport

Total Ammunition Personnel - 9

REMINGTON PERSONNEL

Remington Roll

Actual  
2/28/85

Exempt

Ammunition Research	4
Firearms Research	25
Firearms Modernization	9
Administration	<u>1</u>
Total Exempt	39

Non/Exempt

Ammunition Research	3
Firearms Research	11
Firearms Modernization	1
Administration	<u>1</u>
Total Non/Exempt	16

Wage Roll

Ammunition Research	2
Firearms Research	16
Firearms Modernization	<u>1</u>
Total Wage Roll	19

Total New Products 74