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M/721 - PRODUCTION PROBLEMS

A follow up meeting was held to discuss progress on the program as outlined in the minutes of a similar meeting held on Monday, July 7.

At the last meeting 3 guns had been reviewed. These guns had originally been assembled using parts either entirely to gage or as close to this condition as possible and had been placed in perfect operating condition. They had later been equipped with entirely new fire control mechanisms made up of components representative of those now available in part stores. Of the 3 guns, one had been discovered to be defective in that it would no longer pass the test recently established as a guarantee against a possibility of a M/721 firing when it was removed from safe. It was revealed at this meeting that a thorough check by the Technical Section indicated failure of this gun to be attributable to two conditions.

A. Safety short from hole to camming surface. (approximately .002)

B. Trigger adjusting screw out of position in the housing. (This point is not gaged.)

As a result of the above findings the following program was set up.

1. The test on which this particular gun failed will remain in our operating procedures as a necessary safe guard.

2. The Technical Design Section will select and measure a representative sample of safeties on hand at the Plant. After ascertaining as accurately as possible their condition, a recommendation will be made as to whether they should be 100% inspected and repaired, scrapped, or used as is.

3. Technical will check as quickly as possible the advisability of providing a new angle on the sear. Individuals most familiar with design characteristics of the arm feel that such a change might allow proper functioning of the gun regardless of minor inaccuracies in the safety, as well as inaccuracies in the position of the trigger adjusting screw. The change contemplated is a relatively minor one and would not be particularly expensive since it is necessary for the vendor to rebuild his dies even if no change is made.

Results of preliminary inspections on 9 additional guns were presented to the group. These guns were made up using selected parts throughout with the exception of the fire control mechanism in which representative parts from stores were used. At our action inspection point 8 of the 9 guns performed satisfactorily, one being rejected for hard safety action but this one was later corrected by a very minor reaming operation. It was pointed out by R. Wright that a certain amount of selective assembly was necessary in putting up these guns but that the condition was not too bad. As a result of the above information it was concluded that fire control parts in general will be usable for the manufacture of the gun.

At "First Inspection" many additional defects were noted such as bolt over-rides shell, magazine takes 5 shells, creepy trigger pull, etc. It was felt by the group that such difficulties could be overcome by adjustments and fittings considered normal in current gun assembly. The assembly department will attempt to make such repairs, and results of their efforts will be reported at the next meeting.

It was suggested that disposition be made of approximately 500 guns now held before additional new guns be assembled. This will be handled by the Production Department which will strip the old guns, submit bolts to inspection for a visual survey, and retain complete actions to be used in regular assembly. The housing assembly complete as well as the firing pin assembly will be removed, carefully isolated from any new parts, and held for later disposition. It is anticipated that this work will be completed approximately Monday, July 14.

At that time assembly of new guns will be resumed at a rate to be governed by the availability of usable parts. With respect to these parts several definite decisions were made.

1. Bolt Assemblies:

There are available at the present time approximately 30 repaired, selected, and inspected bolts which have been delivered from the Technical Section to assembly. These bolts together with those available from the 500 guns to be stripped will be used in this new work.

1. Bolt Assemblies - Continued:

It was further decided that all bolts delivered to the assembly department in the future will be subjected to a 100% inspection after the last operation has been performed on them. This inspection will include the following.

A. The back of the lugs must be flat and flush, with no fillet at the junction of the lugs and the body. A gage to check this characteristic will be provided by Plant Process Engineering.

B. The face of the bolt will be inspected visually paying particular attention to the extractor recess where no radius is allowed, the face of the bolt itself where no step can exist or where the step is far enough back so that it doesnot interfere with the shell itself. This inspection will be performed on bolt heads at the screw machine operation in the future but at least temporarily will be performed on all bolts before they are delivered to part stores.

C. Back of the lugs will be inspected visually for finish, to a sample selected and provided by the Technical Design Group.

D. Firing pin holes and ejector holes will be inspected using new gages to be provided by the Technical Processing Group.

E. The face of the bolt will be inspected visually for a limiting chamber at the firing pin hole and down in the rim. Visual sample will be provided by the Technical Design Group and such a sample will be used in the future at the screw machine operation as well as on the completed bolt assembly.

F. Bolt handles will be Rockwell tested 100% to a min. of Rockwell 30. Handles below this min. hardness will be set aside until assurance is given by the Plant Chem. & Met. Group that a lower min. hardness is entirely satisfactory.

G. The thickness of the section in front of the extractor cut will be checked using a snap gage to be provided by the Technical Process Group. Two such gages will be provided, one for use at the screw machine operation, the other to be used on the completed assembly.

Provisions for inserting in the Process Record necessary gaging inspections after screw machine operations and prior to part stores will be made by the Plant Process Engineering Group.

It was further agreed that firing pin holes and ejector holes would be reamed out after Roto Finishing and before assembly. This operation will be inserted in the process record at a suitable point by the Plant Process Engineering Group.

2. Firing Pin Heads:

While making tests to determine min. hardness limits on the bolt handle the problem of hardness of the firing pin head presented itself. It was found that excessive wear developed between the lug on the firing pin head and the cam on the bolt body at approximately 2,000 actions. In order to overcome this difficulty it was recommended that firing pin heads be heat treated to provide a thicker case and further that the bolt body hardness be increased in future production. The 25 guns assembled will be passed as is since it is not felt that serious complaints will result.

(Since this meeting was held and before these minutes were written, evidence was obtained that this defect is more serious than originally believed. As a result it has now been decided to replace the firing pin heads in all guns now assembled before delivery to warehouse. New firing pin heads will be provided by the Plant Chem. and Met. Group after further testing indicates the min. hardness and case depth which will be required.)

It was further agreed that a reaming operation to clean out the hole in the firing pin head would be included in the process record somewhere between Roto-finishing and assembly. Provisions for this change will be handled by the Plant Process Engineering Group.

3. Bolt Heads:

It was brought out that there was not complete agreement as to the suitability of the present process for manufacturing bolt heads insofar as eliminating the step on the face is concerned. This problem will be undertaken by the Plant Process Engineering Group who will immediately set up temporary operation to remove the step from bolt heads already made and will use either this method or some other means for eliminating any step on future production.

4. Sear and Safety Cam:

In order to prevent any possible hold up in production due to lack of these parts, Technical will make immediate arrangements for securing a minimum of 10,000 components from the vendor. It is understood that these parts will

4. Sear and Safety Cam: Continued

require additional operations on the Plant before they can be used, and that it may be advisable to scrap a portion of these parts when new dies are made up by the vendor and more accurate blanks received on the Plant. Tooling, processing, and investigation of possible design change on the part are all being handled by Technical.

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