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TOPIC: MAY 1993 PROGRESS REPORT

o PROCESS DEVELOPMENT/RESEARCH OF NBAR:

Although the results of the first pass forging operation were positive, upon inspection after the second pass, micro cracking was found. The belief is that due to the current lug design of 60 degree radial increment between lug surfaces, the forging mandrel, when oriented radially with the centerline of the hammer, is causing a shearing force across the receiver wall. The shearing forces exceed the limitations of the material, producing the micro-cracking at the transition points of the lugs. To alleviate the shearing effect, the lug geometry has been further altered so that the lug profile will consist of parallel sides, with 120 degree radial increment between the lug surfaces. Mandrels to the new geometry are expected by May 27. Due to the change in the lug geometry, an alternative process is now available. Prints have been sent to ELMASS, Inc., producers of a production "keyway" slotting machine. They are confident in their ability to produce the geometry and are currently developing projected cycle times and tooling costs. If the results are favorable, samples will be produced.

The focus panel guns are progressing rapidly. All the components are either completed or are in the fabrication process except for the RECBAR's. Although the two full length samples that were forged along with the test receivers would be acceptable to use for the focus panel, the parallel lug geometry is preferred. Two full length RECBAR's with the improved lug geometry will be processed by June 15. John Remington has been able to inlet and rough shape the two stocks. Once he receives the RECBAR's, he'll be able to inlet for the bolt handle, finish sand and apply the wood finish.

As part of the NBAR package, we would like to offer a scope mounting system. The current trend in the market place is to have integral scope mounting bases on the receiver. Although providing integral bases as a feature of the NBAR is physically possible, it would not be economically feasible due to our manufacturing technique of material removal rather than preformed (i.e. machining vs. casting). As an alternative, we have developed an integral base and ring unit that will be mechanically fastened to the receiver. This concept will be a major issue to be reviewed during the focus panel. Due to the complexity of the geometry, a rapid prototyping service bureau has been involved in the development of this part. If the part were to be made by conventional prototyping practices, the piece price and delivery would have been unacceptable. The service bureau

was able to use our computer file of the solid model and develop a wax model of the part using their Fused Deposition Modeller. Their modeling system sectioned our computer generated solid into .010" thick layers which would be reproduced by depositing wax through a C.N.C. directed nozzle. The resulting wax preform can then be used as pattern for an investment cast prototype. Two wax preforms have been produced and are expected to be at the investment casting facility by May 28.

o XP-100 WOOD STOCK:

Due to the backlog of refinishing, Bishop has not been able to complete samples to the new stock configuration. Production is currently manufacturing the components required for the Trial and Pilot run. As soon as all the components reach final assembly, they will begin building the T&P test guns.

o M/7400 M.I.M OPERATING HANDLE/BOLT CARRIER ASSEMBLY:

No further testing has been completed due to other Test Lab obligations.

o ECM of CENTERFIRE RIFLING:

No further testing has been completed due to other Test Lab obligations.

o REAR SIGHT SLIDE IMPROVEMENT:

No further testing has been completed due to other Test Lab obligations.