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Dr John Tamblyn
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By Email: submissions@aemc.gov.au

Monday, 12 May 2008

Dear Dr Tamblyn

Proposed Rule change: Re-classification of Contingency Events

International Power (IPRA) supports the submission by the NGF on the Rule change in relation to re-classification of contingency events.

In considering this matter IPRA has formed the view that there are errors and deficiencies in parts of the existing Rules that are closely associated with this proposed change, but are not directly changed by it.

We suggest to the Commission that it would be timely and desirable to consider and potentially correct the drafting of this section of the Rules while considering the AER proposal.

Our proposed drafting changes are detailed in Appendix A.

The following discussion details our reasons for concern, and the basis for our proposed changes.

Rule 4.2.3(b)

This Rule defines the term “credible contingency event” in a way that leaves unclear whether it includes the disconnection of more than one item.

If the reclassification of a normally non-credible contingency event as a credible contingency event is accepted, as now accepted in practice and permitted in a more explicit provision under the proposal, then the definition must encompass the disconnection of more than one item.

But even without considering reclassification, a credible contingency event should allow for the disconnection of several items. This is because in some locations a single disconnection leads

inevitably to a related disconnection. Consider a generator connected to the network via a single transmission line. In this case disconnection of the transmission line logically must include disconnection of the generator.

While the current drafting does not preclude this reading, we suggest that its failure to clarify the issue should be remedied.

Of itself this may be considered a minor drafting issue. However, clarifying this issue is important in the following discussion.

The definition of “credible contingency event” could also be improved by making clear, for the avoidance of doubt, that the simultaneous occurrence of two or more credible contingency events (unless reclassified) is not a credible contingency event.

Rule 4.2.3(c)

This Rule purports to define “single credible contingency event”, but fails to do so.

The set of *credible contingency events* at any time will be a large set and may well, as discussed above, include some that involve the disconnection of multiple items (generators or transmission plant). Each of these, regardless of its content, is “individual”. Hence the inclusion of the word “individual” in 4.2.3(c) does not, of itself, create a subset of *credible contingency events* to be the *single credible contingency events*.

Much of this sub-clause refers to what Registered Participants may “reasonably expect”, but we do not believe that this provides any definitional criteria for the term *single credible contingency event*, because such expectations are reliant on the meaning of “*single credible contingency event*”.

This leaves only the question of whether something is to be read into the use of the word “single”. Two possibilities emerge –

- The term *single credible contingency event* is synonymous with *credible contingency event*, in which case it is redundant and detracts from the clarity of the Rules and hence should be deleted, or
- The term *single credible contingency event* denotes a sub-set of *credible contingency events*, presumably distinguished by the disconnection of only one item. On this interpretation NEMMCO’s security obligation would relate to only this sub-set of *credible contingency events*. In particular, re-classification would generally have no practical effect since the re-classified *credible contingency event* would not be a *single credible contingency event* and NEMMCO need not, and indeed should not, secure the system against its occurrence. This meaning is inconsistent with the practice in the market, and we believe also inconsistent with the intention of the Rules, and if it applies then this term should be deleted to ensure that NEMMCO’s system security obligations are clear.

We thus contend that given either of its possible meanings the term “single credible contingency event” is undesirable and should be deleted.

Rule 4.2.3(d)

This rule provides a definition of “critical single contingency event”, which relies on the term “*single credible contingency event*”, which as discussed above has no clear meaning and is undesirable as either redundant or undermining NEMMCO’s security obligations.

On this ground alone the term should be changed to “critical credible contingency event”.

However, there is a further objection to the drafting of 4.2.3(d). This is the requirement for NEMMCO to select one event as being critical. This requirement is inconsistent with the realities of system operation.

In operating the system, NEMMCO needs to consider the large range of credible contingency events in several contexts. These include –

- The assessment of low reserve or lack of reserve conditions for various regions or sets of regions,
- The determination of FCAS quantities that should be dispatched in various regions or sets of regions
- The limitations of network power flow in many parts of the transmission network that must be applied to ensure security

For each of these purposes there will be a critical credible contingency, in that one contingency event out of the hundreds of credible contingency events will determine the particular outcome. There is no reason for the critical credible contingency for any one purpose to also be critical in another context except by coincidence.

Hence it is irrational to require NEMMCO to choose one of the many credible contingencies that are simultaneously critical (in different contexts), to be THE critical credible contingency.

By way of example, should NEMMCO consider the contingency leading to an LOR₁ condition in SA, to be more critical to one leading to a low reserve condition in Queensland or vice versa.

We believe that the requirements of 4.2.3(d) to be meaningless in practice and hence leading to confusion in the interpretation of the Rules.

We suggest that if this concept is retained, it should be re-drafted to recognise that there will be many critical credible contingency events simultaneously, each in its own context.

But given a clear definition of “credible contingency event” as discussed above, a better alternative is available. This is to define the obligations of NEMMCO in terms of these events only, broadly –

- NEMMCO must operate the system, if possible, to withstand any credible contingency event, and
- NEMMCO must inform the market if any credible contingency event would lead to reliability below the standards described in 4.8.4.

The drafting suggestion in Appendix A has taken this path and avoided the need to define any critical credible contingency events directly.

In relation to the consequential changes to clause 4.8.4, an additional qualification has been added which seeks to align the Rules with current NEMMCO practice (as we understand it).

If you wish to discuss these suggestions please call Ken Secomb on 03 9617 8321.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Stephen Orr', with a stylized flourish at the end.

Stephen Orr
Commercial Director

Encl: Appendix A

Appendix A

Proposed changes to clarify the rules in relation to contingency events

4.2.3 Credible and non-credible contingency events

(a) A “contingency event” means an event affecting the *power system* which NEMMCO expects would be likely to involve the failure or removal from operational service of a *generating unit* or *transmission element*.

(b) A “credible contingency event” means a *contingency event* the occurrence of which NEMMCO considers to be reasonably possible in the surrounding circumstances including the *technical envelope*. Without limitation, examples of *credible contingency events* are likely to include:

- (1) the unexpected automatic or manual *disconnection* of, or the unplanned reduction in capacity of, one operating *generating unit*; or
- (2) the unexpected *disconnection* of one major item of *transmission plant* (e.g. *transmission line*, *transformer* or *reactive plant*) other than as a result of a three phase electrical fault anywhere on the *power system*.

(c) A “credible contingency event” may include the removal from operational service of more than one generating unit or transmission element if:

- (1) one removal from service is an unavoidable consequence of another removal from service, or
- (2) coincident removals from service has been reclassified by NEMMCO in accordance with 4.2.3A

(d) {deleted}

(e) A “non-credible contingency event” is a *contingency event* other than a *credible contingency event*. Without limitation, examples of *non-credible contingency events* are likely to include:

- (1) three phase electrical faults on the *power system*; or
- (2) simultaneous disruptive events such as:
 - (i) multiple *generating unit* failures; or
 - (ii) double circuit *transmission line* failure (such as may be caused by tower collapse).

Consequential changes

4.2.4 Secure operating state and power system security

(a) The *power system* is defined to be in a *secure operating state* if, in NEMMCO's reasonable opinion, taking into consideration the appropriate *power system security* principles described in clause 4.2.6:

- (1) the *power system* is in a *satisfactory operating state*; and
 - (2) the *power system* will return to a *satisfactory operating state* following the occurrence of any *credible contingency event* in accordance with the *power system security and reliability standards*.
- (b) Without limitation, in forming the opinions described in clause 4.2.4(a), NEMMCO must:
- (1) consider the impact of each of the potentially *constrained interconnectors*; and
 - (2) use the *technical envelope* as the basis of determining events considered to be *credible contingency events* at that time.

4.2.5 Technical envelope

(a) The *technical envelope* means the technical boundary limits of the *power system* for achieving and maintaining the *secure operating state* of the *power system* for a given demand and *power system* scenario.

(b) NEMMCO must determine and revise the *technical envelope* (as may be necessary from time to time) by taking into account the prevailing *power system* and *plant* conditions as described in clause 4.2.5(c).

(c) In determining and revising the *technical envelope* NEMMCO must take into account matters such as:

- (1) NEMMCO's forecast of total *power system load*;
- (2) the provision of the applicable *contingency capacity reserves*;
- (3) operation within all *plant* capabilities of *plant* on the *power system*;
- (4) *contingency capacity reserves* available to handle any *credible contingency event*;
- (5) advised *generation* minimum *load constraints*;
- (6) *constraints* on *transmission networks*, including short term limitations;
- (7) *ancillary service* requirements;
- (8) **[Deleted]**
- (9) the existence of proposals for any major equipment or *plant* testing, including the checking of, or possible changes in, *transmission plant* availability; and
- (10) applicable *performance standards*.

4.5.1 Power system voltage control

(a) NEMMCO must determine the adequacy of the capacity of the *power system* to produce or absorb *reactive power* in the control of the *power system voltages*.

(b) NEMMCO, in consultation with *Network Service Providers*, must assess and determine the limits of the operation of the *power system* associated with the avoidance of *voltage failure* or collapse under any *credible contingency event* scenario.

(c) ...

4.8.4 Declaration of conditions

NEMMCO may declare the following conditions in relation to a period of time, either present or future:

(a) *Low reserve condition* - when NEMMCO considers that the *short term capacity reserves* or *medium term capacity reserves* for the period being assessed have fallen below those determined by NEMMCO as being in accordance with the relevant *short term capacity reserve standards* or *medium term capacity reserve standards*;

(b) *Lack of reserve level 1 (LOR₁)* - when NEMMCO considers that there is insufficient *short term capacity reserves* available to provide complete replacement of the *contingency capacity reserve* on the occurrence of any *credible contingency event* that would lead to the removal from operational service of a *generating unit* or interconnection between *regions* for the period nominated;

(c) *Lack of reserve level 2 (LOR₂)* - when NEMMCO considers that the occurrence of any *credible contingency event* that would lead to the removal from operational service of a *generating unit* or interconnection between *regions* is likely to require *involuntary load shedding*;

(d) *Lack of reserve level 3 (LOR₃)* - when NEMMCO considers that *Customer load* (other than *ancillary services* or contracted *interruptible loads*) would be, or is actually being, interrupted automatically or manually in order to maintain or restore the security of the *power system*.

In chapter 10 delete definitions of –

Single credible contingency event, and

Critical single credible contingency event