

RESEARCH DEPARTMENT

HIGHLIGHTS REPORT

JANUARY 1981

Distribution

J.P. McAndrews	J.E. Preiser
E.F. Barrett	L.J. Scott
E. Hooton, Jr.	J.R. Ayers
J.G. Williams	P.S. Hebert
E.B. Beattie	C.B. Workman
R.A. Partnoy	

JPGlas:jl

FIREARMS

Model 4 Limited Edition

Marketing has approved receiver artwork. Drawings of the rosewood fore-end tip have been transmitted to Production for cost estimates. A source of rosewood has been identified and arrangements have been made to obtain samples for process and durability testing. Based on a volume of 3,000, Aurum Etching has estimated cost of the etched and plated receivers at \$170 per gun. There are no alternative etching vendors for this program.

XSG/XPG Shotguns

In laboratory test firings, a prototype XSG with a square wire action spring has exhibited good closing velocities after 8,704 baby magnum rounds. New design front and rear locking systems are being prepared for testing. Increased emphasis is being placed on the development of a gas system designed to control bolt velocities, a key to improving durability of the locking, feeding, and slide bar components.

Model 870 Competition Trap Shotgun

During fabrication of trial and pilot components, the Plant experienced a problem with alignment of the barrel and receiver assemblies. Approximately 50% of the components could not be assembled without applying excessive force. Measuring of components and rechecking design drawings to identify the cause of the problem are currently underway. However, in the interim, barrel assemblies with a smaller outside diameter on the gas cylinder have been obtained. These smaller diameter components have been assembled to receivers with no difficulty. Testing will be completed in February. If tests are successful, production will be resumed using the revised component design.

Bolt Action Carbine

A 308 caliber carbine with a decreased barrel diameter, revised stock, and short floor plate latch has been completed and reviewed by Marketing. Total rifle weight is 6 pounds. Accuracy tests on one prototype were satisfactory. Pending approval by Marketing, models in other calibers will also be fabricated and tested.

Research Department

-1-

January 1981

Model 1100 Ducks Unlimited

Drawings for all three models have been completed and transmitted to the Plant. Production plans warehousing of all models starting in July.

Model 1100 Piston and Piston Seals

Approval for adding an electroless nickel plating to all Model 1100 pistons and piston seals has been received from the Operations Committee. Drawings have been revised to reflect the new design and transmitted to Process Engineering.

As an alternative approach to the corrosion problem, a stainless steel stamped piston and high temperature plastic piston seal are also being investigated. Potential cost savings for the M/1100 are \$100,000 per year.

ASEA Manipulator

Preliminary test results indicate that the LVDT repositioning system will correct the problems with maintaining tolerances when polishing receiver side panels. Prove out should be completed in February, to be followed by trial and pilot in late February. Quotes are being requested on a conveyor system to feed the manipulator. A feed system is required for fully automatic operation.

Four Slide Machine

The machine will be shipped from Torin to the tooling vendor in mid-February. Tool design for forming the Model 7400/7600 long magazine follower is almost complete. Approval drawings will be provided to Remington. Delivery of the system is scheduled for March.

AMMUNITION

Shotshell

New Unibody Shotshell Process

Process changes to improve strength in the tube portion of the 12 gauge product are being evaluated. A half-inch taper has been added to the wall near the base section for resistance to buckling under adverse conditions, and a higher work ratio is being used to increase longitudinal tensile strength to a range of 20,000 to 24,000 psi.

Body Performance Improvement

Experimental work with an internal polymer lubricant indicates that the fisheye count may be reduced permitting use of a higher work ratio at the Perkins operation. The resulting higher tensile strengths would be expected to result in fewer body cutoffs. Early tests also show that a deeper skive, possible only on the Lachaussee loader, can alter the mode of failure from body cutoffs to mouth failure. Further testing in both areas is in progress.

21MM Seismic

Production rates were increased to the 250M per month design rate for the equipment, however, electrical inspections continue to be performed manually which affected January output. About 175M rounds were warehoused in January, with 250M rounds anticipated in February. The proposed supplier of primer components is reviewing tooling to correct some deficiencies and new primer cup samples are due before February. Research equipment will be able to support the forecast requirements until vendor suppliers are established.

Shotshell Cut-down Inspector

Design of a photo-electric, in-line inspector for assembled shell cut-downs, cap splits, and "lipped brass" is complete. One unit will be fabricated and tested.

Center Fire

357 Rem Max 158 Gr. SJHP

Four thousand rounds were loaded on the Duplex loader. Remington will conduct tests on the product prior to shipping it to Ruger for further evaluation.

Research Department

-3-

January 1981

Primers

Integral Anvil Battery Cup

To date, 3.5 million battery cups have been produced using bare steel, against the extended test goal of 25MM units. Production operators are being trained to provide support. Testing is anticipated to be complete by the end of the 1st quarter when tool usage, material requirements and machine efficiency can better be defined.

117X Shotshell Primer

A second lot of 117X primers, primed shells and loaded rounds were produced at Lonoke and are now being evaluated for use in a Marketing sponsored field test. Off-center sensitivity of the primers was excellent. Sensitivity of the primed shells was slightly below the first lot tested, however, well within the acceptable range.

TLX Priming Mixtures

The candidate TLX priming mixture for center fire has been tested in #9-1/2 large rifle primers and was determined to be acceptable from a sensitivity and ballistic standpoint. This mixture is satisfactory in both center fire and shotshell primers. Experimental quantities of RG-16P mixture will be prepared at Lonoke during the week of January 18th with primer assembly and test to follow.

RESEARCH PERSONNEL

Remington Roll

	<u>12/31/80</u>	<u>1/31/81</u>	<u>Forecast 12/31/81</u>
Exempt	62	63	62
Nonexempt	23	23	22
Wage Roll	20	20	20
Total	105	106	104

Research Department

i

January 1981