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FIREARMS RESEARCH DIVISION

PROGRESS REPORT

MARCH 1980

Remington Arms Company, Inc.

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HIGHLIGHTS

FIREARMS

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<p>The problem of premature receiver failure has been solved. Potential solutions to broken locking blocks are in test. Rib separation remains a problem.</p>	
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<p>A revised floor plate latch is being developed. Program is still on schedule.</p>	
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<p>Magnum endurance tests show Action Spring and Slide Block braze joints are still a problem.</p>	
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<p>The Bolt Lock will be ready for review by Marketing and the Operations Committee in April.</p>	
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<p>Tests show that Firing Pin revisions are required. New Firing Pins will be tested in April.</p>	
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<p>Machines have been delivered to Ilion and installation has started.</p>	

MODEL 870 COMPETITION TRAP SHOTGUN

The Competition Trap Shotgun is a special, single shot version of the Model 870 with a gas operated recoil reduction system added. It was previewed at the Grand American Handicap Trap Shoot last August and announced in December of 1979.

Production of the model has been delayed pending completion of design modification testing.

The tests on the Fore End Tube have been satisfactorily completed and design transmitted to the Plant.

Effects of a tight or loose Magazine Cap have been evaluated. Two guns have been tested making sure the caps were tight. The results of this test show that the Receivers will have a satisfactory endurance life if the Magazine Caps are kept tight. However, one Locking Block failed in a safe manner at 17,700 rounds and ventilated rib posts are still separating from the Barrel.

Two more guns are in test with shot peened and Harperized Locking Blocks. They have Magazine Caps and Barrel Retaining Sleeves to model drawing and have been shot 12,000 and 14,000 rounds. Both Barrels have vent ribs coming loose. These guns will be continued to 25,000 rounds to test the Locking Block endurance.

Three more guns have been fired 2,000 rounds. Two have shot peened and Harperized Locking Blocks, and one has a Model 1100 Locking Block. They will be tested to a minimum of 25,000 rounds.

New Barrels are being processed with heavier walls in an attempt to solve the rib separation problem and are due April 1. They will be put in test when received.

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BOLT ACTION CARBINE

The Carbine is a short barreled, bolt action, centerfire rifle that is under development as a replacement for the discontinued Model 600.

Five barreled actions in each of four calibers have been assembled and shot for accuracy. Results were satisfactory. Additional function testing will be conducted. The redesigned latch system on the floor plate performed satisfactorily during firing. However, because it does not operate the same as conventional systems and costs are questionable, we are developing a simpler design. A prototype is being made.

Work is progressing on schedule for 25 models in 7mm-08 caliber for a Marketing field test.

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MODEL 7400 AUTOLOADING and MODEL 7600 SLIDE ACTION CENTERFIRE RIFLES

These rifles have been developed as replacements for the current Model 742 and Model 760 and are scheduled for announcement in December 1980.

Forty (40) rifles of each caliber, 30-06, 270, 7mm Exp.Rem. and 6mm, were selected from Production samples for design verification measurements, field function cycles, and endurance tests. Preliminary test results so far indicate no serious problems.

The location of Model 4 and Model 6 designations has been approved. Production has three different renderings of the Model 4 roll marking on a single roll. Samples will be rolled the week of March 24.

The grip cap spacer 16 cavity mold has been reviewed and satisfactory samples have been molded. An optional pewter grip cap design by Sid Bell has been completed and approval has been given by Marketing for this final version.

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MODEL XSG SHOTGUN

New autoloading and slide action shotguns are being developed for introduction in the 1984 Model Year. The objectives of the program are to replace the Model 1100 Autoloading Shotgun and the Model 870 Slide Action Shotgun. The guns are being designed together to take maximum advantage of common parts for optimum manufacturing costs.

A prototype autoloader is in test and has been fired over 6000 rounds using 2 3/4" Magnum loads. The Action Bar - Slide Block braze joint failure is the most prevalent problem. Mechanical joint designs utilizing welding and swaging processes are being fabricated to improve the joint's strength. The existing Action Spring design has set 2.28 inches. This is unsatisfactory. Testing is continuing on this gun with a new spring of the same design.

A redesign of the Action Bar Assembly was necessary to utilize a Model 1100 type gas system. This provides more room for the design of a lower stressed Action Spring. The design of a square wire Action Spring to reduce spring stress loads and setting is complete, with prototype parts currently on order from Connecticut Spring.

Two different Locking Systems with better mass distribution are being detailed.

A gas cut-off system has been designed to fit into an XSG or Model 1100 gas system. Component parts are being made for test to verify function and reduced bolt velocities for Magnum loads.

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MODEL 700 BOLT LOCK

The objective of this development is to give the shooter the ability to open and unload his firearm without placing the Safety in the Off position. In order to do this, the operation of the Bolt Lock and the Safety have been designed to be independent of each other.

Revisions to improve appearance have been made to several of the prototypes. Assembly of the modified system will be completed the week of March 24. It is planned that all samples will be available for review by mid-April.

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21mm SEISMIC GUN

A 21mm cartridge and gun system to be used for Seismic exploration for oil and gas is being developed for MAPCO. The cartridge is an electrically primed version of Remington's 8 gauge industrial load and the gun is a German made Kiln gun modified to fire either electrically or with percussion primers.

Fifteen (15) guns have been through an interchangeability test and preliminary results indicate that breech blocks can be made completely interchangeable if necessary.

The results of the test also show that neither the ammunition nor the gun at their present levels of development are acceptable products. Presently the gun is being redesigned to eliminate the malfunctions encountered in the interchangeability test. In light of this, the shooting test program will be suspended until the redesign is complete. We will continue with a mechanical dry cycle test to determine the endurance of the present design.

Testing of redesigned parts will be complete by approximately April 15, 1980.

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NEW OWNER MANUAL FORMAT

Our present owner manuals are written using words that often tend to be technically slanted, making it difficult for the average person to read and understand. The new manuals are being written using a controlled language with the key principle being one word-one meaning.

Mechanical illustrations for the Model 700 Owner's Manual are scheduled to be completed by Smart Communication, Inc. the week of March 24. Twenty-five instruction booklets are to be printed and distributed for final review by April 20.

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INTEGRAL EJECTORS

Currently the Ejectors in the Model 1100 12 Ga. and 20 Ga. shotguns are spot welded to the Barrel Extension and machined to size. A process has been developed to form the Ejector as an integral part of the Barrel Extension. Savings of over \$60,000 per year can be realized by this procedure.

Three operations will be eliminated as well as the Ejector Pin and result in a more durable ejection system. Tooling to coin ejection surfaces into 12 Ga., 16 Ga. and std. 20 Ga. Barrels has been developed and transmitted to Production.

Marketing requested that the "bulge" in the area of the LT-20 Ejector be reduced. Tooling modifications have been made to support the outside of the barrel in the area of the Ejector. This produced satisfactory results. Four prototype Barrels have been sent to the Test Lab.

12 Ga. pilot run production barrels should be available for confirmation testing in April.

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FOUR-SLIDE MACHINE

This automatic manufacturing system for in-house production of precision formed stampings will enable Remington to develop an expertise in stamping manufacture in order to eliminate our total dependence on costly outside suppliers. An additional benefit will be improved quality and reduced new product lead times.

The appropriation request to purchase a Four-Slide Machine and support equipment has been submitted for approval.

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RIVETLESS EXTRACTORS

These new centerfire extractors in small, regular and magnum sizes will replace the troublesome riveted types. Part cost will be reduced, a number of bolt head operations eliminated, and gun reliability and ease of replacement will be improved.

Regular and magnum sizes have been transmitted to Production. Testing has now been completed on the small size with satisfactory results. Drawings are being prepared for transmittal.

Five thousand (5000) Bolt Heads originally intended for Model 700 7mm Mauser will now be used for Model 700 7mm-08 caliber and Model XP-100 7mm BR caliber.

All tooling to coin anti-rotation projections into Model 788 Reg., Model 700 Reg.L.H., Model 700 Mag. and Model 700 Mag.L.H. Bolt Heads will be completed in April.

An additional 25 regular caliber and 5 small caliber Bolt Assemblies are being manufactured for the new bolt action carbine prototypes. These should be ready by mid-April.

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AUTO DRILL LINE

The present method of preparing shotgun barrel blanks for the swaging machines is difficult to control and requires an unacceptably high degree of technical and engineering support. A process has been developed to replace it utilizing proven machining methods and completely automatic part handling.

Fabrication of the system is now complete. Satisfactory run-off was achieved at the vendor's site on March 3. A problem with excessive smoke was evident and will be solved at Ilion. The system has been shipped from the vendor and is being installed. Start-up is scheduled for early May.

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ASEA MANIPULATOR

Rifle and shotgun receivers are rough and finish polished by a labor intensive hand process. ASEA, Inc., an industrial manipulator manufacturer, demonstrated the technical capability of automatically polishing Model 742 and Model 760 receivers utilizing their industrial robot. Estimated gross savings are \$67M per year.

The project timing has been revised to insure receiver polishing success before any capital money is spent on the conveyor system. Programming, development of a receiver realignment system to overcome the panel polishing problem, and a trial and pilot run, must be accomplished. The trial and pilot run is scheduled to commence in June 1980.

HIGH ENERGY BEAM APPLICATIONS

There has been no change in status for this item since last month.

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