December 5, 1990

TO: Hal Munson
FROM: Jim Ronkainen

SUBJECT: November Monthly Report

STAINLESS STEEL M/700

Ed Ford has run two 416R stainless steel receivers through the current production line. The 416R material machined as well or better than 4137 used for the standard receiver. The only problem noted was that the surface finish of the bolt body hole gundrilled through the receiver was too rough. This problem can be fixed by drilling the hole slightly undersized and then reaming it to size. Mike Keeney has quotes from Vestshell for the bolt handle made from 17-4PH that are approximately $.20 higher (~8%) than the current AISI 1050 bolt handle. I am working with Pete Cross to develop the heat treatment process for the S/S receiver. Roger Hatfield has tested electroless nickel plated fire controls in salt spray testing, but the final results are not available yet.

I have learned two important lessons in the past month. First, Nitronic 60 or Gall-Tough non-galling stainless steel alloys cannot be used for the bolt head because both are austenitic stainless steels. Austenitic stainless steels can only increase their strength through cold working, not heat treatment. Therefore, even if it were possible to forge the bolt head to increase its strength, the copper brazing operation to join the bolt head and body would anneal the part. I am looking at alternate materials and designs to maintain corrosion resistance and eliminate galling with the bolt head. My second learning for the month was about the peculiarities of magnafluxing 416R S/S. Two barrels failed magnaflux for apparent cracks after centerless grinding. Both barrels passed the die penetrant test done by Bob Raux. Die penetrant testing may need to be added to the process to limit barrel yield loss for 416R stainless.

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