

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

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May 8, 1990

TO: W.H. COLEMAN, II
FROM: H.C. MUNSON *H.C. Munson*
SUBJECT: PROGRESS REPORT - APRIL 1990

.22 Rimfire Rifle (Findlay/Smith/Franz)

This totally new rifle is scheduled for production in the third quarter, 1991. It is currently in prototype, with design features being tested and revised to optimize safety and performance.

Considerable effort this month has centered on material selection for the stock. Visits to Trico Plastics (California), American Plastics Co., and Arkansas Tool & Die (both in Arkansas) have reaffirmed the use of a foamed mixture of reinforced Rynite and recycled P.E.T. plastic. Chris Tice of DuPont PPD is providing technical assistance.

Function testing of the design prototype continues, providing more definition of design parameters. Problems encountered with ejection and occasional striker follow-downs are specific areas being addressed. Engineering analysis is being used extensively to evaluate the entire functioning system involving components, masses, spring forces, etc.

Ignition reliability has been improved by optimizing firing pin indent with the inertia firing pin system. This was achieved by changing the mass relationship of the firing pin and striker, lengthening striker travel, and the configuration of the firing pin tip.

Additional work is needed to improve functional reliability with all ammo types. Bolt mass is a prime candidate, as bolt velocity appears insufficient with some ammo.

Stress analysis calculations on a potential new design for a firing pin block have confirmed acceptable stress levels.

The MIM magazine box mold is expected to be complete in mid-May. The magazine box is a special concern due to technical challenges expected in processing.

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M/700 Synthetic Stock (Smith)

DuPont is likely to drop production of Arylon, and a suitable substitute is needed for our synthetic M/700 stock.

Sample stocks made with a foamed mixture of reinforced Rynite and recycled P.E.T. plastic resulted in a stock weight four ounces heavier than Arylon.

Chris Tice of PPD will look for ways to modify the foaming action and the tooling to produce a stock equal to, or less than, the Arylon stock weight.

7MM Weatherby Magnum - M/700 Classic (Martin)

Six prototype classic rifles, along with a test request and outline, have been sent to the Test Lab for test scheduling and completion. The DCR/PLCN has been completed and will be transmitted upon successful test completion. This testing may be slowed because of ammunition production. Final testing may be combined with trial and pilot testing to meet production schedules.

Sniper Rifle (Martin)

Technical support is provided as necessary. Work on the Remington 5R (type of rifling) barrel is continuing. Thirty samples are to be made and testing.

New Bolt Action Rifle (Martin)

This program is on hold until the .22 Rimfire and O/U Shotgun programs clear the Design Area. We will continue to work on it as time permits.

XP-100 Wood Stock (Martin)

This new stock is scheduled for introduction in three calibers as a phase-in in 1991. Sample stocks from Bishop have been approved by Marketing. Barrel contour is being revised and will be incorporated as part of this change.

A synthetic stock proposal has been received from Six Enterprises.

This program and sample guns will be reviewed at a future Product Team Meeting.

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New Centerfire Autoloading Rifle (Powers/Findlay, Sr.)

As a result of Product Team consensus, this program will be shelved indefinitely.

Over/Under Shotgun (Bauman/Rowlands)

We plan to introduce a new, field O/U Shotgun in mid-1992. This schedule requires concurrent engineering.

Design activity is underway, and involves frequent consultation with process engineers so that problems are identified and resolved at the earliest opportunity.

Sketches and measurements of Ruger and Beretta guns have been completed and tabulated. The frame layout is essentially complete and the fire control components are being added. A layout of the entire gun is being created to establish relationships of all major components.

Investment cast components are receiving priority in design when possible, due to long lead times. Some parts are already out for quotation.

Barrel over-boring is being considered as a method for optimizing weight while providing sufficient muzzle wall thickness for choke tubes installation. Tom Powers is conducting tests on various configurations to determine a suitable combination of over-bore and constriction length.

SP-10 Mag. (Rowlands)

A 10 ga. rifle sighted barrel is being developed to be offered in a 1990 SP-10 Mag. Combo Package and for future extra barrel sales.

In testing on nine guns equipped with 22" rifle sighted barrels, all guns functioned reliably with the same size orifice hole as the 26" vent rib barrel. All sights were capable of being adjusted so that point of impact coincided with point of aim at 40 and at 100 yards.

Accuracy results, when shooting rifled slugs, produced average group sizes of 6.07" at 40 yards with the standard mod. 10 ga. choke tube. This does meet minimum SAAMI specs. of 7", but is considerably less than the 3" groups shot at 50 yards with 12 ga. rifle sighted barrels. Three additional experimental 10 ga. choke tubes were also tested, with the best one producing groups of 5.55".

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SP-10 Mag. - Cont'd.

Pattern densities, when shooting turkey loads through the turkey extra full choke tube, still have to be determined.

Among the improvement items also being tested, no problems were encountered with the carrier casting, slide link casting or fore-end washer with pre-applied adhesive. Problems were encountered with one of the magazine tubes installed with the new plant proposed Loctite Assembly Procedure, which loosened up, and two of the magazine followers, which unlatched from their magazine tubes. Therefore, these last two items will be dropped from consideration.

Model 90-T (Murphy/USCA)

Two guns used as stand-ins for the Arizona and Florida State Shoots were delivered on time. (The Arizona gun auctioned for \$5,000 - Florida's went for \$3,800.) Two additional proxy guns have been sent to Fajen for stocking with high grade wood. Final inspection criteria has been established and provided to USCA.

A gun has been sent to Bishop to verify their workmanship in an effort to qualify them as an alternate source of 90-T stocks.

Ten guns for design acceptance testing in Ilion are expected in mid-May, about a month beyond the promise date.

Elvaloy Recoil Pad (Powers)

This program is aimed at reducing labor costs for 870 Express Stocks, since Elvaloy-fitted stocks can be finished without taping and untaping the pads.

Rubber Industries has submitted proper-size pads to Gerry Helmer at S&K for process evaluation. Recoil reduction measurements will be made in Ilion.

M/11-87 Police (Powers)

This program is being accelerated from '91 to '90 due to high I.R.R., Product Team support and strong interest from potential customers.

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M/11-87 Police - Cont'd.

We have three prototypes out on loan, two with the FBI and one at the Federal Law Enforcement Training Center (U.S. Border Patrol) in Glynco, Georgia. Both these customers have previously reported good results. The lower recoil and overall handling characteristics of our gun are particularly appreciated by the smaller-stature recruits. Both the FLETC and FBI Training Center instruct recruits from outside agencies, so our gun is being seen by additional agencies. The gun loaned to the Tennessee Highway Patrol has been returned. They prefer it over the Benelli and Beretta, and expressed an interest in placing an order. Other police departments have expressed an interest in evaluating our police autoloader. Twelve more prototypes will be available for test in early May. Six of these will be used for design acceptance testing.

M/11-87/1100 Fore-End (Powers)

S&K will provide fifty samples with shortened finger grooves for testing improved crack resistance. We are not currently pursuing cold-process alternative for installing reinforcement patches. Process Engineering is considering a smaller patch requiring heat application.

Muzzle-Brake Choke Tubes (Powers)

Briley has proposed a choke tube design to reduce muzzle jump; samples have been received and will be tested as scheduling permits.

Custom Gun Design Activities (McCormack)

The Model XP-100R (Repeater) is ready for production pending results of design acceptance testing.

Reinhart-Fajen supplied some stocks to supplement production of custom XP-100's. Quality was very good, at a substantial cost reduction.

Preliminary work has started on a bolt action rimfire pistol based on the M/541-T in a modified XP stock.

An accuracy problem using factory chamber dimensions for benchrest 6mm BR Rem. rifles has been resolved. Target rifles (M/40X Series) will continue to be chambered for the tight-neck version consistent with past practice. Barrels will be marked accordingly, and a notice will be packed with each gun to inform customers of dimensions needed for sizing brass.

ANSYS Stress Analysis Program (Franz)

Following Scott Franz' attendance at a three-day introductory seminar, we purchased an educational 2-D version of ANSYS. It has been used in analyzing stress on new rimfire components, plus parts for other models. This work has helped demonstrate the potential value in Finite Element Analysis, and we will consider acquiring a more powerful analytical program.

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