

RESEARCH DEPARTMENT
FIREARMS RESEARCH DIVISION
MONTHLY REPORT - JUNE 1980

HIGHLIGHTS

FIREARMS

Page

Model ~~700 Bolt Lock~~

⑤

On model 700
The accepted bolt lock design is being ~~fabricated and~~ assembled and will be tested on the bolt action carbine.

Model ~~XSG Shotgun~~

②

XSG Shotgun
The ~~2~~ model is ready to resume testing with a new lower stressed action spring and a modified Model 1100 ~~gas~~ gas system. ~~The welding process for the slide block action bar joint is being perfected.~~

Models 7400 - 7600

Model 7600 machine trial testing results show a malfunction rate of .09% in 1140 rounds of field cycle testing.

Model 700 Fire Control

New components for the original (no. 1) design have been fabricated, assembled and are ready for test.

A third design which combines features of the original design and design no. 2 with the present model 700 fire control is being assembled for evaluation.

The second design has ^a balancing problems. Development work is proceeding to resolve the problem.

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Model 700 Bolt Lock

The objective has been to give the ^{SHOOTER} rifleman the ability ^{to} ~~of~~ opening and unloading his rifle without ~~placing~~ ^{ON} the safety in the ~~off~~ ^{ON} ~~safe~~ position. This has been done by divorcing the operation of the safety from the bolt lock. An aesthetically acceptable lever has been designed ~~and fabricated~~ and will be tested in conjunction with the bolt action carbine. Final cost estimates are being prepared by Industrial Engineering.

Testing is planned to start the first week in July.

Model 700 Fire Control

^{ORIGINAL}
 New components for the (No. 1) design have been received and assembled, and will be tested.

^{NO 2 ??} The third design, which combines ~~both current Model 700 and~~ desirable features of Design Nos. 1 and 2, ^{with the present M700 fire control} is being ~~fabricated and~~ assembled for evaluation.

Models 7400 - 7600 ~~Auto and Pump~~ Centerfire Rifles

Five Model 7400 - Cal. 30-06 rifles have been fitted with production heavy wall magazine boxes. The testing shows a reduction of about 1% in the malfunction rate, or from 3.5% to 2.5%. Work is continuing to reduce the stem override (SOR) malfunction which occurs on the last round out of the box. The trapped shell malfunction has been reduced by changing the configuration on the face of the ejector. If this proves successful in additional sample guns, the change will

To: J.R. Ayers - Bridgeport
From: C.B. Workman

June 25, 1980

HIGHLIGHTS

(+) the inertia retract firing pin has been selected for production due to a more favorable misfire rate.

21mm Seismic System

A 21mm (8 Gauge) cartridge and gun system is being developed for MAPCO which is to be used for seismic exploration of oil and gas. An electric primer is being developed at Bridgeport and the firing system is being developed by Ilion.

Since the last report two types of retractable firing pins have been designed and tested. These include an inertia retract model and a cam operated automatic retract model.

The testing has been confined to live firing and firing primed empty cases. The inertia retract model has fired 7898 rounds and has experienced 75 misfires. The automatic retract model has fired 5255 rounds experiencing a total of 159 misfires.

Because of the more favorable misfire ratio the inertia retract model has been selected for production.

Model 700 Bolt Lock

The objective of this development is to give the shooter the ability to open and unload his firearm without placing the safety in the Off position. In order to do this, the operation of the bolt lock and the safety have been designed to operate independently of each other.

An aesthetically acceptable lever has been designed and will be tested in conjunction with the bolt action carbine. Final cost estimate are being prepared by Industrial Engineering.

Testing is planned to start the first week in July.

loading
Models 7400-7600 Auto and Pump Centerfire Rifles Continued

be transmitted to the Plant. The change is minimal and ~~has been~~
~~reviewed with production personnel.~~ *should have no detrimental effect on the project,*

The wood processes have been resolved. Approval has been given for the Model 7400-7600 stocks and fore ends, and we have also approved the Model Four fore end. We have not had satisfactory samples of the Model Four stocks. The press form process has been approved ~~and we~~
~~are waiting on the checkering to complete.~~ *except for*

Production firing pins, ~~with~~ shot peening ~~from~~ *by* Metal Improvements, have been dry cycled over 10,000 cycles and are satisfactory.

Model XSG, XPG Shotgun Design

New autoloading and slide action shotguns are being developed, ~~for introduction in the 1984 model year.~~ The objective of the program is to replace the Model 1100 autoloading shotgun and the Model 870 slide action shotgun with improved versions which will be lighter in weight. The gun are being designed simultaneously to take advantage of common parts for reduced manufacturing costs.

Four prototype ~~model~~ guns have been used in the development and testing of this improved ~~model~~ autoloader. A total of 45,000 rounds has been fired ~~between these four model guns and has indicated need for~~
~~improved design modifications in the locking system and action bar,~~ *by the* ~~slide block locking assemblies.~~ *weaknesses have been uncovered in*

Two new locking system are currently being built. Barrel assemblies are completed for these locking systems and breech bolts, locking blocks and slide blocks are in the ~~process of being built.~~ *model shop.*

Preliminary testing of one previous XSG model updated with new action bar assembly and ~~longer~~ longer round wire action spring and ~~Model 1100 type piston and~~ has begun. This will enable us to monitor spring set as compared to previous spring design. ~~Also~~ *A* square wire ~~design~~ *action* spring is ~~presently~~ on order from Connecticut Spring. *Delivery expected in mid July.*

Model XSG, XPG Shotgun Design

A gas cutoff system has been made and ~~is being~~ ^{will be} tested in a Model 1100 to determine ~~the~~ ^{its} effectiveness ~~of this system as to controlling~~ ⁱⁿ bolt velocities between light and heavy loads.

The computer simulated model is still being ~~evaluated~~ ^{studied} for an effective gas cutoff orifice system. The shooting model is in test for evaluation currently.

21mm SEISMIC GUN

The 21mm Seismic Gun is being developed for Mapco for use in their seismic exploration for oil, gas and mineral deposits.

Since the last report two types of ^{retractable} firing pins ~~retracting blocks~~ have been designed and tested. ^{these include} ~~The two designs are~~ an inertia retract model and a cam operated automatic retract model.

The testing has been confined to live firing and firing primed empty cases. The inertia retract model has fired 7898 rounds and has experienced 75 misfires. The automatic retract model has fired 5255 rounds experiencing a total of 159 misfires.

Because of the ^{more} favorable misfire ratio the inertia retract model has been ~~tentatively~~ selected for production. ~~The automatic retract will still be developed for possible production.~~

Highlights

The inertia retract ^{firing pin} ~~model~~ has been ~~tentatively~~ selected for production due to a more favorable misfire rate.