

PORTSMOUTH TRIP REPORT

January 10-12, 1967

L.E. Huyler

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To: Personal Television Department
Portsmouth, Virginia

Reported by: L.E. Huyler

Persons Contacted: RB Ashley - Engineering
T Burns - Manufacturing
G Connor - Quality Control
R Joseph - Engineering
BJ Smith - Engineering
A Stauffer - Prod. Planning
R. Strout - Engineering
R Swanson - Manufacturing

Subject: 1. 11SP22 - Line Rejects
2. 15MP22 - Tube Development
3. 6" 70° - Tube Design
4. 16-Pack for 12" Monochrome

1. 11SP22 Line Rejects

PTD is experiencing approximately 30% rejection rate for picture tubes at preline inspection and final test. While a great deal of the problem is due to initial start-up difficulties (they have built up to 300 sets per day, packed, in approximately three weeks), it appears that we do have a problem caused primarily by loose particles in the tube.

An investigation of 45 sets rejected at final test revealed the following:

Total Line Rejects - 45
Total Rejects per CRT0 Specs - 23
Total O.K. per CRT0 Specs - 22

<u>Item</u>	<u>Total Rejected</u>	<u>Confirmed Rejects per CRT0 Specs</u>	<u>O.K. per CRT0 Specs</u>
Screens	15	7	8
Low Emission	11	1	10
Brightness Won't Cut-off	12	12	-
Shorts	4	3	1
Miscellaneous	3	0	3
	<u>45</u>	<u>23</u>	<u>22</u>

Screen Defects

The majority of the defects were obscured dots apparently caused by plugged apertures and loose particles on the screen.

A group of tubes containing the above defects, but within CRT0 specs, were reviewed with Engineering, Manufacturing, Quality Control and Marketing management, and it was mutually agreed that they would use the current CRT0 specs. However, the reaction was quite controversial, and we can expect pressure to tighten screen quality criteria in the near future.

Low Emission

The problem here obviously was not with the picture tube but due to improper set-up of Grid No. 2 voltages. Line personnel were instructed in proper set-up procedure.

Brightness Won't Cut-off

This appears to be due to stray emission in the picture tube, developing after 20 minutes warm-up time.

Since it was impossible to analyze these tubes accurately without a test set, the rejects are being returned to Bldg. 15 for complete analysis. Meanwhile, a subjective limit allowing a low level of stray emission was established for use at PTD.

Shorts

The trouble appears to be Grid No. 1 to Cathode shorts developing after 5 - 6 minutes warm-up. We attempted to "burn-out" the shorts with capacitor discharge device but were unsuccessful. Tubes are being returned to Bldg. 15 for analysis.

In general, it is expected that the unconfirmed reject rate will decrease as the line personnel gain experience. Dan Livingston, CRTO Technician, Bldg. 15, made a distinct contribution in this area in educating the test and troubleshooter personnel on the production line. It is proposed that a similar follow-up effort be made in the near future to further reduce the rejection of good tubes on the line.

2. 15MP22 Development

The following items were discussed with R. B. Ashley:

- a. Heater Circuit - PTD plans to use a 120/6.5 volt, 1.35 amp. transformer in the initial design. However, they requested that we determine the feasibility of a 600 ma. series connected heater system (same as HB) to be connected in the receiving tube series heater string. Ashley stated that they had modified the cathode circuit and the voltage was reduced such that the maximum heater-cathode voltage could be maintained within the tube rating without a transformer.

In the event this approach were not feasible, Ashley asked us to consider the possibility of a 6.3 v. 400 ma heater to be parallel connected so that a standard 1.20 amp. transformer could be used instead of a non-standard 1.35 amp. transformer. He was not positive of the cost differential, but it is estimated to be in the order of \$.10.

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- b. Focus Characteristic - Ashley is concerned about the apparent sharp focus response characteristic which is apparently typical in the bi-potential lens design. He requested curves of Spot size vs. E_{anode}/E_{g3} ratio.

- c. Deflection Yoke - The latest yoke design failed heat run criteria and requires modification of windings and an increase in impedance in order to reduce the power dissipation. Ashley expressed concern that this might require a greater separation in the convergence pole pieces due to greater interaction factor. He said this would be a last resort only if all other possibilities fail. He will keep us informed.
- d. Outside Paint - PTD will prepare a sample tube with outside paint dimensions compatible with receiver components to aid us in developing the necessary specifications.

3. 6" 70° Monochrome Tube Design

The following was discussed with R. Joseph:

- a. PTD wants to change the implosion system from separate to integral, preferably T-Band with mounting ears, and requested that we investigate necessary changes in bulb design as to:
 - (1) dimensions
 - (2) cost
 - (3) timing

4. 16-Pack Carton for 12" Monochrome Tube

Advised Ken Moulton, Packaging Engineer, that we were proposing a 16-pack carton to replace the present 9-pack and planned to make a shipment of the new cartons during the week of 1/16/67. Ken asked that the shipment be marked to his attention, and he will evaluate the pack for approval.

LEH/cdj