

# LIMITED DISTRIBUTION

RESEARCH DEPARTMENT

HIGHLIGHTS REPORT

APRIL 1982

## DISTRIBUTION

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REMINGTON ARMS CO.  
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MAY 6 1982

FIREARMS RESEARCH DIVISION

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## FIREARMS

### XSG/XPG Shotgun Design

Five of six Research prototype XSG autoloading shotguns are complete. Initial proof and function tests have begun. A review of design and capital investment requirements will be complete in May. Initial results indicate that considerable cost reduction is possible without compromising basic design objectives.

### Model 7400/7600 Rifles

M/7400 center fire rifles are being tested with altered feeding ramps on the barrel extension. Completion is anticipated in early May. If test results are acceptable, the modification will be approved to permit use of the same barrel extension in all calibers.

New caliber tests results on 25-06 and 7mm-08 models have been satisfactory.

### Model Four Limited Edition

The front sight approved by Marketing does not fit well and does not provide an acceptable match with barrel finish. The recommended alternate design is the M/700 with hood. Samples are being prepared for Marketing consideration.

### Model Four Carbine

Several new models have been prepared. Test results to date with an aluminum receiver have been satisfactory. The aluminum receiver provides an attractive, light weight design.

Research models in the .223 caliber are complete. Testing to determine bolt velocities is in progress. Magazine boxes have been received and the assembly is being evaluated.

### Bolt Action Rifle Development

Preliminary feature requirements have been established for a new generation bolt action rifle. Research prototypes will be fabricated in the preferred design and two contingency designs. Prototypes will include both straight classic and Monte Carlo with cheek piece stock designs.

A third Bob Emmons' stock has been delivered to Ilion. This model features modifications to facilitate Production operations. A fourth sample is being prepared to illustrate potential alterations to the barrel, receiver and safety.

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#### Model Seven Lightweight

Prototype stamped, no-bind followers in 7mm-08 caliber are satisfactory. Accuracy of the 7mm-08 caliber has not been resolved. Three of five rifles initially tested for accuracy would not meet our specifications (2.7 inches center-to-center). Accuracy was improved with floor plate pad material and adding tension to the barrel. New stocks, being made by Fajan, will be used to determine the optimum barrel pad height (barrel tension) and effect of steel floor plate pads.

#### Model 870 Limited Edition

Etched samples from Newcut have been reviewed and information delivered to Marketing for artwork changes. New samples will be ordered when revised artwork is available. This project is now one month behind schedule.

#### Model 870 Competition Trap Shotgun

28" barrels with improved modified choke for 16 yard shooting will be completed in May. They will be tested for pattern and point of impact. Part lists and drawings will be sent to Process Engineering for cost estimates.

#### Model 1100 Ducks Unlimited 1983

Artwork for the Commemorative and Trade Models have been completed. Prototype models will be completed in May. Specifications for the Special Dinner Model are required from Marketing

#### Form Rolling

A pilot quantity of M/870/1100 trigger plate pins was successfully form-rolled at Rol-Flo Engineering Company. One million pins could be produced in 19 shifts at an estimated annual savings of \$10,000.

Burnishing of M/870/1100 and M/7400/7600 firing pins will be tried. If successful, it will eliminate grinding firing pins, thereby reducing the piece price and opening up other vendors. Further work will concentrate on making the firing pin completely by form-rolling.

#### Cut Checkering

A Model Four checkering pattern, modified to accommodate the CO.RE.MA. (Italy) stock machine, has been approved by Research Management for a pilot run. Machine templates are being made, unchecked Model Four stocks have been provided, and the 100-piece pilot run should start by May 3.

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#### Model 979 Seismic Gun

All guns ordered by MAPCO have been shipped. No additional orders are expected.

#### Powder Metal Tool Steels

XSG slide blocks, processed by Valform from D-2 powder, have been measured and are dimensionally acceptable. They have been delivered to the Model Shop for two finishing operations, after which, they will be attached to inertia bars for Test Lab evaluation.

#### Injection Molding of Metal and Ceramic Components

Startup of the injection molding facility was completed in April. All equipment is functioning satisfactorily. A scope of work is being prepared to renovate the Alcet building.

Representatives from Photo Products, EDL and Remington will meet in Ilion on May 20 to review one anothers progress in injection molding.

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## AMMUNITION

### New Unibody Shotshell Process

Final acceptance testing of three production 12 gauge load lines (SP12-00BK, SP12RS and DP12) was completed in April and initial results are positive.

Fine tuning of 20 gauge tooling is complete for one station. Tooling for a full quadrant of 20 gauge production will be available in early May.

### Polymer Support Program

Dimensional uniformity of the extruded pipe has been improved by ESD's incorporation of a constant die pressure control system. Upgrading of the system is being carried out to reduce longer term variations by cascading ultrasonic wall thickness measurement feedback to the die pressure control. Experimental tests on the Research extruder with fixed puller speed show that controlling pipe wall thickness at the entrance to the cooling tank by manipulating screw speed is relatively insensitive to polymer changes. An experimental system has been installed on a production extruder and is being debugged. Improvements in the ultrasonic wall thickness measurement system installation are required to avoid periodic upsets due to air entrainment in the surrounding water bath.

### Extended Range Shotshell

Tests indicate the shot hardness and plating thickness (.0001 to .0002") in competitive premium products have negligible effect on internal ballistics (V&P plus load fit). Pattern testing has not been completed. Load development has been started on the new buffered loads.

### Extended Range Center Fire

Efforts to improve on accuracy and ballistics control for several of the extended range cartridges are in progress. Assembly of the bullet feed, orient, and cannellure station is nearing completion. Startup and debugging is commencing using the .30 caliber 165 grain Sierra boattail bullet.

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### Primer Improvement Program

Direct substitution of steel for brass anvils resulted in poorer piercing performance with our current 117XA primer design, however, a significant reduction in primer piercing was achieved by the use of a domed primer cup with no loss in sensitivity.

A test was conducted with the 117XA primer at different pellet weights with various target load reloading powders. The primer is compatible with these powders, however, the optimum primer pellet weight remains to be defined. Increased pellet weight is required for some hunting loads and a common pellet weight would be desirable, particularly for component primers.

### Integral Anvil Battery Cup

Technical Services reported lower pendulum gun sensitivity and higher piercing results for the ABC primed 12 gauge low base promotional load production sample versus the specific control sample provided. Field testing of ABC primed ammunition is being conducted using the three guns which simulate severe field conditions. Production startup of the four million round sample will be approved if the ABC sample performs satisfactorily against controls in the field test.

### 357 Remington Maximum 158 Grain SJHP

An experimental run has been completed. Thirty-nine thousand service loads and two thousand proof loads were shipped to Sturm Ruger on April 2, 1982.

### New Product Development - Shotshell

Approximately 1000 low cost component wads were molded on Research equipment and are undergoing test. Results, to date, show that the experimental wad can be used as a direct replacement for the RXP 12 wad with regard to load fit, velocity and pressure and cold temperature breakup is improved.

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Attachments



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RESEARCH PERSONNEL

Remington Roll

	<u>Actual</u> <u>3/30/82</u>	<u>Actual</u> <u>4/30/82</u>	<u>Forecast</u> <u>12/31/82</u>
EXEMPT	60	59	62
NONEXEMPT	21	21	20
WAGE ROLL	23	23	24
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TOTAL	104	103	106

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PATENTS & TRADEMARKS

Summary of Activity

April 1982

Patent Applications Filed

DRY OFFSET PRINTER FOR CYLINDRICAL OBJECTS

RA-0231A U.S.

Divisional Patent Application

Scott R. Albin

ABSTRACT: Dry offset printing apparatus for horizontal or vertical printing on shotshells, which comprises a three-roller system including a single roll ink-metering system, plate cylinder and blanket roll. The ink roll is covered with a soft elastomeric material and a doctor blade is configured and oriented with respect thereto to meter a uniformly even thin film of ink onto the ink roll. A rotary track is used for positively feeding the shells to the printer at high speeds in either horizontal or vertical orientation.

Trademark Applications Filed

N O N E

Patents Received

RECOIL-OPERATED FIRING PIN RETRACTOR FOR  
ELECTRICALLY-FIRED GUNS

RA-0241

Rowlands

ABSTRACT: The firing pin tip is retracted by inertial movement of a weight upon firing the gun. As a safety feature, the gunner must manually release a latch to return the firing pin to its firing position.

Trademarks Received

N O N E

Inventions Reports

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