

Enduring Fault Ride Through Process

The Company / Users / Network Operators shall follow the below steps to manage the system security risk following an **unexpected generation or interconnector or HVDC System or network asset loss/de-load coincident with a transmission fault**.

1. The Company will **within 24 hours** issue a notification as soon as a potential fault ride through issue has arisen to all Users and Network Operators providing them with the voltage waveform data from the fault recorder *nearest to the fault location* (or, if appropriate, multiple incidents/locations) in question to allow all Users and Network Operators to examine how their Plant and / or Apparatus performed during the incident in question.
2. Having examined all the relevant voltage waveform data and determined who the relevant User(s) or Network Operator(s) are, and after confirming that the nature of the fault is one which the User / Network Operator assets should have remained unaffected, the Company will then issue:
 - a. the relevant party with voltage waveform data from the fault recorder(s) *nearest to their point of connection* and
 - b. a notification to the relevant party whose Plant and / or Apparatus have, in the view of the Company, been affected by the potential fault ride through incident, asking that they confirm to the Company what steps they are taking to initiate an investigation.
3. The affected party will use reasonable endeavours to confirm to the Company that it has initiated such an investigation and set out the expected timeframe for concluding the investigation. Any changes to the expected timetable will be notified to the Company without undue delay. In accordance with OC5.4.2.2(b) the User and STC Section 3.2.9 the Network Operator must provide the Company with an explanation of the reasons for failure and a proposal of the actions the User and / or Network Operator will take to comply with the CC, ECC or STC as appropriate. In addition, in accordance with OC5.4.2.3, the User, and STC Section 3.2.1.0 the Network Operator, will discuss with the Company and agree the actions proposed and the appropriate short-term operational restrictions (see (7) below) and the associated changes to Balancing Mechanism parameters for Generator, HVDC System and Network asset(s), as necessary (eg MEL).
4. The affected party will have **12 weeks** from receipt of waveform data in accordance with (2(a)) above, in which to provide to the Company with the conclusions of its investigation, and if appropriate issue an initial notification to the Company and follow the process defined in CP.A.1.4 accordingly; and if appropriate issue a Limited Operational Notification to ensure that the User and the ESO are fulfilling their respective Grid Code obligations (CP/ECP.6.3.6.4 & CP.ECP.8.5.4).
5. If the affected party is unable to resolve the issue within the time period set in (4) above, then it shall without undue delay reduce the maximum import and/or export (as relevant) of its relevant BMU (in the case of a generator or interconnector) or relevant Network Asset, to **50%** of its capability until the issue is resolved.
6. If the relevant asset is capable of importing and /or exporting (as relevant) 100 MW or more, then upon receipt of the notification in accordance with (2) above, then if the affected asset is operating under a
 - a. FON then no immediate limitation on capability will be applied and the User will have **12 weeks** to investigate and if necessary resolve the cause of any non-compliance
 - b. ION, then the User will restrict the import or export of the relevant BMU(s) or relevant network asset (as applicable) to **70%** of its rated capacity or the **Largest Infeed Limit (whichever is lower)**. The Company will then revise the Interim Operational Notification in place as appropriate.

Commented [JD1]: We want:

- ESO to publish fault metadata for all system faults to enable Users to check performance (especially windfarms)
- ESO to provide to apparent non-compliant users, waveform data of the fault to enable investigation to start

Commented [JD2]: The ESO to determine whether a User should have ridden through a fault and provides data to the User to aid with the investigation

Commented [JD3]: User to confirm they have started investigating and commits to discussing and agreeing actions with the ESO in the short term

Commented [JD4]: Clarify time user has to investigate before action taken

Commented [JD5]: Defines penalty of not resolving fault within time allowed

Commented [JD6]: Clarifying that the constraint applies to the relevant BMU(s) that was/were in operation at the time of the fault.

This approach uses balance of risk to

- 1.Allow large long-established users a 'grace' (3 months) period to continue at full output (presuming they are v likely to be compliant) unless there is a good reason to expect they could have a problem (for which they would be under a LON)
- 2.Require large new users to constrain immediately (presuming they could well not be compliant given limited operational history)

Commented [JD7]: ESO to update ION conditions as appropriate

- c. LON then:
- i. If the LON relates to equipment changes that could reasonably be expected to affect the FRT performance (e.g. a generator replacement or software update that fundamentally changes the FRT capability or protection settings that are tighter than were applied previously) then the affected party would be managed as for an ION (see (b) above).
 - ii. For all other reasons the affected party would be managed as for a User or Network Operator in receipt of a FON (see (a) above).
7. In respect of the Largest Infeed Limit, the generator will have where relevant at least one complete settlement period prior to gate-closure to amend its output in order to comply with paragraph (6(b)) above - thus a change to the largest infeed limit as shown on the relevant part of the Company's data portal between, say, 00:01 to 00:29 would require the generator to amend its PN by 00:59 for its practical application from 02:00 onwards.
8. Following the provision of the relevant information by the User / Network Operator of a relevant event as required by (3) above to the Company, the Company shall without undue delay prepare a summary of the lessons learnt by the User / Network Operator and / or the Company (if relevant) and publish the summary on its website within 5 working days of it being prepared.
9. To ensure and enhance transparency of the transmission system operation and thus better aid Users and Network Operators understanding of fault ride through situations that have occurred historically, The Company will publish within 90 days of an Authority decision to approve GC0151 the historic waveform data from the fault recorder *nearest to the fault location* (or, if appropriate, multiple incidents) in question to allow all Users and Network Operators to examine how their Plant and / or Apparatus performed during the incident in question. The historic period that The Company will provide this information for will extend back [five years] [ten years] from the date of the Authority decision to approve GC0151.

Commented [JD8]: The Largest infeed limit level may not be relevant if a lower interim constraint is agreed (e.g. 50% instead of 70%) since 50% of the User's capacity would very likely be lower than the Largest Infeed Limit at all times.

Commented [JD9]: ESO to disseminate lessons learnt so other users can take action to improve system security