

AI-81-9

B O L T A C T I O N C A R B I N E

August 1977 to May 1981

Project No. C 1850

Data in Report:

1. Pictures and information on 1977 models for Marketing
2. Pictures and information on 1978 models for Focus Panel
3. Focus Panel Report 1979
4. Pictures and information on 1980 models for Marketing
5. Field test reports of 1980 models
6. Picture of redefined model 1981

No previous reports have been written on this project.

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C O N T E N T S

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*Omitted in abridged version.

I N T R O D U C T I O N

The goal of the Bolt Action Carbine project is to improve Remington's marketing position and increase sales by restyling the Mohawk 600 Rifle. This rifle has not had a change in the styling of the stock since it was originally introduced as the Model 600 in 1964. The barreled action had minor changes in 1968. The rifle is well liked as a brush gun because of its handling ability, short overall length, accuracy, and selection of calibers. It will be introduced to compete against carbine length rifles presently in the field.

O B J E C T I V E

The work to be accomplished consists of redesigning the stock and barreled action for improved function, aesthetics, and weight reduction.

The work has covered three phases to date, and is presently in the fourth phase.

- o Models for Marketing evaluation completed in 1978.
- o Models for evaluation by a Marketing panel completed in 1979.
- o Models for field testing completed in 1980.
- o Redesigned models for field testing to be completed in 1981.

The first phase consisted of building models with all the features suggested by Marketing, the field force, and Research. These models were shown to Marketing to evaluate and decide what features should be included in the group of rifles to be shown to a Marketing Focus Panel.

The second phase consisted of building rifles with the features requested by Marketing for the Focus Panel exposure. Panels were held and results were tabulated and evaluated.

The third phase consisted of building models to test in-house and in the field. These models had the features requested by Marketing after their evaluation of the Focus Panel report.

The fourth phase consists of building models to test in-house and in the field. These models will have the added features that were requested after evaluation of the first field test. With satisfactory completion of this phase the model will be presented to the Operations Committee for addition to the Remington Centerfire Bolt Action line.

S U M M A R Y A N D C O N C L U S I O N S

The project has been completed thru the third phase, which included field testing of the Bolt Action Carbine. The reports were enthusiastic and complimentary. However, a large percentage of the reports indicated the rifle was too heavy.

In the fourth phase requirements were redefined which resulted in a smaller stock and smaller diameter barrel, reducing the overall weight by approximately one pound. Barreled actions with the smaller diameter barrel and the largest caliber to be introduced have been satisfactorily tested for strength. The rifles must still be tested for accuracy and the stock must be tested for strength.

P A T E N T S I T U A T I O N

The Patent Division has not discovered any unexpired competitively-owned patents that are relevant to the design being considered in this project. Initial investigation of a preliminary design of a new floor plate latching system suggests that patent protection may be obtainable for this design.

FUTURE PROGRAM

Completion of the Fourth Phase

Barreled actions of the latest design have been built in five of the proposed calibers. Five stocks of the latest design are being built and will be ready by the end of May. Accuracy and function testing of the rifles will be completed in 1981. Pending satisfactory completion of these tests, the Bolt Action Carbine is scheduled to be presented to the Operations Committee in June for approval to add this model to the Remington Centerfire Rifle line.

Twenty barreled actions of 7mm-08 Rem. caliber are being assembled for a new field test. They will be completed in May. Stocks have been ordered and will be completed in July. Rifles will be assembled and ready for a Marketing field test by September, 1981.

ACKNOWLEDGEMENTS

John Linde	Design
Leon Johnson (Retired)	Stock models
Kurt Blumer (Resigned)	Stock models and floor plate design and models
Fred Martin	Design
Douglas Bullis	Design
Adam Hugick	Measurements & Test
James Hennings	Measurements & Test
Richard Nightingale	Measurements & Test
Christopher Miller	Measurements & Test

EXPERIMENTAL HISTORY

Phase I In 1977 Marketing and Research agreed on a plan to restyle the Mohawk 600 rifle (Exhibits 1,2 & 3). Research began by building several models with various shaped stock stylings and barreled actions, with various additions and deletions, retaining the basic Mohawk 600 receiver and barrel. These models are shown in Exhibits 4 thru 8, with a list of changes that are different from the basic Mohawk 600 model. A meeting was held with Marketing and the above exhibit models were discussed to decide what features were to be shown to a focus panel. (Exhibit 9)

Phase II Six rifles were made up with the features discussed. (Exhibits 10 thru 15). These rifles were delivered to Marketing for use in the Focus Panel held January 1979. The group sessions were set up in three different marketing areas (Exhibit 16). A discussion guide and questionnaire (Exhibits 17 - 18) were used to obtain answers to the probability of acceptance of this Bolt Action Carbine concept. A final report (Exhibit 19) was written evaluating the concept. It stated that it is a "distinctive and promising new product prospect".

Phase III A subsequent meeting was held with Marketing to discuss the report. A decision was made on the design requirements of a final model using the panel report recommendations. (Exhibit 20)

Research proceeded to make final models for approval by Marketing. In order to add a hinged floor plate assembly the receiver had to be made a half inch longer and the rear receiver mounting hole moved back. The longer receiver can be made using existing Mohawk 600 tools and fixtures.

Two sample rifles were made using birch and walnut wood. (Exhibits 21 - 22). Marketing accepted the samples.

A meeting was then held with Process Engineering so they could discuss the new features of this model and changes could be made if possible to simplify processing and manufacture.

(Exhibit 23). At the same time models were started for accuracy, function, and field testing. Five hand made stocks were to be used for in-plant testing. The stocks were proofed four times each with each succeeding caliber. The stocks stood up well. The accuracy from the bench was well within the present plant specifications for these calibers in this and other centerfire rifles. (Exhibit 24)

Twenty stocks were ordered from Fajan from our handmade pattern, to be used for field testing. They were finished and fitted to actions by Remington personnel. The field test actions were all made up in 7mm-08. They were ready for field test in June 1980, and were sent to people designated by Marketing. (Exhibits 25 - 26)

Costs were requested from Industrial Engineering. Several updates were completed to cover possible changes in stock wood and finish and checkering. (Exhibits 27 thru 30) A separate cost was also requested for a proposed bolt lock mechanism. This mechanism has now been dropped from the latest model. (Exhibit 31)

A letter was received from the Patent Department (Exhibit 32) covering work to date on the new stamped floor plate design.

The field test models were returned to Ilion starting the first week of July. Marketing field test reports (Exhibit 33) indicated the rifle was too heavy and the stock was too fat. They requested that Research look at ways to reduce the overall weight by at least 3/4 of a pound. Research responded with several suggestions to meet this new criteria. (Exhibits 34 - 35) Subsequent testing indicated the required weight could be obtained by reducing the barrel diameter (Exhibit 36) and using walnut for the stock.

Phase IV New barreled actions were made with the smaller diameter barrels. A thinner stock was made up and a model was shown to Marketing. (Exhibit 37) They approved of the barreled action but requested further work be done on the stock. (Exhibits 38 - 39)

A sample was made with the grip and fore end slimmed down as requested by Marketing. Samples with a Schnabel fore end were also made to show them. (Exhibits 40, 41, 42)

The sample with the Schnabel fore end was accepted by Marketing. (Exhibit 40)

Five hand made samples are being built for accuracy and function testing of the 308, 7mm-08, 6mm, 243 and 222 calibers, and twenty stocks are being made by Fajan from a handmade pattern for field testing.

The test schedule becomes extremely important at this point because of the lighter barrel and stock. The first concern is what effect the heaviest caliber will have on the strength of the lighter stock. The second concern is what effect the smaller diameter barrel will have on accuracy and overall rifle function. These questions will be answered in June 1981.