LIMITED DISTRIBUTION

RESEARCH DEPARTMENT

HIGHLIGHTS REPORT

FEBRUARY 1981

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REMINGTON ARMS COMPANY

ARD MONTHLY PROGRESS REPORT - MARCH, 1981

SHOTSHELL

New Unibody Shotshell Process

A practical limit work ratio, which balances tensile strength with acceptable production yield in the new process, has been defined, and samples are currently under test which have a tensile strength of 22,000 psi. With the successful conclusion of these tests, a substantial run of bodies will be made to confirm processability and the effect upon body cutoffs.

Body Performance Improvement

A large test of over 30,000 shell firings has been completed which indicates that product produced since 1978, on the average, has lower tensile strength than that produced prior, but that the increased volume of PETERS Target Load construction reduced reloading pressures sufficiently to effectively reduce the probability of body cutoffs with PTL versus the older RXP construction. A program to improve PTL tensile strength has been initiated.

21MM Seismic

Loaded round production will be about 150,000 rounds for the calendar month of February versus 250M forecast. A detailed plan is being developed with production to assure the total 1Q81 forecast requirement of 750M rounds can be met.

Hob Industries has supplied 470,000 primer cups subsequent to testing of sample product.

Rifled Slug Improvements

Experimental samples of 20 ga. Hollow Point rifled slugs of 3/4 and 7/8 oz. were loaded and test fired for accuracy. The 3/4 oz. slug met the Remington accuracy standards while the 7/8 oz. component proved to be unsatisfactory. A larger sample of the 3/4 oz. slug will now be fabricated, production loaded and acceptance tested with product introduction to follow shortly thereafter. Meanwhile redesign of the heavier 20 ga. slug for possible use in a magnum shell will continue.

BARBER - PRESALE R 0108749

CENTER FIRE

7mm Mauser 140 Gr. PSP

The initial production run of 350,000 cartridges has been completed.

7mm BR Rem Case

As reported last month, a difference in velocity and pressure between the factory formed case and the hand formed case was reported by DuPont personnel involved in reloading development work. This difference has been confirmed by Research testing and is a result of the difference in internal volume of the two cases. Testing to determine the impact of this difference will be completed in early March.

357 Rem Max 158 Gr. SJHP

Cartridges from the first experimental run performed satisfactorily in ballistic, function and casualty testing. However, excess pressures were found in cartridges stored for three weeks at +150°F. Additional tests are in progress to confirm these results.

TLX

A TLX mixture was made and charged into shotshell and centerfire primers at Lonoke. The charging was difficult, presumably due to differences in the Nitrocellulose used at Lonoke. Sensitivity was not within specifications for the shotshell primers. Differences in the tamping operation and/or raw materials will be investigated as possible causes.

Seventy thousand rounds of 22 High Velocity, TLX primed rim fire ammunition have been fired at the Ilion gallery with eight misfires observed. This misfire rate is less than current product with conventional mixture.

ENGINEERING RESEARCH & DEVELOPMENT

Rotary Cam - Machine Status

The control system has been received. The heatset units are in fabrication at A&M Machine Tool. The body former is in assembly at Alliance. Delays on body former delivery are still being encountered. The latest schedule from Purchasing is for the end of March delivery.

Rotary Cam - Machine Status (cont.)

Site preparation for the EDL test phase is essentially complete. Site preparation for Production installation at Bridgeport is underway.

In an effort to partially make up lost time, ER&D is re-evaluating the complete program to determine the best possible schedule. The goal is to ship and install these facilities at Bridgeport in the June/July period with initial equipment turnover in August.

NEW PRODUCT DEVELOPMENT

ESG/XPG Shotguns

The present XSG design features an action spring forward around the magazine tube, a modified barrel contour for reduced weight, and an improved (smoother action) locking system. Four (4) prototypes are being fabricated for field testing to prove out the design. Assembly is scheduled for completion by mid-March. Work is continuing on a variety of contingency designs for the feeding, gas, locking, and fire control systems. In laboratory tests, two more square wire action springs are exhibiting good closing velocities after 3,750 and 6,573 2 3/4" magnum rounds, respectively. Design work on the XPG (pump action) feed system has been initiated.

Model 7400/7600 Centerfire Rifles

Phase 1 (Data Gathering) of the M/7400/7600 Task Force program is essentially complete and Phase 2 (Data Analysis) is in progress. Review of gallery rejects by malfunction type is complete and a computer program is being written to provide weekly update charts on status of malfunctions. Parts for the 100 piece correlation study are 95% complete and nearing final assembly.

One of the problems which has been identified in the final heading area. Critical gage dimensions have been determined, new fixtures are being designed, and a new heading machine has been installed. Initial results look encouraging.

A follow-up Research Warehouse Quality Audit is in progress to compare performance of M/7400's to M/742's. Five guns each of M/7400, M/4, M/742 ADL and M/742 BDL have been obtained from the warehouse. Preliminary results indicate that the new models compare favorably with the previous line.

Model Four Limited Edition

Research is working with Process Engineering on the best way to attach and finish the rosewood tip to the fore-end. Samples of rosewood received from the vendor seem to be free of cracks and color is better than expected. Sample fore-ends with rosewood tips will be fabricated and tested by mid-April. All drawings and parts lists are now complete and will be transmitted upon completion of the rosewood tests.

Model 999 Seismic Gun

A schedule has been developed for the next ten (10) seismic guns. These guns will be ready for shipment by the end of March.

Model 870 Competition Tap Shotgun

During fabrication of Trial and Pilot components, the Plant experienced a problem with alignment of the barrel and receiver assemblies. A check on dimensions specified on the engineering drawings confirmed that extremes in tolerances could cause the observed interference. When the gas cylinder diameter was reduced by 0.010", parts would assemble without any difficulty. Two (2) guns with the reduced diameter gas cylinders were evaluated vs. a gun without the modification. Results of the evaluation were as follows:

1. No appreciable change in Piston velocities.
2. No detactable change in gas leakage past the gas cylinder.
3. Comparable shoulder force measurements.

The gas cylinder drawing has been modified to reflect the reduced cylinder diameter and transmitted to Production.

CURRENT PRODUCT DEVELOPMENT

M/788 Safety

All model drawings have been transmitted to the Plant. Production has ordered a sample of 2,000 springs and plungers for a pilot run with safety levers modified to include the 100^{0} cone angle.

Model 1100 Ducks Unlinited

Josten, the vendor selected to make the emblem for the commemorative model, furnished us with a test sample. Shooting tests were satisfactory. However, Josten now states there may be a problem in holding dimensions. They will modify our print to indicate dimensions they can hold and return it to Research by the end of February. Due to the limited time available prior to production of these guns, Purchasing is keeping a close contact with Josten and has contacted a back-up vendor.

PROCESS DEVELOPMENT

Auto-Drill Line

Research is continuing to assist Production in troubleshooting start up problems and in operator training. Pilot operation on a two-shift basis has been initiated. When a full two-shift operation is achieved, production rates will be more than sufficient to satisfy feed rates required for GFM machines

One-Piece Model 700 Bolt Assembly

The production of one-piece Model 700 bolt assembly is being investigated as a cost reduction item. Two separate approaches are being studied. One starts from bar stock and utilizes standard machining techniques. The second method begins with a forging which includes not only the bolt head and bolt body, but also the bolt handle all in one piece.

RESEARCH PERSONNEL

Remington Roll

	1-31-81	2-28-81	Forecast 12-31-81
Exempt	63	64	62
Nonexempt	23	22	22
Wage	20	20	20
Total	106	106	104