

FIREARMS

Model 1100 Special Shotgun

Research effort on prevention of cracking in the Model 1100 Special fore-ends has been concentrated on two primary designs.

The first design is a buffered fore-end having an elastomer sleeve retained in the fore-end. Five samples are in test at this time.

<u>Gun</u>	<u>Total Rounds</u>	<u>Mag.</u>	<u>Express</u>	<u>Light Field</u>	<u>Results</u>
1	7305	2805	3500	1000	Broken barrel support
2	6850	2350	3500	1000	Broken Magazine tube
3	5900	1400	3500	1000	Broken bolt
4	1150	115	805	230	Still in test
5	5200	700	3500	1000	Broken interceptor latch

The second design utilizes an extension on the magazine cap which separates the fore-end from the internal loads caused by the barrel. Five test samples have been shot 5,000 rounds utilizing 10% magnum, 20% light field, and 70% express loads. All fore-ends passed this test without cracking. The test was continued with 100% magnums with the following results:

<u>Gun</u>	<u>Total Rounds</u>	<u>Mag.</u>	<u>Express</u>	<u>Light Field</u>	<u>Results</u>
1	6125	1625	3500	1000	Broken action bar
2	9975	5475	3500	1000	Broken barrel support
3	8275	3775	3500	1000	Broken action bar
4	9740	5240	3500	1000	Broken bolt
5	9260	4760	3500	1000	Broken action bar

Components for fifty test samples of each design have been started. Since at this time both designs appear to be acceptable, the results of a cost estimate being done by Process Engineering will have a significant impact on the decision on which approach to adopt.

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Model 870/1100 Deer Gun

Introduction in 1985 of a new deer barrel to replace the current offering has been initiated. This redesigned barrel in both models and in both 12 and 20 gauge will feature a 21" barrel and a rear sight base capable of mounting a long eye relief scope with a variety of mounts. Drawings have been completed for estimating by Production and samples will be completed by September 30.

Model 870P Police Shotgun

Endurance testing of three Model 870 12 gauge police shotguns for anti-jam design evaluation is complete. Disassembly and assembly with the proposed anti-jam latch slide appeared to be a major problem for the F.B.I. These difficulties demonstrated at the August Remington Arms-F.B.I. contact meeting in Quantico, Virginia may require a redesign.

Model 700 Lightweight

Initial accuracy results for .30-06 gave a four gun average of 1.69". Present specification is 3.5". Four guns will be available by September 8 for Marketing Field Testing. Transmittal and accuracy testing will be complete by September 15.

Model 870/1100 Waterfowl

Five Model 870 shotguns will be completed by the end of September and design verification testing will be completed in October.

One prototype Model 1100 will be completed by the end of September. If testing is satisfactory, 25 models will be built and tested for design verification in October.

Injection Molding - Firearms Components

Pilot quantities of Model 700 magazine followers have been processed through the Production gallery and are in the Test Lab for research function and endurance testing. Samples have been given to Marketing.

Cut Checkering Machine Development

The Bostomatic machine is installed, and development of the Model Four and Six stock is progressing. Checkering quality is as good as the current N/C machines. Repeatability from stock to stock is good. Minor software or fixture revisions are necessary to achieve uniform depth from side to side.

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Cut Checkering Machine Development - Cont'd

A purchase order has been issued for a CO.RE.MA. six spindle CNC machine for checkering fore-ends. Run off in Italy is expected in late December.

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FIREARMS MODERNIZATION

Receiver Flexible Manufacturing System

To insure that the proposed FMS process is the most cost effective system available, we are investigating the purchase of Japanese produced receivers. Preliminary results indicate that Japanese manufacturing costs for flat panel receivers are significantly lower than our current process. When the additional costs of equipment amortization, import duties, freight, shipping, insurance, etc. are added, the Japanese receivers are substantially more expensive than our current full factory costs.

Details of the Japanese Receiver study will be issued under a separate cover.

GFM Automation

Installation of the robot mounting plate and miscellaneous facilities modifications were completed during plant shutdown. The robot will be installed beginning August 29. The strip/assemble machine and all controls will be shipped to Ilion by September 9.

Wood Components - Flexible Manufacturing System

CNC Long Stock Inletting

Operator training is complete and the standard operating procedures and safety key points are circulating for final plant approval. The Heian machine will be released to Production in September.

Rotary Bell Atomizers

Recent tests indicate that a problem still exists with uniform finish application. Arrangements have been made for Remington and Du Pont finishing personnel to retest the equipment on our stocks at DeVilbiss in September.

Stock Vendor Study

Responses from two furniture manufactures have been received.

- 1) Bassett Furniture Company stated they would be unable to furnish wood components.
- 2) Ethan Allen Inc. indicated low interest in supplying gun stocks, but requested additional information.

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Stock Vendor Study - Cont'd

No response has been received from two other furniture companies contacted. Plans are being formulated to contact woodworking companies in the mid-West and possibly Remington's wood blank suppliers.

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AMMUNITION

New Unibody Process

Tests on the 3" large volume trial and pilot loads resulted in 10% base cracks at -20°F in an oversize chamber, excess head-space gun, compared with 0.5% in the experimental run. We are investigating differences in AH&P setup as well as possible tooling improvements.

Loading of 2-7/8" 20 gauge is scheduled for completion by the Plant this month, and trimming of the 2-11/16" shell for body length has been completed.

An experimental body former run of 28 gauge has been completed. Some development is required at heading.

New deep-skive tooling has been designed to improve shroud and cutter alignment on loading, to increase wall thickness and improve final crimping. Testing is scheduled for completion this month.

Steel Shot Shotshell Loads

Although an acceptable hand load has been established for the 12 gauge 1-3/8 oz. and 1-1/4 oz. steel shot loads, confirmation of process limits is contingent on completion of the large volume body. Load development of the 1-1/8 oz. steel load in the large volume body has also been delayed.

12 Ga. Low Cost Component Wad

Research has completed its objective of demonstrating a low cost component wad. Marketing has initiated an economic evaluation.

ABC Battery Cup

One row of tooling was modified to produce four flash holes to eliminate the occasional blowing of the anvil out of the battery cup. Drop testing of primers charged with .97 grains of 1024 mixture resulted in no failures with four flash hole cups and about 10% failure with three flash hole cups. Cup distortion was also substantially reduced. The anvil point is about .020" lower and further tooling development is required to correct this loss in height. With the correction of anvil point height the battery cup should be satisfactory for use in target loads.

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357 Remington Maximum

Federal 180 gr. loads were compared to Remington 180 gr. experimental run product. Vented barrel and revolver velocities and accuracy were identical. The Federal product experienced several splits in oversize chamber firing and three cylinder lock-ups during revolver velocity firing were caused by bullet jacket material wedged in the barrel cylinder gap.

SAAMI velocity specifications for the 158 grain bullet have been issued and can be met easily. Development of the 125 grain load is complete. Technical data packages will be transmitted within two weeks.

Multi-draw Bullet Jackets

A new progressive draw improved Core-Lokt® bullet jacket process has been developed. Sample jackets are being tested at Lonoke. Average accuracy from three groups of five rounds at 100 yards were:

30-06, Avg. 0.9 inches
300 Win Mag., Avg. 0.8 inches

The present Plant specification is 1.8 inches average. This performance compares favorably with Federal loaded Sierra bullets.

Center Fire Modernization

Funds to cover the CFM prototype project operations overruns and to allow for the completion of this phase of modernization have been approved. All six prototypes will be completed and turned over to production by the end of November, 1983.

A new Marketing forecast for use with the CFM construction economics has been defined. Significant reductions are projected in total sales and those resulting from case/jacket polishing and modernized jacket draw and bullet assembly. These reductions will lower the "best case" economic returns submitted at the July Operations meeting. Present indications are that lower machine utilization/efficiencies and labor savings plus increases in equipment investment and projected operations costs will also reduce these returns.

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RESEARCH PERSONNEL

REMINGTON ROLL

	<u>Actual</u> <u>7-31-83</u>	<u>Actual</u> <u>8-31-83</u>	<u>Forecast</u> <u>12-31-83</u>
<u>Exempt</u>			
Ammunition Research	17	17	14
Firearms Research	38	37	36
Firearms Modernization	7	8	9
Other	<u>1</u>	<u>1</u>	<u>1</u>
<u>Total Exempt</u>	63	63	60
 <u>Nonexempt</u>			
Ammunition Research	12	12	12
Firearms Research	12	10	12
Firearms Modernization	1	1	1
ER&DD.	1	1	1
Other	<u>1</u>	<u>1</u>	<u>1</u>
<u>Total Nonexempt</u>	27	25	27
 <u>Wage Roll</u>			
Firearms Research	18	18	19
Firearms Modernization	<u>1</u>	<u>1</u>	<u>2</u>
<u>Total Wage Roll</u>	19	19	21
 <u>Total Research Department</u>	<u>109</u>	<u>107</u>	<u>108</u>

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PATENTS & TRADEMARKS

Summary of Activity

August 1983

Patent Applications Filed

N O N E

Trademark Applications Filed

N O N E

Patents Received

FIRING PIN BLOCK FOR A FIREARM HAVING A
RECIPROCATING BREECH BOLT
(Bauman/Kast)

RA-0232 CANADA

ABSTRACT: A major safety feature of the XSG
shotgun. The slide block positively retracts
the firing pin inside the bolt face prior to
unlocking the action, and blocks the firing
pin from protruding until the action has been
relocked.

RECOIL-OPERATED FIRING PIN RETRACTOR FOR
ELECTRICALLY-FIRED GUNS
(Rowlands)

RA-0241 CANADA

ABSTRACT: The firing pin tip is retracted by
inertial movement of a weight upon firing the
gun. As a safety feature, the gunner
must manually release a latch to return the firing
pin to its firing position.

Trademarks Received

N O N E

Inventions Reports

Ilion:

N O N E

Bridgeport:

RB-525 - Electric Primed Plastic Cartridge Case

RB-526 - Electric Gun/Ammunition Interface