

July 30, 1991

MONTHLY REPORT JULY, 1991 Bill Warren

SAFETY The Safety Manual section on cutter guarding was reviewed for a SITE audit. Because the audit was in an office area, I devoted attention to the contents of the manual itself.

My follow-up included:

- o adding the specific cutter guarding requirements from the Safety Manual to our generic machine specifications data base
- o bringing to the attention of the Manual review committee, a vague reference to "Engineering Standards." I could not locate any such information on site.

PROCESS CONTROL

Major PROCESS studies: completed and reviewed one each for Housing and Receiver just before shutdown. This permitted needed mold changes to proceed during shutdown.

Future studies: The greater need-and priority-is on molded parts.

molded parts (all repeats)

receiver
housing
firing pin carrier
magazine guide
sear spring cap

machined parts

bolt
barrel
magazine box

assemblies

housing (holes) C.M.M. program being written by G. Saunders
receiver (after welding sear pin)

Breech bolt process: I have been working with G. Barnes to help develop a process control strategy to help the operator take the appropriate corrective actions, integrated with the new optical gauge. We have ranked characteristics for importance and defined how "paired" dimensions will react when the cutter common to both of them is adjusted. There is more work to be done here to provide permanent written reference information and to exploit the graphical output/data base capabilities of the optical gauge.

I am working with G. Barnes to improve the current technical SOP for the Optical Gauge.

SPC: Recently, members of the Shotgun Process Engineering team have said that they are considering purchasing electronic gauges linked to an electronic data base to provide "instant SPC" for some dimensions on the O/U. My impression of their vision for this action was that they considered adding SPC to be strictly a technical activity. I indicated to them, at some length, that for a high probability of success, there must be other considerations and actions.

As an alternative, I suggested that Engineering resources focus on providing clear instructions and means to the operator to make it easy for him to correctly gauge his work and adjust his process. These things are essential to any form of operator control.

I also provided him an article describing additional things which are essential to successful SPC implementation.

EXPERIMENTS

- o Cryogenic treatment of M522 Receivers: to determine if post-mold shrinkage (without fixture cooling) could be reversed cryogenically. Conclusion: cryo. treatment was not a practical alternative to fixture cooling the receiver. I analyzed the results and wrote and distributed the report.
- o Elevated temperature exposure test for M522 housing blanks: to determine if dimensional changes occur over 2 days at 150 degrees F. Request of K. Soucy. Conclusion: localized dimensional changes of up to 2% were found in areas of this part. These were in the same areas where changes after molding have been measured over time. I planned this test, analyzed the results and issued the report.

Similar testing needs to be repeated with the completed product.

EDUCATION/TRAINING

- o Videoconference @ MVCC; "The new economics for management." Dr. Deming, himself, talked about several of his "14 points." He is 91 years old; his presentation is very labored. The value to me was that the depth of his beliefs and the strength of his convictions comes across very clearly.
- o Suggestions were made to improve our 4/year gun handling review:
 - o Eliminate redundancy by omitting grade variations
 - o Change the "surprise" now and then.
 - o Add models to anticipate new product introductions

If necessary to implement the above improvements, we should divorce our choice of sample guns from those used by production.

VACATIONS/HOLIDAYS

combined: 7 1/2 days

SIGNIFICANT PROBLEM

We are still not able to transfer files from the R&D CMM to the Vax system. Doing so permits analysis using MINITAB. Our system person feels that we are caught between the machine manufacturer and the software supplier. This means that measurements of the M522 receiver must still be analyzed with the more modest CMM graphics package. We can adjust to this.