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RESEARCH DEPARTMENT

HIGHLIGHTS REPORT

OCTOBER 1980

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FIREARMS

NEW PRODUCT DEVELOPMENT

Model 7400/7600 Centerfire Rifles

Warehouse audits on the Model 7400/7600 project have been completed and the guns approved for shipment. However, field test results indicate that feeding malfunction rates can be reduced by refinements to the magazine box design. A new box design has been completed which features modifications to the spring and follower geometries. Components for the new design have been released for fabrication and testing of prototypes.

Testing will continue on production guns as additional calibers become available.

Model 1100 Limited Edition

Warehouse audits have been completed and the guns approved for shipment.

Model Four Limited Edition

Two receivers have been etched, plated and returned by Aurum Etching. One of the two has been provided to Marketing for their evaluation.

Model drawings have been provided to Process Engineering for cost estimation.

A complete gun assembly will be available the week of October 27th for visual evaluation.

Model 870 Competition Trap Shotgun

Research is continuing to fabricate long leadtime items for Production to assist them in meeting warehouse dates.

XSG/XPG Shotgun

Test firings are in progress on a prototype XSG with a long, square-wire action spring. Approximately 1100 magnum rounds have been fired and the spring has exhibited some permanent set. The goal is 5000 magnum rounds with a spring set equal to or better than that for the M/1100.

Research Department

-1-

October 1980

XSG/XPG Shotgun (Cont'd.)

Design and fabrication of two new locking systems are complete. Test firings will begin following assembly and proof testing of the guns the week of October 27th.

New feed system parts have been fabricated.

Work is continuing on a new gas system design for improved gas metering and cut off to control bolt velocities.

Model 979 Seismic Gun

All guns are complete and have been shipped to MAPCO satisfying the first order of 15 guns and the second order of 25 guns. As per the original order, percussion blocks are being completed and shipped to MAPCO as alternates for the second gun order.

Forty field repair kits have been assembled and shipped to MAPCO to provide one kit for each gun shipped to date.

CURRENT PRODUCT DEVELOPMENT

Rivetless Extractor

Rivetless extractors are being implemented on centerfire rifles. Anti-rotation projections are required on regular and magnum size guns. Tooling to coin projections on the bolt is in use for some calibers and should be completed for the remaining calibers by November 28th.

Model 700 Bolt Lock and Fire Control

A revised design on a bolt lock separate from the trigger safety lever has been completed and a prototype bolt fabricated. Five more bolts are being assembled for testing scheduled to begin the week of October 27th.

A fire control design featuring both a blocked sear and a blocked trigger has been completed and prototypes fabricated. This design is compatible with the above bolt lock design and will be incorporated into the October 27th test program.

Model 788 Safety

Layouts are being made to include a blocked trigger when the safe is at the "ON" position.

Research Department

-2-

October 1980

Model 1100 Ducks Unlimited

Parts lists have been transmitted to Production. Test firing of guns with the larger size emblem will be completed by the end of October.

Model 870 20 Ga. LW Limited

Models have been completed and shown to Marketing. Parts list and drawings have been transmitted to Production.

Model 700 BDL in 7mm-08 Caliber

Parts list and drawings have been transmitted to Production to add this caliber to the line.

Model 1100 Piston and Piston Seals

Electroless nickel plated sample parts have been ordered for testing and will be delivered by the end of October.

Model 1100 Link Breakage

Spare parts and repair records indicate an unusual number of failures in M/1100 links this past year. Significance and cause of those failures are being investigated.

PROCESS DEVELOPMENT

Auto-Drill Line

Shutting off the major sources of coolant oil leakage is nearly complete and Albion is realigning the drill fixtures. One of the two duplicate lines was tested successfully at design cutting rates.

ASEA Manipulator

Equipment for improved position control tolerance on polishing receiver panels has been received. Polishing programs for M/7400 and M/7600 receiver panels are being developed. Prove out of the new equipment should be completed by January 1981.

Four Slide Machine

The four slide machine will be complete and ready for tooling by the end of November. Delivery of the complete system is scheduled for March 1981. The wire EDM has been delivered and is currently in operation making prototype gun parts in the Research N/C area.

Research Department:

-3-

October 1980

AMMUNITION

SHOTSHELL

New Unibody Shotshell Process

Installation and debugging of the new body former die set is complete and new 12 gauge tooling has been installed and adjusted to the equipment. A limited run of 12 gauge product is planned to confirm the process. The first full-scale production system is in fabrication with some schedule delays being encountered. It appears that production startup will shift from end of second quarter to mid-third quarter, 1981.

Polymer Improvement

Two production lots of USI resin were processed acceptably through the Lonoke extruder and Perkins press. Body cut off characteristics in loaded round testing were mixed with one lot exhibiting acceptable performance, and the second lot unacceptable performance.

Asbestos Basewad Elimination

Process and product difficulties have been encountered in the conversion of the 8 gauge products to plastic basewads. Tooling changes at the extruder and heading operation are being made in an effort to correct the problems.

21MM Seismic

The 50,000 round commitments for September and October were completed and an additional run is underway to fulfill an export order.

CENTERFIRE

7mm Mauser 140 Gr. PSP

A second experimental run of 2,000 cartridges was loaded to verify ballistic performance and insure a smooth production startup. Samples were forwarded to Bridgeport for final acceptance testing.

7mm BR Remington Case

The four-draw sample of 10,000 shells was processed through head turn and is now in the taper-trim press.

Research Department

-4-

October 1980

7mm 140 Gr. PSP Bullet

Bench top experiments were conducted with new forming dies to produce bullets with a more slender tangent-ogive profile. Cores and stepped jackets for 10,000 bullets have been made to support an assembly run on production equipment.

357 Rem. Max 158 Gr. SJHP

Experimental quantities of shells were processed through the draw line and are now at cut off and head stamp. Ruger has agreed to lengthen the cylinder of the 357 Rem Max revolver if necessary in order to provide more clearance between the nose of the bullet and the end of the cylinder.

PRIMERS

Integral Anvil Battery Cup

The performance demonstration has started with a run of 600,000 cups.

#117 Primer

To improve off-center sensitivity of the #117 primer, a hardness reduction of the .019" primer cup is being evaluated. Preliminary results indicate significant sensitivity improvement with no incidence of pierced primers.

Paper Covered Flash Hole Primer

Engineering of a permanent equipment facility for the Lonoke Plant continues. Full production startup is estimated early second quarter, 1981.

TLX Priming Mixtures

A second plant-scale run of the candidate rimfire mixture was made. Primed shells will be autoloading as 22 LRHV for Ilion gallery evaluation.

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Research Department

-5-

October 1980