

LIMITED DISTRIBUTION

REMINGTON ARMS COMPANY, INC.

NEW PRODUCTS RESEARCH

MONTHLY PROGRESS REPORT -- MAY, 1984.

Distribution

J.W. BOWER
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FIREARMS

New Product Development - Shotgun

Model 1100 Special Field - 12 Gauge

Trial and Pilot testing of the second production sample is in progress, with a May 25 completion date expected.

Models 870 and 1100 Waterfowl

The drawings package and parts list for both models have been transmitted to the Plant.

Choke Tube Development

Testing of Remington choke tubes should be complete, with the exception of endurance and strain gauge measurements, by June 8.

Production has verified that they can source tubes for \$1.40 each. They are developing a schedule for producing 30,000 tubed barrels in 1985.

New Product Development - Rifles

Model 700 Mountain Rifle

The parts list and drawings package have been transmitted.

CAD modeling of the stock is nearing completion. Research is working with Production to assure the timely completion of the stock former.

Model Seven - .308 Caliber

The second Trial and Pilot sample has been received from Production. Visual inspection was satisfactory. Function and endurance testing will begin immediately following completion of Model 1100 Special Field testing.

New Bolt Action Rifle

High-spot cost estimates for the various options will be complete by May 25. Prototype guns are expected by mid-June. A Research review meeting is scheduled for May 29.

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Research Department

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Current Products

Model 870P Riot Guns

Transmittal of the flexi-tab carrier design is complete.

Model 541X Military

Transmittal of the drawings package and parts list is complete.

Research Department

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May, 1984

AMMUNITIONRotary Cam10 Gauge

Experimental bodies have been made on ARD's body former which met goal dimensions for body O.D., wall thickness, overall length and primer bore diameter. Rim diameter was less than goal but may represent the upper limit of the process capability. The internal volume appears to be excessive (low centers on loaded product) and is being corrected by adding material to the wall taper.

12 Gauge 2-3/4" (Target)

Tooling modifications to the prehead station of the body forming operation have resulted in production of smooth target bodies without the cosmetically unacceptable "suck-in". Machine headed target samples primed with the new #209 primer have been hand loaded and successfully evaluated in both standard and severe reloading and in severe function and casualty testing. Severe reloading life for this product averaged 12 with an average standard reloading life of 18. Body cutoff indices in both cases were zero. Tooling required to produce this body is being fabricated in-house with a scheduled completion date of June 1. All 12 ga. 2-3/4" bodies will be made using this tooling.

28 Gauge

Product from one station of the production body former, hand headed and loaded, has successfully passed all ARD testing. Tools for the remaining two stations have been cut to lengths and is scheduled for evaluation on the body former the week of May 21. A full set of AH&P heading stems are ready. A trial & pilot run through AH&P and loading is planned at Lonoke as production schedules permit.

.410 Bore

An experimental run consisting of 45,000 - 3" bodies and 40,000 - 2-1/2" bodies has been completed on the Research body former. Product from this run is currently being hand headed and loaded for evaluation tests.

Body former tool drawings are currently being updated for submission to vendors for fabrication. Change parts have been fabricated and are in-house. The usual tool fabrication time is 12 weeks but every effort will be made to reduce this time so tool trim-in can be completed in August.

Research Department

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"Premier" Shotshell

12 Gauge 1-7/8 oz.

An experimental run of product loaded May 16 using primers with flattened primer cups from AH&P produced acceptable ballistics at ambient and hot conditions. Plant ballistics firing at -20°F recorded one round each:

- 15.4 kpsi, one of 50
- a wad lodged in barrel, one of 50
- a squib that cleared barrel, one of 250

Research believes that the damaged primers were the cause of these unacceptable rounds due to pellet breakup which occurred at AH&P. A second run was made and tested at -20°F. No squibs or wads lodged in barrel were observed. However, the high pressure excursions remained. Additional testing is in progress to determine the cause of this problem.

- 20 Gauge 1-1/8 oz.
- 20 Gauge 1-1/4 oz.
- 12 Gauge 1-5/8 oz.

Load development has begun on all "Premier" loads. Initial results indicate that blends of Hercules 35% nitro-glycerin propellants and 209 primers will be acceptable.

Centerfire "Premier" Bullets

After an initial test run of secant ogive bullets on the modified bullet assembly machine, some modifications to the bullet dies were needed in order to form smaller meplats. Modified dies have been received and shipped to Lonoke for testing in early June.

Rifled Slugs

A satisfactory hand load using 3" rotary cam large volume shells and standard 1 oz. slugs has been established with an average velocity of 1725 ft/sec. Below is a comparison of this load to other existing and new loads.

Load	Velocity (ft/sec)		Energy (ft-lb)		Drop (50 yds)
	muzzle	50 yds.	muzzle	50 yds	
2-3/4" 1oz. (Control)	1560	1175	2364	1342	10.7
3" 1 oz. (New)	1725	1310	2890	1666	8.9
2-3/4" 1-1/4 oz. (Existing Federal)	1490	-	2695	-	10.2
3" 1-1/2" (New)	1390	1174	2815	2006	11.4

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Rifled Slugs (Cont'd.)

Accuracy of the new 3" 1 oz. load in an M1100 barrel was comparable to control. A computer program has been completed and will be used to predict slug dimensions for a new 12 ga. 1.5 oz. slug.

Remington Target Loads

The critical path item in the overall Remington Target Load program is the new 12 ga. RTL wad with a straight fin shot pouch for ease of factory loading. Molding tools for the modified wad have been completed and installed in the Bridgeport Semi-works molding machine. Approximately 10M wads are now being molded for an experimental loading run at Lonoke.

3" Steel Shot Loads

20 Gauge 15/16 oz.

A one-cavity mold and tooling have been completed by the outside vendor (Automatic Injection Molding, Inc.). A sample run of 250 wads with molded-in shot container slits has been made and is in transit to Bridgeport Research for inspection and preliminary tests before the 10M sample run is made.

12 Gauge 1-1/4 and 1-3/8 oz.

Preliminary load development using large volume RC shells and the new Hercules 467/468 powder samples are underway. The standard 1-1/4 oz. steel shot wad and a modified (increased volume) 1-3/8 oz. wad are being used for shot containers.

ABC Primer

Refinements were made to the anvil pyramid dies and tested with very favorable results being obtained. Anvil height increased and overall anvil appearance was improved. Test results using modified first anvil pointing dies have also given encouraging results. We are presently right at the edge of the anvil height spec and expect that a refined first anvil point die, presently being fabricated, will give the desired anvil point profile.

Centerfire "Premier" - Case Polish

A tentative date of July 10 has been set for a plant demo/experimental run of the chemical case polish process. Questions pertaining to the chemical makeup of the brightener

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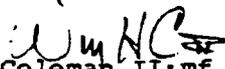
May, 1984

CF "Premier" - Case Polish (Cont'd.)

and what effect it would have on the Plant's waste treatment process have been answered and the remaining items to be completed are to outline the test objectives to address all interested parties' questions and concerns and to mechanically prepare the equipment for the test run (heating coils installed in tanks and drip/collection pans made).

Brass Plated Steel

A meeting was held with representatives of Thomas Steel reference brass plated steel and a sample will be sent to us for testing along with price quotes for economic analysis.


WHColeman, II:mf

Research Department

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NEW PRODUCTS RESEARCH

PERSONNEL

REMINGTON ROLL

	<u>Actual</u> <u>4/30/84</u>	<u>Actual</u> <u>5/31/84</u>	<u>Forecast</u> <u>12/31/84</u>
<u>Exempt</u>			
Ammunition Research	9	9	8
Firearms Research	<u>28</u>	<u>28</u>	<u>33</u>
Total Exempt	37	37	41
<u>Non-Exempt</u>			
Ammunition Research	9	8	6
Firearms Research	<u>12</u>	<u>12</u>	<u>12</u>
Total Non-Exempt	21	20	18
<u>Wage Roll</u>			
Firearms Research	<u>16</u>	<u>16</u>	<u>17</u>
Total Exempt	16	16	17
<u>Total New Products</u>	<u>74</u>	<u>73</u>	<u>76</u>

Research Department

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RESEARCH PERSONNEL AS OF MAY 31, 1984

ILION DIVISION

Exempt 28
 Balaska, Robert J.
 Bauman, Thomas G.
 Bower, James W.
 Calkins, Kevin L.
 Coleman, Wm.H., II
 Curry, Wm. M.
 Eddy, Albert
 Findlay, David S.
 Franz, Scott R.
 Hand, Charles J.
 Hennings, James H.
 Hugick, Adam H.
 Hutton, James C.
 Kast, Jack L.
 Lawrence, Jeffrey A.
 Martin, Fred E.
 Murphy, Randall A.
 Nightingale, Richard E.
 Plunkett, Thomas J.
 Powers, Thomas P.
 Rankins, Edwin D.
 Rowlands, Kenneth
 Sanzo, Robert J.
 Sassone, Richard L.
 Saunders, Eugene L.
 Smith, Robert
 Snedeker, James R.
 Yetter, Edward W., Jr.

Non-Exempt 12
 Eskoff, Sophie S.
 Jones, Raymond A.
 Martin, James S., Jr.
 Pickett, Wm. F.
 Schuster, Joyce M.
 Scram, Wendy L.
 Smith, Floyd H.
 Smithson, Ronald
 Stephens, Charles
 Supry, Fred
 Urtz, Donald
 Weaver, Harold E.

Wage Roll 16
 Baggetta, Joseph A.
 Bearer, Robert W.
 Bedworth, Gary R.
 Butler, Richard G.
 Fiorentino, D.J.
 Harter, James D.
 Howe, Robert W.
 Jennings, Dale E.
 Kozakowski, Rbt. J.
 Paslak, Wm. F.
 Sohns, Wm. A.
 Storne, Ramon
 Trauz, Irving E., Jr.
 Williams, Clifford
 Williams, Donald
 Williams, Ronald R.

TOTAL ILION PERSONNEL: 56

BRIDGEPORT DIVISION

Exempt 9
 Cole, Wm. T.
 desJardins, Chas.F., Jr.
 Dwyer, John M.
 Garrett, Thelma B.
 McDonald, A. Daniel
 Peterkin, Vinton A.
 Simpson, Wm. R.
 Sroka, Lee R.
 Tomek, Warren L.

Non-Exempt 8
 Alexander, Bruce R.
 Buccitti, Dominick C.
 Champine, Barry M.
 Frauenberger, Marion O.
 Green, Jeffrey R.
 Montefusco, Stanley, III
 Raimundo, John A.
 Suhy, Frederick A.

Wage Roll 0

TOTAL BRIDGEPORT PERSONNEL: 17

Note: C.A. Stine (Bpt.) Non-Exempt transferred to Marketing,
 Customer Service Dept. as of 5/1/84