

TO: J. W. COWER

12/15/85

FROM: T. C. DOUGLAS

SUBJECT: MONTHLY REPORT - DEC 1985

M/1100 Functional Improvements12 GA

The computer simulation of the M/1100 gas system was studied for possible refinements to enhance 100 performance. Decreasing the initial volume and utilization of the standard M/1100 inertia valve has resulted in improved 100 performance ^{in small test guns}. The valve seat port diameter was decreased from .125 in to .100 in to keep the pressure vent spring from opening. These changes also increase the bolt velocity when firing 3" magnum. Eight guns are being built with these modifications. When the new guns are built, the orifices will be worked up to ensure reliable 100 performance and to minimize 3" magnum velocities. They will then go through a 4000 rd endurance test. This test will also include alternative concepts to improve the endurance life of the piston, piston seal, and carrier latch. Plans are to start the test the week of Jan 6th.

20 GA

Bolt velocity testing on the M/1100 20 GA utilizing a magnum barrel with a second orifice hole on a field action indicates that the 28" and 26" barrels give enough bolt velocity to function reliably with shell loads. Test results:

MAGNUM REL. V(1/2) .070 ORIFICESTERMINAL BOLT VELOCITY (F.P.S.)

	<u>STEEL LOAD</u>	<u>2 1/2" STEEL LOAD</u>	<u>5" MAGNUM - P.</u>
FIELD ACTION 28" BBL	176	272	311
MAGNUM ACTION 28" BBL	156	262	309
FIELD ACTION 26" BBL	143	246	350
MAGNUM ACTION 26" BBL	125	233	339
FIELD ACTION 21" BBL	122	208	304
MAGNUM ACTION 21" BBL	127	193	296

The next step will be a 10 gun endurance test to determine if there are any endurance problems at these bolt velocities. The guns will be field actions with magnum barrels retined to field gun orifices.

1/18/70 Functional Improvements

Analysis of the design verification test yields the following:

- No fault breakages associated with functional improvements.
- Perceived opening and closing forces during shoulder shooting was significantly less than our current production gun.
- The action misfunction rate per three fired rounds was .13% for the improved guns and .14% for the control guns.

- Fired and intercept latencies did not come unstabilized during the test.
- The M1100 "light coil" firing pin retract spring performed as well as the current M1870 firing pin retract spring.
- No problems associated with the M1100 Special Field-Type magazine cap retract system.
- Blow-up testing (chamber burst) of new receivers with the dove-tail cut for the new ejector equal to our current design.
- All program goals were met.

The parts lists and drawing packages for the functional improvements were transmitted to Production on December 5th.

XF-100 .223 caliber version - mid-80 introduction

Six XF-100's were sent to a writer's room in the 1980s where they were well received. Bruce Ben from the Marketing Dept. indicated that one magazine will be a full page story on the .223 XF-100. A custom shop version .35 REM was also well received.

M/700 .338 WIN MAG caliber edition - 1987 introduction

Design acceptance testing of the .338 WIN mag caliber is complete. The parts list and drawing package is ready for transmittal to Production.

M/7400 Functional Improvements - 1989 introduction

A historical analysis of the M/7400 has been started to determine what improvements are necessary. Our goals are to complete this analysis by Feb, 1986.

M/1100 50 ga CHOKE TUBES

Increasing the wall thickness of a M/1100 50 ga choke tube and carrying this extra wall thickness inward until it intercepts our current barrel contour causes an interference with our current fore-end barrel groove. To allow retrofitability to guns already in the field requires either a reverse-tapered barrel or a barrel modified at the end to accommodate the choke tube. Samples of both designs are being built for testing and business review approval. This is not a problem on the M/870.

Pattern testing on the choke tubes show that we have a good IMP/CYL choke tube, but that the Full and Mod tubes need more work. Both the full and the mod tubes shot light patterns, however the full patterns were lighter than the mod. pattern. More mod and full tubes are being fabricated for additional testing.