

TANK HORROR.

By James Collins.

As Director of Manufacturing Engineering for Kollsman in 1979, I was responsible for the manufacture of the fire control system for the M-60 tank. The system had 13 separate LRUs (line replaceable units) and we had a contract to deliver 575 of these complex systems. We were on schedule but the Army wanted to accelerate deliveries and held a meeting to discuss how to do this. We discussed vendors, quality, delivery schedules, lot sizes, capacity, overtime, weekend shifts and manufacturing problems we encountered on a day-to-day basis.

The Colonel in charge asked me specifically what tests could be shortened to accelerate the delivery. Nothing could compromise quality or accuracy but we had already identified some tests, which were duplicates and got relief in these areas. One test that took an exceptional period was the underwater test that applied to each of the 13 modules. We had constructed a tank 6' x 6' and 4 feet deep into which we placed each module. We filled the tank to within two inches of the rim, and a test measured the size and number of bubbles seen coming from the seams of the completed assemblies. If the number of bubbles in a two-minute period exceeded a certain number, the unit had to be disassembled, the old gasket removed and replaced, and then the unit was reassembled and retested. I pointed out that this particular test cost the greatest number of recycling activities and delayed delivery.

"Colonel, the leak test is one of the most difficult and more frustrating of the tests we perform. Our people are always complaining that they do not even understand the purpose of the test. After all, the system, which is totally painted white, resides in the interior of the tank turret and does not encounter rain. We would hope that you might relax the leak requirements on the various units. This would greatly reduce the number of retests and would accelerate delivery."

"Mr. Collins. Have you ever been inside one of our tanks?"

"Yes sir I got to climb in a couple of times and we have a M60 over at our other facility to answer questions on assembly."

"Do you remember seeing that 18 inch diameter circle which is an access port on the floor of the tank?"

"Yes sir, I assume it's an emergency exit in case the tank gets hit."

"Oh, it can be used for that purpose in an emergency but that's not its real purpose. If a tank takes a direct hit the entire crew is usually killed, blown to pieces and spread all over the inside of the tank. We drag that tank into our combat repair facility, open the access port on the floor, put a fire hose in through the top of the turret and wash the remains out through the floor port. Then we load a new crew into the tank, repair the holes in the side, replace any unit that has been a damaged and send them out to fight again. We do not expect any of the equipment to leak due to the fire hose pressures because

they need every piece of that equipment in working order. Their lives depend upon it. There can be no relief in the water test and we expect you to meet or exceed the minimum requirement."

We passed this information onto all of our assembly people who had to know the reason why this test was important and what it meant to our service people. It was interesting that the number of failures due to bubbles coming out from this test went way down. The assembly people took more time and more caution in putting in the gaskets. The U.S. Army benefited from the story.

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