

July 11, 1977

RESEARCH PRESENTATION

I will describe the research product development programs for which I am responsible in the following product areas: Bolt Action Centerfire Rifles, Target Shotguns, Rim-fire Rifles, and Mechanical Traps.

CENTERFIRE BOLT ACTION RIFLES

Present Status

Remington is the leading producer of bolt action centerfire rifles with 46% of the market in 1976. Our production rate is presently limited by our manufacturing capacity, but we have project approval to increase our manufacturing capacity by % in the next years. Our bolt action line is very vulnerable to competition because of the limited product differentiation between models and the vast number of competitors. Presently our biggest competitors are Ruger with their M/77 and Winchester with the M/70.

The M/700 has gained wide acceptance for its appearance, performance, and accuracy characteristics, but we must continue to update and improve this model with design improvements and new model variations to maintain our market position.

New Bolt Action Model Variations

M/700 Classic

- A. Chart
- B. Show rifle

The M/700 Classic is a rifle with uncluttered elegance. It features a traditional stock void of cheek piece, Monte Carlo styled comb, and white line spacers. The grip radius has been swung back to compliment the style of the stock. The tough satin finish will be used on the stock in keeping with the classic theme. The stock will be cut checkered with the same pattern as presently used on the M/700 BDL rifle. The BDL floor plate is included on the Classic Rifle to give the customer a rifle with improved appearance and also make the rifle easier to unload. The rifle will be offered with sling studs and swivels so any carrying strap can be readily adapted to the rifle.

Ilion Research Division

July 11, 1977

New Bolt Action Model Variations - Cont'd.M/700 BDL Rifle with Skip Line Checkering

A. Show Rifle

The M/700 BDL with skip line checkering dresses up the model while at the same time gives a definite model distinction between the Classic and BDL checkering patterns.

M/600 Carbine

The objective of this development effort is to satisfy the needs of the back packer, guide, and deer hunter for a hard hitting, light, short, and fast handling rifle.

Design Objectives:

- Chamber for modern high performance cartridges
- Weight - 6 pounds
- Length - 35 inches

Rifle equipped with:

- Sling and Swivels
- Recoil Pad
- Metal Trigger Guard

Design options to be investigated:

1. Styling of Stock
2. Bolt Handle design
3. Checkering
4. Wood Finish
5. Sights

New Bolt Action Model Variations - Cont'd.

M/600 Carbine - Cont'd.

Development Program:

Fabricate models with design objectives and options by November 1977.

Evaluation of Options with completion in January 1978:

Research Testing
Marketing Analysis
Economics

Proposed Market Announcement:

January 1979.

Bolt Action Product Improvements

Model 700 Extractor

We have received a number of complaints critical of our cartridge extraction from the marketing focus panels and customer contacts. We feel we have a reliable system but we are going to investigate these soundings and if they are justified find a solution. If not justified we will generate marketing information to demonstrate the performance advantages of our extractor. We will present our findings at the January meeting.

Model 700-600 Fire Control Improvements

We presently offer these two rifles with a fully adjustable fire control which we tell the customer not to adjust because the typical customer does not understand the system well enough to adjust it properly. The adjustment feature increases the cost of the fire controls. These rifles cannot be unloaded with the safety in the "On Safe" position which we believe would be a desirable feature. To overcome these

Bolt Action Product Improvements - Cont'd.M/700-600 Fire Control Improvements - Cont'd.

deficiencies we are presently doing a design analysis of the M/700-600 fire controls. We are trying to develop a new fire control with the following features:

1. Trigger externally adjustable for pounds pull within safe limits.
2. Sear engagement and trigger overtravel determined by design (not adjustable by customer).
3. Rifles can be unloaded with the safety in the "On Safe" position.
4. Improved trigger pull characteristics.
5. Reduction of trigger assembly costs.

Development Schedule:

- . Prototypes with different design options available for inspection and testing - March 1978.
- . Preferred model ready for extensive testing - July 1978
- . Design complete - March 1979

July 11, 1977

TARGET SHOTGUNS

The 3200 All Gauge Skeet Sets

The skeet sets will satisfy a market need for a good quality skeet system for the competitive skeet shooter. This program should also help to improve the financial position of the M3200 line.

The design and Research testing of the 3200 Skeet Sets was completed in July of 1975. The Research testing was followed by a Marketing field test which verified the superior bird breaking ability of our skeet system. With this skeet shooting system the customer can shoot all four skeet events with the same gun rather than having to adapt to a new gun for each event.

The gun has a common weight, balance point, sight line and point of impact, for all 4 barrel assemblies. When the shooter shoots any gauge it is practice for any other gauge because he is shooting the same gun with the same feel with any of the 4 different barrel assemblies. The barrels have a unique contour which eliminates the need for spacers or separate fore-ends for each barrel assembly, but also has a very pleasing side and top appearance.

The design is completed, tested, and transmitted to Production. The Skeet Sets have a planned January 1979 market introduction.

M/870 Competition Trap Gun

We have a less than 10% of the Trap Gun market with all three of our model types. The leading competitive trap guns are the Browning BT99, Perazzi Single Barrel, and Winchester M12.

With the limited volume of the Trap Gun market we cannot afford to develop and manufacture a new model designed specifically for trap shooting. What we need to meet our company's objectives of profit and market share is a Trap Gun with superior features based on one of the existing high volume shotguns.

M/870 Competition Trap Gun - Cont'd.

The objective of the M/870 Competition Trap Gun program is to develop a superior shooting trap gun with proprietary features which will give us a competitive advantage in the marketplace.

The M/870 Competition Trap Gun could be offered with all or any combination of the following features:

- . Recoil Reduction System:

This system is placed in the magazine tube. The system is capable of shoulder force reduction equal to the M1100.

- . Adjustable Point of Impact:

The vent rib can be altered to give the shooter a 10-inch adjustment at 40 yards.

- . Pattern Control:

The gun could be offered with a choke tube system which would give the shooter a choice of two chokes for optimum pattern control.

Development Schedule:

Three prototype shotguns with combinations of the above listed features have been fabricated and are ready for Research testing.

The selection of design options, testing, Marketing evaluation, and economics should be completed by September 1978.

The M/870 Competition will be announced January 1980.

M/3200 Single Barrel Trap Gun

The objective of this development program is to offer the customer a superior bird breaking shotgun with proprietary features.

This gun could be offered with recoil reduction, adjustable point of impact, and pattern control devices utilizing either the top or bottom barrel.

July 11, 1977

M/3200 Single Barrel Trap Gun - Cont'd.

The simplest design is fabricated by cutting the bottom barrel off at the end of the fore-end and plugging both ends. This gives a moderately good looking gun without any of the above features. If it is desired, any of the features could be added, but this would require additional development effort.

RIMFIRE RIFLES

Of all the product lines the ones which are the most threatened by competition are our rimfire rifles. Our market share has dropped to 13% of the total rimfire market. We have short-term development programs on the Nyfon 66, M/552, and 581 rifles. We are presently analyzing our long term options on the rimfire autoloading rifles.

M/581 Single Shot Conversion

The objective of this design is to give the customer the option of converting his M/581 clip fed repeater to a single shot rifle which can be used to train new shooters. The rifle at some later date can be converted back to a repeater. This design is accomplished by supplying the customer with two molded plastic parts which readily convert the rifle to a single shot.

New Autoloading Rimfire Rifle

Research is presently initiating a program to determine the long term options available to us in the .22 autoloading market. Because of the complexity and magnitude of the development program it is being initiated with clearly defined check points and goals. To be competitive in the rimfire autoloading market will require a major commitment from the company in the areas of product design and advanced process development.

New Autoloading Rimfire Rifle - Cont'd.

We are in the initial investigative stage of this study. We are approaching the problem from five different vantage points to nail down the autoloading rimfire rifle parameters which will guide our future course of action.

I. Marketing Input

Before the rimfire autoloading proposal can be formulated a number of market related questions have to be answered which directly determine the design options available:

1. To what degree can new innovations be incorporated into the new design which differ from the accepted norm of rimfire rifle characteristics.
2. The type or types of appearance characteristics desired by the potential customers: military, sporting, classic, etc.
3. Functional and operating characteristics desired which would affect its marketability.
4. Definition of market area and types of customer new rifle is being designed for.
5. Potential volumes and proposed pricing structure.
6. Will a promotional gun be a variation of the product mix?
7. The principal competition, their market share and pricing structure.

An interim report has been supplied by Marketing which we are using to guide our thinking until their final report is completed in a couple of months. While the answers to these marketing questions which apply to the design effort are being formulated, Research will be involved in the following activities.

New Autoloading Rimfire Rifle - Cont'd.**II. Analysis of Competitive Rifles**

All of the existing autoloading rimfire rifles in the market are being analyzed from an appearance, function, design and process cost viewpoint.

III. Firearms Cost Data

All of the existing .22 rimfire rifles manufactured by Remington are being cost analyzed to determine what the various elements of manufacturing contribute to the total gun cost. This cost data is pointing out where effort should be concentrated on a new design to reduce overall gun costs. The leading competitive models will be cost analyzed to determine if they have a cost advantage, and if they do, where it exists.

IV. Processing Data

To gain the proprietary position in design and manufacturing costs which we desire, the process development effort on this model will have to be greatly accelerated in the area of rimfire production. All new processes and process innovations will have to be investigated in the proposal stage of development so the parts can be designed to be fabricated by the most economical method.

V. Rifle Design

The design will have to be fully integrated with the process and market requirements to meet the cost and customer acceptance requirements.

A proposal will be made in the January meeting detailing the new development program on the .22 Rimfire Autoloading Rifle. This proposal will include the proposed development schedule, development activity requirements, estimate of development costs, design objectives and proposed product characteristics.

MECHANICAL TRAPS

The objective of this development program was to design two new traps to replace the outdated Blue Rock and Wonder Traps. The new traps are portable, easy to operate and throw targets to tournament standards. These traps will fill the gap between the Trius type traps and the electric traps.

The new traps are constructed of welded steel tubing which is very strong, giving the needed endurance strength to ensure reliability. The new traps have clean lines with a modern appearance. The new traps are much easier to cock than the Blue Rock. They have a smooth throwing action with no throwing arm flailing at the end of the throwing cycle.

The development work on the Blue Rock 78 trap is complete. Drawings will be transmitted after the Marketing field test is completed.

The design of the Blue Rock Tournament Trap with cocking handle and solenoid release will be finished in September of this year.

Research has met its objectives of developing a new mechanical trap family to replace the Blue Rock and Wonder Traps. The new traps are an innovative design, safe, reliable, and well within the cost structure specified. The traps are fabricated completely from purchased parts and will require a minimum of plant effort to produce.

With the addition of these two traps to our product line Research is stopping any further development work on either mechanical or electrical traps.

July 11, 1977

M/12 Winchester	\$575.00
BT 99 Browning Single Barrel	\$432.50
Grade 1 Comp.	\$462.50
1976 Bolt Action market share	46%
Winchester 70	14%
Ruger	16%

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