

Health and Safety Executive OC 483/11

Field Operations Division

To

FCG Specialist Inspectors (Electrical)

UNCOVENANTED STARTING OF PLANT DUE TO CONTROL SYSTEM CROSS-CONNECTIONS

1 This OC gives details of an incident where machinery started up automatically following the restoration of power supplies.

2 The incident occurred in the mining industry, however the defective design principles may be found elsewhere.

3 The machinery concerned was fed from a NEI Belmos 550 volt 3 phase type 5/SB03T103 contactor switchboard. This comprised 2 incoming circuit breakers, a bus-section switch and various contactor units. (See the Appendix for diagram).

4 Two auxiliary transformers supplying 110 volt supplies to the contactor coil control circuits were fitted, one for each half of the switchboard. Each of the incoming circuit breakers supplied its associated auxiliary transformer.

5 The auxiliary transformers were each fitted with switches which allowed one unit to provide all 100 volt contactor control supplies for the whole switchboard.

6 At the time of the incident the bus-section switch on the switchboard was open, the machinery load was being shared between the 2 incoming supplies. The number 2 auxiliary transformer had been selected to feed all 110 volt control circuits on the switchboard.

7 Prior to the incident an overload trip had occurred at the main substation causing loss of infeed to the number one side of the switchboard (see the Appendix for diagram). All machinery fed from this side of the switchboard stopped. However, the contactor coils, which were fed from number 2 auxiliary transformer which was still energised, remained live.

8 When power was restored at the main substation, all the machinery started up automatically. Fortunately there were no personnel injured.

9 Subsequently the switchboard was modified so that the 110 volt control supplies aligned with the main power feeds under all running conditions.

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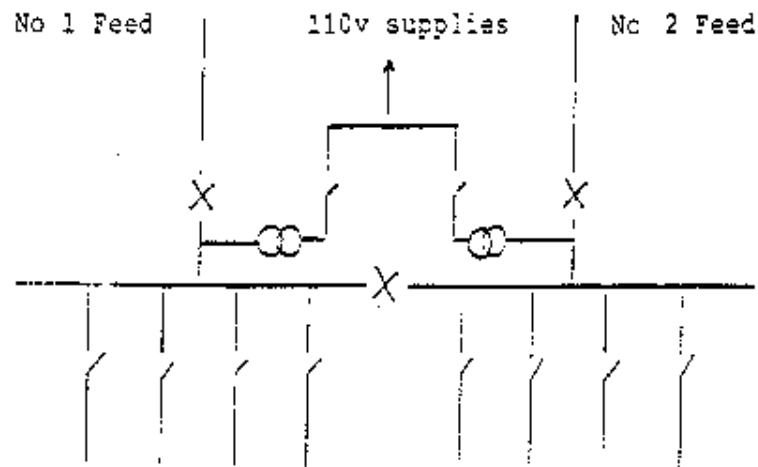
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ASI headings

Circuit breakers: control systems: electric(ity): transformers.

APPENDIX
(paras 3 and 7)

GENERAL ARRANGEMENTS



ARRANGEMENT AT TIME OF LOSS OF SUPPLIES

