

Attachment 6

Credible Contingency Events

S5.1.2.1 of the National Electricity Code provides that:

“Network Service Providers must plan, design, maintain and operate their transmission networks and distribution networks to allow the transfer of power from generating units to Customers with all facilities or equipment associated with the power system in service and may be required by a Code Participant under a connection agreement to continue to allow the transfer of power with certain facilities or plant associated with the power system out of service, whether or not accompanied by the occurrence of certain faults (called “credible contingency events”).”

The following credible contingency events and practices must be used by Network Service Providers for planning and operation of transmission networks and distribution networks unless otherwise agreed by each Code Participant who would be affected by the selection of credible contingency events:

- (a) The credible contingency events must include the disconnection of any single generating unit or transmission line, with or without the application of a single circuit two-phase-to-ground solid fault on lines operating at or above 220kV, and a single circuit three-phase solid fault on lines operating below 220kV. The Network Service Provider must assume that the fault will be cleared in primary protection time by the faster of the duplicate protections with installed intertrips available. For existing transmission lines operating below 220kV but above 66kV a two-phase to earth fault criterion may be used if the modes of operation such as to minimise the probability of three-phase faults occurring and operational experience shows this to be adequate, and provided that the Network Service Provider upgrades performance when the opportunity arises.
- (b) For lines at any voltage above 66kV which are not protected by an overhead earth wire and/or lines with tower footing resistances in excess of 10ohms, the Network Service Provider may extend the criterion to include a single circuit three-phase solid fault to cover the increased risk of such a fault occurring. Such must be examined individually on their merits by the relevant Network Service Provider.
- (c) For lines at any voltage above 66kV a Network Service Provider must adopt operational practices to minimise the risk of slow fault clearance in case of inadvertent closing on to earths applied to equipment for maintenance purposes. These practices must include but not be limited to:
 - (1) Not leaving lines equipped with intertrips alive from one end during maintenance; and
 - (2) Off-loading a three terminal (tee connected) line prior to restoration, to ensure switch on to fault facilities are operative.

- (d) The Network Service Provider must ensure that all lines at the above voltages have two independent high speed protection systems and that all elements of both protection systems, including associated intertripping are well maintained so as to be available at all times other than for short periods (not greater than eight hours) while the maintenance of one protection system is being carried out.