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OUR REFERENCE PML/JCP/SS   FILE NO 5922-001   YOUR REFERENCE

3rd January 1975

Dear Mr Nelson,

As promised I enclose a copy of the Fulmer Research Institute's report following their examination of the lighting console in December.

I have instructed Counsel to settle the necessary Affidavits to enable us to get leave to defend this action and will let you know when the Summons for Judgment is to be heard.

Yours sincerely,

F Nelson Esq
Mermaid Theatre
Puddle Dock
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FULMER RESEARCH INSTITUTE

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ENGLAND

Confidential Report

EXAMINATION OF AUTOMATIC LIGHTING CONSOLE

by

R.A. Cottis

2E227-1/December 1974

FULMER RESEARCH INSTITUTE LIMITED

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INTRODUCTION

The automatic lighting console supplied by Digital Display Equipment Ltd., to the Mermaid Theatre has been examined for efficiency of operation and general mechanical construction. The console has been installed for approximately one year.

Three basic sources of control information are available.

a) Manual operation via one of two banks of 100 linear potentiometers.

b) Memory operation from an internal memory giving 99 pre-programmable cues.

c) Memory operation from a cassette recorder, this being used to reprogramme the internal memory.

EXAMINATION

The operation of the system was demonstrated by Dorian Kelly, the chief electrician of the Mermaid, and the following observations were made -

a) Manual operation - this was in general satisfactory, except that the physical size of the potentiometers was rather small for accurate setting during a performance without assistance from the automatic controls.

b) Memory operation from internal memory - In a test involving the setting and recall of 25 identical cues three faulty cues were obtained, the worst of these involving the illumination of all lights at level 2, when all but one of them should have been off. Switching from memory to manual operation and back again also affected the level stored in the memory, reducing the control signal in the

memory mode by anything from 0 to 10% each time.

c) Memory operation from tape. 25 identical cues were recorded on tape, transferred to the internal memory and checked for accuracy. Three faults were obtained on the first trial and seven on the second trial using the same taped record.

d) Physical Construction

The construction of the main electronic racks is in general satisfactory, with the exception of some of the interconnections which are rather untidy. The panels on which the banks of potentiometers are mounted are rather flimsy, and several of the control legends are coming unstuck.

The cassette recorder unit is based on a standard commercial audio recorder, and as such would not normally be recommended for error-free recording of digital information. The wiring at the back of the unit is very untidy and in addition there is no physical support for the cable leaving the unit other than the soldered connections. This, combined with the relatively flimsy mounting of the recorder will lead to fatigue failure of the most highly stressed joints.

CONCLUSIONS

The results quoted above clearly demonstrate that the equipment suffers from two major faults.

a) The memories (both internal and cassette) are unreliable. Since checking each cue before use is almost as difficult as setting up a cue from scratch the memories are practically useless.

b) Repeated switching between manual and memory operation leads to a permanent and progressive reduction in the light intensity stored in the memory. This further limits the value of the memory facilities.

With such a complex device as this the determination of the exact cause of these faults would require the expenditure of considerable time and effort, especially as we understand that no circuit diagrams

are available for this particular unit. Thus we are not able to say specifically which design features have led to the problems, but we suspect that inadequate attention has been given to the noise immunity of the logic circuits associated with the internal memory.

Additionally there are aspects of the physical construction which are unsatisfactory and which will degrade the reliability of the unit.

RAC/AG/2E227-1
11.12.74.