**Power and Control**

6. The basic circuitry associated with the refrigeration of the Pegasus computer is depicted in Vol.3a figs 7-3 to 7-5 inclusive. Some installations may differ from that described herein but such differences will normally be of a minor character.

7. Fig.7-3 illustrates a typical arrangement for an installation equipped with converter and incorporating shell and water-tube condenser cooling of the refrigerant. The motor starter circuit is not supplied with power until the computer or the converter fans are operating, in which case, relay A or relay B is energised and contacts A1 or B1 complete the power supply to this circuit. Power cubicle contactor CR1 (fig.2-2) controls the three phase power supply to the computer fan circuits. This contactor is energised when a 'heaters-on' button is operated. The fan contactor 'start' buttons are normally held in the 'start' position by means of a locking bar (fig.7-2), hence, the fans are automatically switched-on by operation of the 'heaters-on' button. Contactor CR1 also initiates the distribution of H.T. power to the computer circuits. It follows, that the compressor motor; fan motors, H.T. and heater supplies are all controlled by the 'heaters on' button.

This arrangement is duplicated in the converter power cubicle and fan circuits so that the same conditions apply.

8. The power supply circuit of contactors C and M (fig.7-3) includes several switching devices. Of these devices only contacts A1 and B1 are normally in the 'open' position, hence, the contactors operate immediately relays A or B are energised. Contactor C breaks the power supply to the compressor warning lamps (contacts C1, C2). Contactor M switches the three phases of the supply to the compressor motor (contacts M1, M2, M3), opens the magnetic stop valve (contact M6), operates the hold-on contact M4 and closes the delayed action contact M5. The latter energises contactor S which then 'short-circuits' the rotor starting resistors (contacts S1, S2). The reason for the delayed action of M5 is to enable the compressor motor to accelerate to a 'safe' speed before contacts S1 and S2 operate.

9. The thermal safety device T.S.D. is mounted adjacent to the rotor starting resistors (R1, R2, R3) and is designed to break the power supply to the compressor motor should the temperature of the resistors rise to an excessive value. This would occur if for some reason contacts S1 and S2 failed to close at the conclusion of the delay period. A second protective device for the compressor motor is provided by the overload relay (OL1).

10. The Hand/Auto switch SW2 is mounted on the compressor. Only the 'Hand' position is used in installations of this type where the plant is required to run continuously. The 'Auto' position is not connected and no thermostatic control is fitted.

11. High and low pressure cut-outs protect the compressor from damage should the delivery or suction pressures reach a dangerous level due to a fault in the plant. The high pressure cut-out is connected to the compressor discharge (fig.7-1) and is set to operate at approximately 180 lbs. per sq. inch. The low pressure cut-out is in the suction line and operates at about 5 lbs per sq. inch. Either of these devices will stop the compressor motor if pressures depart beyond the limits shown above.