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RESEARCH DEPARTMENT

HIGHLIGHTS REPORT

APRIL 1981

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E. Hooton, Jr.	W.H. Coleman, II
J.G. Williams	P.S. Hebert
E.B. Beattie	C.B. Workman
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FIREARMSXSG/XPG Shotguns

Preliminary design of the XSG autoloading shotgun is scheduled to be completed in July. Four research model guns have been assembled for design verification testing. All four guns are 3" magnums featuring the A-3 locking system, a modified M/1100 gas system, square wire action spring forward around the magazine tube, and an average weight of 7 lbs. 12 oz. (3.5 kilograms). Two skeet grade guns are also being fabricated.

Model drawings for the XPG pump action shotgun have been released to the Model Shop for prototype fabrication. Assembly is scheduled for July 1981.

Model 7400/7600 Center Fire Rifles

Recent work has concentrated on assuring that boxes are fabricated to model drawings. The vendor (H&P Die Stamping) has extensively reworked tooling to produce dimensionally accurate boxes. Five hundred samples fabricated with the new tooling have been received for evaluation. Focusing on the high volume 30-06 caliber rifles, preliminary tests with the vendor samples and the boxes adjusted to meet the new gages indicate a reduction in Gallery reject rate from approximately 25% to approximately 10-15%. Further evaluation and work on other malfunction sources is in progress.

Bolt Action Carbine

Samples are being fabricated for 1) final testing of new actions, 2) measurements required to produce a master stock drawing, and 3) fabrication (by Fajan) of stocks for field test models. Product acceptance is scheduled for June 1981.

Model 700 ADL/BDL Restyling

Marketing has requested styling changes be made to upgrade the ADL and BDL models for 1982.

Samples of the ADL and BDL models have been completed with the requested changes and furnished to Marketing for their evaluation.

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ASEA Manipulator

Repairs to the ASEA have been effected, and Trial and Pilot resumed. Completed samples should be available for review with Production by the end of the month. At that time, a program for turning the machine over to Production will be established.

Four Slide Machine

Runoff of the machine at the vendor's plant is scheduled for mid-May, with delivery to Ilion by June 1, 1981.

Cut Checkering Machine or Field Grade Guns

Based on a preliminary XSG analysis, the minimum capital investment savings to be derived from successful development of this machine is \$2 million. The CO.RE.MA. mechanical checkering machine has been installed and development work should begin in early May.

Rollform Shotgun Firing Pins

An investigation has been started into the feasibility of using relatively new roll forming technology, which is an adaptation of thread rolling, to produce firing pins and other symmetrical parts. Preliminary economics indicates that a roll forming machine could be justified on the firing pin alone. A visit to a vendor's plant is being scheduled.

Stainless Steel M/700 - 7mm-08 Varmint

This project involves the manufacturing of receivers, barrels, and barrel brackets from 416 stainless steel. Receiver blanks have been fabricated in the Model Shop, and processing through the remainder of Production should begin by the end of April. Steel has been ordered for the barrel bracket, which will be fabricated in the N/C Shop. Steel is available from the Plant for barrels. These will be fabricated during the next run of Varmint barrels on the GFM.

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AMMUNITION

Shotshell

New Unibody Shotshell Process

An experimental run of 15,000 2-3/4" smooth and 10,000 3" corrugated 12 gauge bodies was made using modified tooling which eliminated the thick mouths of the previous run. Average tensile strength is 22,400 psi vs. approximately 18,000 psi. for the present PETERS body.

Semiworks rotary cam equipment has been retooled for 8 gauge and body development work has commenced.

21MM Seismic

To date in 1981, slightly over 700,000 rounds have been loaded and 500,000 rounds are currently in the warehouse.

The technical data package has been transmitted to Production.

New Component Wad

A limited amount of testing has been done with the new component wad. Acceptable crimps were obtained with 1-1/8 oz. loads in PTL shells but low centers were encountered with 1 oz. loads. Wad recovery tests at +150, room temperature and -20°F. looked good. Failure level at -20°F. was comparable to the RTL wad when molded with the same runner system.

A larger quantity of wads will be molded for additional testing to quantify any dimensional revisions that may be necessary.

Center Fire

7mm BR Rem Case

The 14A cup drawing problem has been resolved by PE&C and a trial and pilot run is in progress.

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Center Fire - Cont'd

357 Remington Maximum 158 Gr. SJHP

The vented test barrel velocity requirement of 1700 fps, has been demonstrated. Recalibration of the transducer barrel and subsequent testing have resulted in good pressure correlation between solid and vented copper crusher and transducer barrels. High pressure problems at elevated temperatures continue to be experienced with both WC680 and WC295 powder.

Rim Fire

"Scorpion" Rim Fire Cartridge

An experimental Hercules powder sample, (BS-184) has been tested with excellent results. Thirty rounds of "Scorpion"-type ammunition were hand loaded and assembled on match rim fire equipment and the goal ballistics were obtained.

A larger, pre-production sample of the powder is on order and delivery is expected in late May. When received, the powder will be reassessed for ballistics, charging characteristics and sensitivity to "milling" during an experimental high speed auto-loader run.

Primers

Integral Anvil Battery Cup

Production is running the equipment on two shifts. This will continue until they are satisfied with their ability to properly operate and maintain it.

TLX

A repeat test of TLX shotshell mixtures, one containing Du Pont (Lonoke) nitrocellulose and the other using Du Pont (Bridgeport) N/C, has indicated that the Lonoke N/C is consistently more adhesive, causing the resulting mixture to adhere

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TLX - Cont'd

to the primer pellet knockout pins. A preliminary chemical analysis does show significant differences between the two Du Pont lots. A technical purchase specification will be prepared and issued to Du Pont or other vendors with regard to future purchases of nitrocellulose.

Engineering Research & Development

Shotshell Feeder/Printer

A new ink printing system has been developed to improve ink print appearance on shotshells. The first of three printers to be provided under an approved Production Department project was successfully tested and shipped to the Lonoke plant for production trials. The two additional units are in assembly and scheduled for completion in May.

Joseph P. Glas

Joseph P. Glas, Director
Research Department

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RESEARCH PERSONNEL

Remington Roll

	<u>3-31-81</u>	<u>4-30-81</u>	<u>Forecast</u> <u>12-31-81</u>
Exempt	64	64	42
Nonexempt	22	22	22
Wage	20	20	20
Total	<u>106</u>	<u>106</u>	<u>104</u>

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