## REGULATED SUPPLIES

### Switching

10. Fig. 2.3 shows the switching circuit controlling the regulated AC supply that feeds the heater transformers, the HT and bias rectifiers, the HT stabilising circuits and the HT alarm relays. When the motor-alternator has changed over to delta connection, the contacts in the starter close, lighting the 'motor-alternator running' lamp on the power-supply cabinet, the lamp panel (ILP8) and the engineer's panel (ILP1) (fig. 2.18). Unless the machine has been switched off with the isolator, the motorised potentiometer will be at its bottom limit and the 'start heaters' lamp, (ILP13) on the engineer's panel will be on. In any case, the potentiometer will run down to its lower limit, and the lamp will light, as soon as the isolator is closed again.

11. Pressing one of the 'heaters on' buttons energises contactor CR1, which switches power to the fans, the exciter field supply and the equipment on the desk (contacts 1, 2, and 3, fig. 2.2). Contacts 5 and 6 on contactor CR1 transfer power from the 'lower' winding to the 'raise' winding of the potentiometer motor. After about one minute, the potentiometer reaches its upper limit and the top limit switch changes over, energising contactor CR4 and cutting off contactor CR3: regulated power instead of unregulated power is now fed to the control amplifier and field regulators, (fig. 2.5). Contactor CR4 also switches the heater hour meter, the Sunvic thermal delay unit, the 'Heaters' lamp above the power-supply cabinet and makes power available to the field of the drum alternator.

12. The Sunvic thermal delay unit is incorporated to ensure that the HT supplies cannot be switched on until the heaters have been running for a period at full power and are developing full emission. The unit should be set to give a delay of about 90 seconds. When the delay switch closes, contactor RL1, a component of the same type as contactors CR1 to CR4, is energised. This makes power available to the HT-switching circuit (fig. 2.7), switches on the 'heaters ready' lamp on the engineer's panel (fig. 2.4) and switches off the delay unit.

13. The hold-on circuit of contactor CR1 is shown by a thickened line in fig. 2.3. This circuit includes the starter contacts, a pair of contacts in the control amplifier (see fig. 2.5) and a pair of contacts on relay RL9 in bay 2 of the computing cabinet. Another pair of contacts on relay RL9 inhibits, when opened (RL9 de-energised), the main-store 'write' circuit. Relay RL9 can be de-energised by pressing either of the emergency buttons on the ends of the programmer's panel assembly (fig. 2.17), one of the emergency buttons in the back section of the computing cabinet or the 'heaters off' button in the power-supply cabinet. It is de-energised also if one of the thermal trips operates, or if one of the fuses associated with computer relays RL1, RL3, RL5 and RL13 is blown. When contactor CR1 opens, the potentiometer motor runs down, opening the top limit switch, so that contactor CR3 is energised; contactor CR4 then drops out, switching off the HT supplies. The potentiometer motor will then run down to its bottom limit.

### Routing

14. Fig. 2.4 shows how the regulated supplies are routed. The three regulated phases, A', B', and C', are suppressed with series chokes and fused shunt capacitors