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January 16, 1947

TO: V. G. DeReus

FROM: R. M. Smith

SUBJECT: M/721 PROJECT REVIEW AND REESTIMATE

The following is the estimated anticipated overrun on the M/721-722 for five calibers, not including the cost of tool design, tool design revisions, and tooling for the new type double Sear.

As of December 29, 1946, tool design, tool design revisions, and tool revisions were over expended \$10,797.00. It is estimated that the amount of money needed to complete this work will be \$32,400.00. This gives a total estimated overrun of \$43,200.00. The estimated overrun is divided as follows:

	AMOUNT AUTHORIZED	ESTIMATED OVERRUN (WITHOUT CONTINGENCIES)	TOTAL AM'T. REQ. (WITHOUT) (CONTINGENCIES)
Tool Design	\$78,017	\$3,200	\$81,217
Tool Design Revisions	12,500	21,830	34,330
Tool Revisions	<u>15,000</u>	<u>18,170</u>	<u>33,170</u>
	\$105,517	\$43,200	\$148,717

The basis for arriving at these figures is as follows:

Approximately 69 pilot operations have been placed in satisfactory operating condition at a total cost of approximately \$35,000.00 in tool design revisions and tool revisions giving a cost of about \$515.00 per operation. It is anticipated that about 53 more operations (see attached list) will have to be revised after 1/13/47, excluding non-troublesome operations, such as lacquering, sanding, inspection operations, etc. which would not be involved in tool design and tool revisions cost. On this basis the total cost of completing tool design and tool revisions will amount to \$27,300.00. In addition there is an estimated expenditure for weeks ending January 4 and January 11 of \$5100.00. It is anticipated that \$400.00 of this amount will be expended on completing initial design work on the Stock and other miscellaneous items and that the balance of \$32,000.00 will be equally divided between tool design revisions and tool revisions. These figures do not take into consideration any contingencies.

In view of past unanticipated difficulties, it is estimated that a 20% contingency figure of \$6,500.00 should be added to the total required estimate of \$43,200.00 to complete the project, making a total of \$49,700.00 estimated overrun.

V. G. DeReus

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The following are some of the unanticipated changes required that have come in since this project was reestimated last July:


1. Changing the Sear from a purchased to a manufactured part which included tooling and tool design for milling operations and grinding with gages to suit.
2. Design procurement of Bolt Handle milling operations and additional tooling and tool design for straddle mill and milling the radius where the Bolt Handle fits on the Bolt, due to procurement difficulties.
3. Numerous changes in the design and tooling in development of Machine Chambering.
4. Additional tooling and tool design on broaching operations caused by the variations in Cincinnati profiling operations.
5. Changes in tooling and design of the punch fire control operations on the Receiver caused by interference, change in machine used, etc.
6. Change in the tooling for the Firing Pin Head caused by changing from a belt grinding operation to a milling operation on the front end of the Firing Pin Head.
7. Changes in sequence of operations on the pilot line on the Receiver which required the design and build of temporary tooling.
8. Change in design and tooling of the drilling fixtures for the fire control holes due to excessively tight tolerances required.
9. Changes in the draw rifling machine, due to experimental nature of this operation.
10. Changes in the inletting fixtures on the Stock due to lack of up-to-date revisions on plant drawings of machinery.
11. Changes in gages on purchased parts due to revisions of tolerances caused by inability to procure according to original drawings.
12. Obsolescence of screw machine operations.
13. Changes in component parts, such as shifting back and forth of the serrations from the Firing Pin Head to the Sear and back again.
14. Changes in tolerances on manufactured parts due to inability to hold the tolerances required which afterward developed could be opened up.
15. Changes in air gages caused by not advising the vendor the changes in chambering dimensions established.
16. Changes in tooling furnished to a vendor for manufacturing the Housing as a purchased part, caused by a revision of the component.

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17. Furnishing Comparator Screens for inspection of tools.
18. Furnishing of wear limit drawings on cutting tools.

  
R. M. Smith  
Supervisor of Tool Design  
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RMS/drc  
Attach. (1)