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RESEARCH DEPARTMENT

HIGHLIGHTS REPORT

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FIREARMSNEW PRODUCT DEVELOPMENTModels 7400/7600 Center Fire Rifles

The Plant continues to experience problems with excessive feeding malfunctions in the M/7400 rifles. Test results indicate that the malfunctions are due to a combination of problems with fabrication and assembly of component parts. A trial run of 100 revised boxes has been received and a test program has been initiated to determine effect of the change on malfunction rate. In addition, prototype boxes are being fabricated for tests with a new design incorporating a revised spring and follower geometry.

Model Four Limited Edition

Following evaluation of the first two etched and plated receivers from Aurum Etching, Marketing requested minor changes to the design. Two additional receivers are being etched and plated to the new design and are scheduled for delivery by mid-December.

XSG/XPG Shotgun

In laboratory test firings, the square wire action spring has exhibited a 1.5" set after 5,220 rounds, including 4,870 rounds of short magnums. The gun still exhibits good closing velocities, but the test has been delayed due to action bar failures. Total malfunction rate during the test was 0.9%.

Model 979 Seismic Gun

In recent cold weather tests by SSC at Wellsville, N.Y. all three guns in test failed to function after approximately three firings due to freezing of the inertia weight - firing pin mechanism. Sluggish operation was also obtained in subsequent tests at Ilion to identify cause of the problem. Prototype inertia weights have been modified to provide a back up, manual retract mode. Modified parts were hand delivered to SSC by Research personnel and have functioned well in subsequent tests by SSC.

Bolt Action Carbine

Barrels are being fabricated and models will be built to reduce the weight of the rifle by approximately 12 oz.

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Service Manuals

A partial service manual for the M/7400 center fire rifle has been drafted covering items which differ significantly from the M/742 rifle. This draft could be issued as a supplement to the M/742 manual pending completion in mid-March of the full M/7400 manual.

CURRENT PRODUCT DEVELOPMENT

Model 788 Safety

Samples of the new safety design have been tested with satisfactory results. Safe-on and -off forces remained constant after 20,000 cycles. Model drawings are being prepared for transmittal to Production.

Model 1100 Piston and Piston Seals

Electroless nickel plated samples from several vendors have successfully passed salt spray tests and function tests in skeet guns. Endurance firing tests will be performed on other samples and cost estimates for plated parts have been requested from PE&C.

PROCESS DEVELOPMENT

Auto-Drill Line

Installation of the line is completed and test runs have been made in the full automatic mode. Plant personnel are being trained to operate the line. A Plant safety evaluation, conducted while the line was in operation, revealed a few minor items for modification and those deficiencies have been corrected. A preliminary cost analysis, prepared by Research, indicates that the project will be completed within project authorization limits.

AMMUNITION

SHOTSHELL

New Unibody Shotshell Process

High and low base 12 gauge product, assembled and loaded at Lonoke, was tested. Several product problems were uncovered and corrective action is being taken. Target loads are scheduled for evaluation in December.

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Asbestos Elimination

Product and process difficulties continue to be encountered with 8 gauge plastic basewad conversion. Tooling modifications have corrected extruder variability but slug cutoff and heading problems remain. Heading pin tip geometry changes are being made in an attempt to improve basewad sealing.

21MM Seismic

The November commitment of 50,000 rounds was warehoused. Debugging of the production dry assembly equipment is underway and a pilot run is scheduled for early December. The vendor supplying components is behind schedule and in-house banks of components are being increased to offset the delay.

Low Cost Component Wad

Wads were produced with single cavity tooling on Research equipment. Very limited testing indicates that the compression column is not as stable as desired. Corrective revisions to the tooling are being made.

Paper Covered Flash Hole Shotshell Primer

Development of a permanent facility for the Lonoke plant continues. The anvil set-up machine and anvil/battery cup assembly equipment are complete and have been delivered to Lonoke. The paper blank and insert machine will be delivered in February. Full production start-up is estimated early second quarter, 1981.

CENTER FIRE7mm Mauser 140 Gr. PSP

A second experimental run was conducted to verify that specified pressure and velocity data could be met. An early December production run is scheduled.

7mm BR Rem Case

An experimental run to produce this shell was completed. Taper-trim of 30,000 shells was accomplished with 10-15% scrap versus 50% predicted. In testing, case splits at the mouth anneal transition point occurred after eight reloads. The cause of the deficiency was identified and the problem has been resolved.

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7mm 140 Gr. PSP Bullet

The experimental run to produce this bullet is in progress. Ten thousand lead cores and stepped jackets have been made in preparation for a bullet assembly run later this month. Hand loaded cartridges with the new bullet were forwarded to Bridgeport for down range ballistic evaluation.

357 Rem Max 158 Gr. SJHP

Production has been requested to schedule an experimental loading run on this cartridge. In addition to normal performance evaluation, samples will be tested for creep and accuracy in the hand guns. A quantity of these cartridges will also be made available to Ruger for evaluation.

RIM FIRE

Scorpion Cartridge

Plant loading tests using a larger sample of the Hercules powder anticipated to give greater velocity were unsuccessful. Both Hercules and Du Pont are being consulted in an effort to locate a rim fire propellant with improved ballistic properties.

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