

## GUIDANCE ON MAINTENANCE PROCEDURES

### 1 CCR and TMSE Testing

All necessary maintenance is to be performed in accordance with the manufacturers recommendations and instructions contained within their relevant "Operation and Maintenance Manual". All work is to performed in compliance with JSP 375, Volume 3.

Routine maintenance must include checks to verify the functionality of all installed equipment facilities such as:

- a. Brilliancy Settings (Refer to JSP 554, Table 220-2)
- b. Overcurrent Trip (refer to manufacturers manual)
- c. Undercurrent Relay Operation (refer to manufacturers manual)
- d. Open Circuit Trip (refer to manufacturers manual)
- e. Earth Leakage Indication and Alarm circuits (refer to manufacturers manual)
- f. Lamps Out Detection and Alarm Circuits (refer to manufacturers manual)

### 2 Constant Current Regulators (CCR's)

Refer to specific manufacturers "Operation and Maintenance Manual". All work is to performed in compliance with JSP 375, Volume 3.

### 3 Transformer Mains Supply Electronic [with protection & monitoring unit] (TMSE)

There are no specific details as to how to ensure that TMSE and CCR monitoring circuits are proved fully operational. The following procedure should be added to the maintenance routines, at the same frequency as the IR tests are conducted:

- 1) Disconnect the links in the CTP. Energise the TMSE from the D22 and SCR/CCRs from the MCS. Check that in the case of TMSEs the D22 contactor does not remain energised and that the O/C alarm light on the TMSE illuminates. Pressing the TMSE reset button should result in the D22 contactor chattering. Do not persist with operation as it will reduce the life of the Contactor. Check that this light remains on after the D22 circuit is switched off and that the alarm light is only extinguished after pressing the reset button. This test can also be applied to SCR/CCRs by operating the circuit locally from the MCS. Ensure that the contactor within the SCR/CCR does not re-engage.
- 2) Leave CTP links disconnected. Having proved that the O/C facility functions correctly an Earth leakage test can be performed. The O/C trip does not remove power to Regulator auxiliary circuits, but only to the field power output. Ensure that nobody can access the O/C Reset button on the CCR/SCR. On TMSEs,

disconnect the Open Circuit plug/socket. This will prevent the D22 contactor from energising. Measure volts to earth on Regulator outputs (on CTP "IN" terminals). For all Simon Parmeko and ATG Regulators this will be approximately 27V DC (80V DC on Alstom regulators). Momentarily connect Regulator output to earth. Check that both earth alarms illuminate and remain so until the Earth leakage Reset button is pressed. If technicians have access to resistors in the range of 5k $\Omega$  to 15k $\Omega$ , the actual earth trip levels can be measured. For SCR/CCR circuits confirm that the MCS (B Centre, A Centre and VCR desk) registers an earth fault. Earth fault indication circuits from TMSEs are not connected to the MCS. Restore systems.

- 3) Rectify any faults on site or request assistance from regulator manufacturer. Record findings.
- 4) The Facilities Manager must consider the safety procedures that will be essential to undertake these recommendations. All work must be undertaken in accordance with SRP-01. The Facilities Manager should undertake a Risk Assessment and if the recommendation is accepted, should construct a Method Statement for such procedures.