

F. H. McCollum

EL-109

R. E. Murray

October 29, 1957

Your Engineering Memo #134 "Thornton Letter"

## I

1. Shock mounts will be replaced by stronger units when scorer is returned to Del Mar Engineering Laboratories. Normal practice is not to secure shock mounts during shipment because this eliminates afforded protection. Mounts were installed to carry 40 g load specified by manufacturer. Structure clearance was for 80 g's load. Air transport was requested which has shown to eliminate transport loading problem. Environmental testing to MIL-E-5272 at Wyllie Laboratories would have also brought this to light, as was requested.
2. Satisfactory test film was taken prior to shipment. Budget allowed for project was not enough to put scorer as a whole in first class shape. Attention is called to fact that scorer is flying bread board and not a prototype.
3. Pressurization of unit is not necessary at 25,000 feet maximum altitude, which was specified by sales. Gap for mixer functions as pressure seal.
4. Cathode ray tube and mixer lock nuts were secured before shipment. They vibrated loose during very rugged shipment. Environmental testing may have uncovered this along with many other faults yet to be discovered.

## II MANUAL

1. Wiring diagram that was included was intended to serve as a wiring guide only. More complete information was not submitted with units, so as not to weaken proprietary design position. Removal of this information from manual was at engineering's request. Page 61 - 2.7. The word 'camera' after Pin C and the words 'Radar On - Off' are the same term, have the same function and therefore it is impossible to wire up the connector wrong. Following furnished block diagram and wiring a J-952 to F-952 or following Page 61 - 2.7 would achieve same results. Furnished umbilical cord and spare connector and umbilical mother cord to the unit all were wired to the block diagram, Pin J-952, for pre-shipment tests at Del Mar.
2. Quoting from paragraph - "It should be pointed out that such words and phrases as Camera Trigger, Operates, etcetera are meaningless when no statement is made as to their function and the power required for them." Electronics was informed, that terms are standard. Power required for remote on-off switch and trigger is not listed on print, therefore these will be added to print.
3. Sections of manual on installation and operation will be enlarged. All information that is required for installation and operation is contained in present manual, but this will be reviewed in order to determine if any information has been left out.



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Section II, Item 3, Cont'd.

Present scorer design is completely incapable of being maintained by a 'Flight Line Mechanic'. Electronics Technical Sergeant is capable of operating system. System of simply swapping boxes will prove to be difficult because only two scorers will be at a given facility. This does not allow much swapping to take place. Pre-flight inspection comes first, if unit fails to pass this inspection, offending 'black box' may be singled out through the use of monitoring meter box.

4. Trouble shooting section does not appear as part of prototype manual, but is being prepared for production units by technical writing staff and electronics. This will contain three step procedure, in tabulated form, for systematic elimination of troubles. These three sections will be Trouble, Probable Cause, Correction. Detailed instructions for removal and replacement of all the units has been completed and will also be added. Bill has pointed out that A.F.C. design for operation by technician or practicing engineer is not satisfactory. Recommendation is made that A.F.C. be redesigned with eye to its application. Unit does not employ standard F.R. techniques and does not have (1) amplitude discrimination, (2) correct cross-over slope characteristic, (3) wide enough band pass. Problem lies in fact that without amplitude limiting, signal input must be exactly right amount to achieve A.F.C. action.

Expenditure of \$200.00 more per klystron will provide unit that can be tuned with screwdriver and not with wrenches. Present local oscillator is designed for fixed use and can only be established on proper operating frequency by use of correct microwave laboratory test equipment which Del Mar does not possess. Procedure outlined in manual is necessary to align set, because of klystron employed.

  
R. E. Murray, R.E.

REM/k

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