

FAX TRANSMISSION

To: Tom Harada
Equipment Division #2
Kamigo Engine Plant

From: Bob Sanders
Date: Thursday, June 13, 1989

Re: Follow Up Data Analysis (Fax 7)

Mr. Harada

You are right! This is not a simple skills problem as I mistakenly thought. I looked at the data from TMM and Kamigo and realized that the typical call for help from an assembly line is indeed to repair some type of sensor or switch. However as we discussed the average time to make the repair in Japan is under 10 minutes for this type of problem versus over 20 minutes here at TMM.

The data alone could not tell me the answer so I decided to follow "Genchi-Genbutsu" as you suggested. I followed about 10 different relevant maintenance calls to final assembly over the past 3 days for closer investigation. Here is a short summary of what the typical repair process looks like on average (Refer to attachment Comparison of Repair Sequence). All the cases I observed were remarkably similar so I do not think I am leaving anything significant out.

As you can see from the chart the difference is all explained by two areas of action A) the time it takes to diagnose the actual problem and B) the time it takes to get a spare part. I anticipated your next question (Why does it take so much longer?) and here is what I found on the two issues.

A. Why it takes longer to diagnose the problem.

There are three different factors that I found out

1. The electrical schematic drawings in the control panel do not match the actual circuits in the machine. Why? Upon installation various

- merely a problem of organization as common parts should not be stored by machine number at all. This is 90% of the search problem I am convinced and why it just looks like we are “missing” some spare parts.
2. However, I did check all the limit switch parts in the store for good measure. There are over 17 types of basic limit switches used on the conveyor line between the U.S. and Japanese equipment! This seems like too many but I have no basis for comparison. It take time to look through the 17 types and takes additional minutes to find the right one at times in the store room.
 3. Some “wrong” limit switch spare parts are also in the store. I checked the detail part specification by which we ordered the switch and they look very close but have one digit missing or mistaken. For example:

LS-1734ZZTS-OP
LS-152522TS-ED

This is OK
This is no good. We don't use this type at all.

What I think happened is that when we faxed the spare parts list over so that TMM could order spare parts before launch some items got fuzzy and hard to read. The latter example probably should be type “ZZ” in the middle instead of “22” as this is a different style of switch completely. The text was either written wrong into the purchase order or mistaken when sent to the distributor in the U.S. for order.

I would like to discuss with you what to do during my last week here at TMM. I am happy to extend my trip if needed.

Regards,

Bob Sanders