

Firearm Control Division
Progress Report
February 1980

HIGHLIGHTS

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Conduct Development

Page

4.2 x 56 Shotgun

Testing is continuing on the current prototype model. A total of 3750 rounds have been fired using 2-3/4 magnum loads without major component failure.

Model 870 Competition Map

Three fore and tube designs were tested with satisfactory result. During the testing of the new fore end and tube design premature cracking of the receiver was detected.

Model 7400 - 7600

Twelve Production Model 7400 rifles, consisting of a selection of 30-06, 270 and 7mm Exp. Rem. Calibers were successfully tested for bolt velocity verification.

21mm Aerosols

1000 p.p.s. has returned twelve guns for conditions of the breech bolt, firing pin and alignment problems that were encountered in the field. Twenty-five thousand rounds of ammunition has been received from MAPCO for our field testing use.

AS21 Manipulator

Greener handling conveyor system design is being reviewed. Three routes have been reviewed ranging from \$20K to \$33M. An order will be issued to fabricate the system in early March.

High Energy Beam Application

Laser Welding Preliminary results of the EDL welded m/1100 slide block and action bars are expected in March.

Wood Decorating - Samples of the Ducks Unlimited emblem carved in the m/1100 stock were received. Additional samples of laser carved stocks and fore ends are expected in March.

Integral Ejector

Tooling modifications have been made to support the outside of the barrel to reduce the bulge in the area of the LT 20 ejector. Four barrels have been produced and are in test.

Rivetless Extractor

Satisfactory testing on the small caliber
rivetless extractor without the anti
rotation projections has been completed.
Part drawings are being finalized for
transmittal to production.

Status Report

Product Development

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m/200 LT-20 Limited

Mail & Relat guns were tested satisfactory.
A special field ^{test} with 8 boys and girls was
successfully completed. The guns were accepted.

model 7400 - 7600

Final Production model 7400 rifled consisting
of a selection of 30-06, 270 and 7mm Exp. Rem.
calibers were successfully tested for ball velocity
verification.

Receiver marking drawings are being prepared for
the designation of Model 4 and ^{model} 6. Drawing
transmittals will be made once location has
been approved by Marketing.

Satisfactory production samples of the base grip cap have
been made on a single cavity die.

m/200 Competition Trap

Production of this new model is in delay as a
result of failure of the action bar and fore end
tube assembly. Three design modifications have
been tested.

The first design ^{tested was} ~~and~~ the present production rate.

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with the thread ^{changed} changed to increase the area thru the threaded section by approximately 40%. The complete action bar is copper brazed together, microcarbed and heat treated. Using ~~an~~ accelerated firing tests, one assembly went to 13,000 rounds with the tube failing next to the action bar. Two assemblies went up to 25,000 rounds without failure. A slow rate of fire test ^{also} was conducted to determine if the rate of firing was a factor. Two assemblies went to 25,000 without failure.

The second design test was the same as the first with the exception of a shock ring added to the test gun between the fore end nut and the gas cylinder. Using the accelerated firing test method one assembly went to 25,000 rounds without failure.

The third design test was fore end tube of heavier wall thickness, ^{copper brazed together, microcarbed and heat treated.} These assemblies went 25,000 rounds without failure under the accelerated mode of testing.

Test results indicated that the first design using the secondary production tube is satisfactory. Process Engineering feels that for ease of assembly the heavier wall tube be pursued.

MONTHLY PROGRESS REPORT - February 1980

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MODEL 870 COMPETITION TRAP SHOTGUN

While using production guns to test fore end tubes to solve the breakage problem, premature cracking of the receiver was encountered. To further investigate the problem strain gage measurements were made on the standard Model 870 shotgun and the Model 870 Competition Trap shotgun. Measurements at the rear of the receiver ejection port opening on the M870 Competition Trap shotgun and a standard M870 shotgun show similar readings.

Measurements on the side of the same locking block in a M870 Competition Trap shotgun and a standard M870 show similar results. When the magazine cap is loosened one turn both guns show similar strain gage measurements but the reading is double that which is registered when the caps are tight.

Two production guns are in test and the magazine caps are being checked every 25 rounds and tightened if they have loosened. One barrel retaining sleeve has been replaced after 400 rounds because the tab holding the detent spring was bent, preventing the detents from fully engaging the magazine cap. One gun has a heat treated fore end tube with greater area thru the thread section and the other gun has a soft thick wall tube.

The guns have 8,000 rounds to date.

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During the intensive testing of the new fore end tube designs the premature cracking of the receiver was detected. Initial endurance testing of the prototype guns shows cracks developing at the rear of the ejector port at 37,000, 35,000 and 30,000 rounds. Cracking of receivers on production guns began to show after 5,000 rounds. Two M/870 control went to 25,000 rounds without cracking the receivers.

To further investigate the problem strain analysis tests were conducted on the M/870 completion trap gun receiver using CT barrels and a standard M/870 barrel. Test results showed similar stress levels. Test on a standard M/870 receiver showed similar results.

Further strain analysis measurement are being made to the locking block area. ~~on the magazine cap effect the strain gauge reading. Two production guns are currently on test to determine the relationship of the magazine cap to stress.~~

Bolt Action Carbine

Two barreled action for each of four caliber will be ready for assembly the first week in March. The latch system on the floor plate has been redesigned to eliminate latch releasing during firing. A prototype model has been made and preliminary testing indicate satisfactory results. Additional prototype testing will be conducted.

Model 700 Bolt Lock

A number of bolt lock design that provide the shooter with the ability to load and unload his rifle with the safety in the on position has been developed. Four prototype of different configuration have been fabricated. Design revisions are being made to improve aesthetics.

Model 700 Fire Control Improvements

Two fire controls have been designed that incorporate several desirable safety features requested by marketing. Both fire controls have been fabricated assembled and tested.

Process Research

Integral Ejector

Trimming modifications have been ^{made} to support the outside of the barrel to reduce the bulge in the area of the LT 20 ejector. Four prototype barrels have been fabricated for testing. A total of 60 rounds have been fired through each barrel. Testing has been curtailed due to higher priorities.

Swivelless Extractor

Satisfactory testing on the small caliber swivelless extractor without anti rotation projection has been completed. Drawings are being finalized for transmittal to production.

All tooling to coin anti rotation projections into the m/788 regular, m/700 Reg left Hand, m/700 reg and m/700 reg L.H bolts head will be completed in mid March.

Auto Drive Line

The fabrication of the system is near completion. Vendor run out is expected the first week in March. System installation and start up at Ilion is estimated to be late April.

Other Work

New Owners Manual Format

The final draft version of the m/700 Owners manual has been approved by legal and Marketing Department. The draft will be reviewed with Smart Communications One and final artwork and printing completed.