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RESEARCH DEPARTMENT

HIGHLIGHTS REPORT

JANUARY 1982

**REMINGTON ARMS CO.
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FIREARMS RESEARCH DIVISION

DISTRIBUTION

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FIREARMS

NEW PRODUCT DEVELOPMENT

XSG/XPG Shotgun Design

Work is progressing on XSG contingency designs for the carrier release, locking block and gas system. One of two carrier release designs currently undergoing functional tests is scheduled for endurance testing in February. A lower cost rear lock design will also be ready for preliminary function testing in February. Test results continue to look promising for the forward bleed gas system. Work is also progressing on a contingency design based on the tandem orifice concept.

Models 7400/7600 Rifles

A sample lot of 100 M/7400 - 7mm Express Rem., with the altered barrel extension to correct feeding problems, will be tested in February.

Screw machine firing pins have been endurance tested to 3,000 rounds. The Research goal is 10,000 rounds without failure.

A sample lot of 3300 wave washers, to eliminate fore-end rattle in the M/7600, has been turned over to Production. Model drawings are complete and have been transmitted to the Plant.

Model 4 Limited Edition

All model drawings have been transmitted to the Plant. Two sample guns have been fabricated for testing and evaluation. Endurance testing on one sample has completed 1,000 rounds with no apparent problems.

Models 4-6 Carbines

Research has provided samples to Marketing for evaluation.

Bolt Action Rifles

Five Model 700 fire controls with blocked sears and blocked triggers are in the Test Lab for evaluation. We are assembling sample fire controls employing a new trigger design which does not require a connector to eliminate a part, insure a more positive lift, and maintain proper clearance.

The second Model 7 bolt action gun is complete with long action.

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Bob Emmons Styling - Bolt Action Rifles

Two samples will be complete by mid-February. One will be similar to our present classic, the second will have Bob Emmons special items - butt plate, grip cap, fore-end tip, etc.

Bolt Action Carbine

Prototype stamped no-bind followers will be tested in February. A second generation master stock is due February 8.

CURRENT PRODUCT DEVELOPMENT

Model 870 Limited Edition

Artwork is being refined and will be ready by February 1.

Model 870 Competition Trap Shotgun

Endurance testing has been completed to 25,000 rounds on two guns. Production has been authorized to hold a .035" maximum bolt to receiver clearance by increasing bolt height .008".

1982 Model 870 Ducks Unlimited Shotgun

Drawings for all three models will be transmitted to the Plant by February 1.

Model 700 Upgrade

Four model stocks will be completed by February 8 for a Marketing research panel evaluation of stock shape.

Model 700 Classic - 257 Roberts Caliber

Initial tests indicate feeding problems (stemming on the magazine and chamber) from the long action magazine. Work is in progress to determine the cause of the stemming problem and to identify potential solutions.

Model 700 Scope Mounts

Prototype scope mounts based on the aluminum extrusion design will be tested in February. Material has been ordered by Research for 3,000 sets.

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Model 700 No-Bind Follower

Prototype testing is satisfactory except for the 222 Caliber. A larger quantity of samples is being made for additional testing of all calibers in the line.

PROCESS DEVELOPMENT

Injection Molded Metal and Ceramic Components

Acceptance runoff of the Witec equipment was successfully completed in San Diego, and the equipment has been shipped.

Renovation of Bldg. 76-2 will be completed by the end of January.

The first quotations for marketable product will be mailed out on January 25.

Four-Slide Machine

Installation is complete in the N/C machining area, and a demonstration has been conducted for Research and Production personnel.

Tooling for the M/7400 and M/7600 short magazine followers is being designed. Quotes have been requested for tooling for the Bolt Action Carbine magazine follower.

Form-Rolling

A purchase requisition is being prepared for Rol-Flo Engineering, Inc., West Kingston, Rhode Island, to develop tooling for the M/1100 Trigger plate pins.

Cut Checkering

Work has begun again on the CO.RE.MA. cut checkering machines. The quality of the latest sample run is comparable to that produced when the machines were first purchased. The next step is to determine if the quality is good enough, and what design changes are required to improve machine reliability.

CNC Vertical Machining Center

Deliveries of the Matsuura machine center, post processor, and tooling are due by the end of February.

POWDER METAL RESEARCH

Sintering of Powder Metal Parts in a Dissociated Ammonia Atmosphere

Current data on our sintering process is needed by the Engineering group for process development and tool design. This project was initiated last year and one technician is being devoted full-time to this single project.

Cryogenic Processing

A second batch of parts were treated by this process. The resultant properties were disappointing. This is attributed to the vacuum sinter as against the dissociated ammonia atmosphere sinter which was used for the first batch of samples.

Hot Isostatic Pressing of Powder Metal

Samples of selected alloys were fabricated by the powder metallurgy process, followed by Hot Isostatic Pressing (HIP). Significant increases in density were realized, together with some improvements in mechanical properties.

"Complex Metal Powder Shapes by Injection Molding" - Battelle Program

The third progress report dated December 31, 1981 on this work has been received. A considerable degree of information has been generated in the last three months.

AMMUNITION

Shotshell

New Unibody Shotshell Process

Dimensionally accurate 12 gauge 2-3/4" bodies were produced using six stations on the production system.

Improved heading for 20 gauge has been demonstrated in the laboratory. Tooling has been fabricated for confirmation on production equipment.

An experimental run of approximately 25,000 8 gauge bodies was completed in semiworks with very consistent dimensions. A five percent body defect rate was attributed primarily to foreign material in the plastic.

Experimental 28 gauge bodies are close to goal dimensions. Head pulls need to be improved.

Polymer Support Program

Extrusion tests conducted by ETL, ESD and Remington personnel at the Pencader Plant indicate that wall thickness variability correlated well with die pressure and that about one-third of the wall thickness variability was caused by the extruder and about two-thirds caused downstream of the extruder. When a virgin/regrind blend was run, the process and pipe dimensions become unstable. The cause of the instability is unknown, but feed problems related to variable bulk density are suspected. Melt properties of the blend show no significant differences from the virgin polymer. A similar fully instrumented test will be run in Bridgeport.

Primer Basics

Primer sensitivity and piercing tests conducted with primer cups and anvils of selected hardnesses indicate that a good balance of sensitivity and piercing performance with the desired safety factor can not be achieved through metallurgical changes alone with our current design. The effects of anvil and cup dimensions and shapes will be evaluated.

Integral Anvil Battery Cup

Lonoke has completed a Trial and Pilot run of 12 gauge promotional shotshells primed with the ABC-202. Ballistics tests are in progress. These efforts, which are necessary prior to beginning the four million round production run, will be supported by Research on an as-required basis.

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Extended Range Shotshell

A Task Force has been established to plan and coordinate the introduction of an Extended Range Shotshell Line. An information project is being prepared for circulation and Management's approval. It will include the recommended program, and sufficient data for Management decisions. The program will be presented at the Operations Committee meeting on February 16, 1982.

Center Fire

Extended Range Center Fire Ammunition

An informational project has been written and sent to Marketing, Production, and Legal for comment. The final writeup should be released for distribution by early February.

357 Remington Maximum 158 Grain SJHP

Alternative primers are being evaluated as a route to improve cartridge performance with Hercules 2400 powder. Ruger is attempting to improve the revolver's performance through dimensional changes suggested by Remington.

7mm Bench Rest Case

An experimental run is in progress using third draw punches fabricated to corrected drawing dimensions. The sample was processed through taper-trim with excellent gauging characteristics. Of the forty thousand shells, about twenty-five thousand passed inspection for physical defects....folds, oil pockets, etc. A scrap rate of 50% at this operation has been predicted since project initiation.

JPGlas:jl
Attachments

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January 1982

RESEARCH PERSONNEL

Remington Roll

| | <u>Actual</u> <u>12-31-81</u> | <u>Actual</u> <u>1-31-82</u> | <u>Forecast</u> <u>12-31-82</u> |
|-----------|----------------------------------|---------------------------------|------------------------------------|
| EXEMPT | 61 | 61 | 62 |
| NONEXEMPT | 21 | 21 | 20 |
| WAGE ROLL | 23 | 23 | 24 |
| | <hr/> | <hr/> | <hr/> |
| TOTAL | 105 | 105 | 106 |

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PATENTS & TRADEMARKS

Summary of Activity

JANUARY 1982

Patent Applications Filed

N O N E

Trademark Applications Filed

N O N E

Patents Received

MAGAZINE SPRING RETAINER AND CAP DETENT SYSTEM
(Kast/Young)

D-233

ABSTRACT: The detent mechanism for the aluminum magazine cap in the XSG shotgun. A plastic retainer/detent, located in the magazine tube, is used for two purposes. It retains the magazine spring in the magazine tube when the cap is removed and it uses the magazine spring force to detent the magazine cap by means of interacting teeth in the retainer/detent and in the cap.

Trademarks Received

N O N E

Inventions Reports

N O N E

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