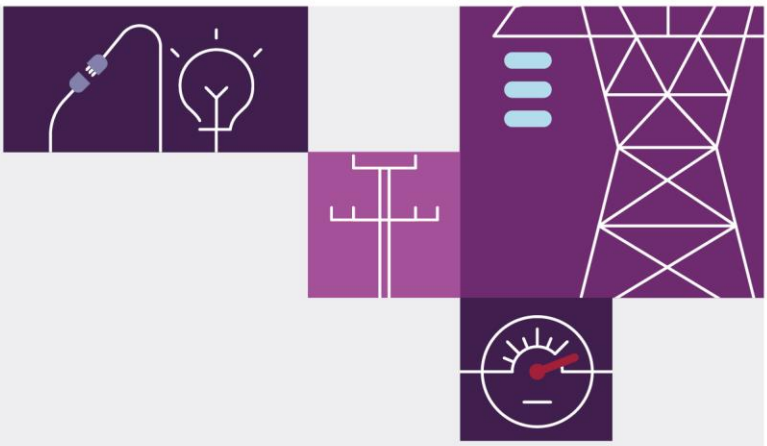
Trip of Uralla 330 kV B Bus and 330 kV CB 5012 on 4 September 2022

February 2023

Reviewable Operating Incident Report under the National Electricity Rules



Important notice

Purpose

AEMO has prepared this report in accordance with clause 4.8.15(c) of the National Electricity Rules, using information available as at the date of publication, unless otherwise specified.

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AEMO acknowledges the Traditional Owners of country throughout Australia and recognises their continuing connection to land, waters and culture. We pay respect to Elders past and present.

Abbreviations

Abbreviation	Term
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AEST	Australian Eastern Standard Time
CB	Circuit Breaker
kV	Kilovolt
MW	Megawatts
NEM	National Electricity Market
NER	National Electricity Rules
NESF	New England Solar Farm
TNSP	Transmission Network Service Provider

Incident review

This reviewable operating incident[1] report is prepared in accordance with clause 4.8.15(c) of the National Electricity Rules (NER). It has been prepared using information provided by participant(s)[2] and from AEMO systems.

Table 1 Summary of the event

	Details
Reviewable operating incident type	Non-credible contingency event impacting critical transmission elements.
Incident details	This report relates to a reviewable operating incident[3] that occurred on 4 September 2022 in New South Wales. The incident involved the trip of the Uralla 330 kilovolts (kV) B busbar and Uralla 330 kV circuit breaker (CB) 5012.
Incident classification	Other causes – human error – insufficient isolations on the New England Solar farm (NESF) protection panel.
Generation impact	Nil
Customer load impact	Nil
Pre-incident conditions	Immediately prior to the event, NESF staff were working on the protection panel at the NESF switching station. The work included confirmation of intertrip protection system between Transgrid and NESF. Isolators 5421 and 5411 were open and NESF was out of service prior to the event, as shown in Figure 1 (NESF's rated capacity is 400 megawatts [MW]).
Incident key events	1. At 1454 hrs on 4 September 2022, the Uralla 330 kV B busbar and Uralla 330 kV CB 5012 tripped, as shown in Figure 2. 2. At 1701 hrs on 4 September 2022, the Uralla 330 kV B busbar and CB 5012 were restored.
Incident cause	Post-incident investigation by Transgrid and NESF has confirmed: • NESF technical staff were on site at NESF undertaking work on the solar farm's protection panel with the Uralla 330 kV Bus and Uralla 330 kV CB 5012 in service. • While staff were working on the NESF protection system, a trip signal was inadvertently sent, tripping the Uralla 330 kV B busbar and 330 kV CB 5012. • The root cause of the incident has been identified as human error. The NESF staff had not sufficiently isolated the NESF protection panel for their works and this allowed a trip signal from NESF to trip in-service equipment at Uralla 330 kV substation.
Power system response (facilities and services)	There were no other material impacts on the broader power system, load, or generation.
Rectification	Following the trip of the Uralla 330 kV B busbar and 330 kV CB, NESF has confirmed that: • After the incident occurred, a standard isolation procedure was put into effect at the NESF substation, with Transgrid being informed of works on site throughout the process. Transgrid has confirmed that: • The protection isolations implemented by Transgrid staff at the Uralla 330 kV substation were also insufficient. • Transgrid has amended its procedures to ensure that there are additional isolations in place to reduce risk of inadvertent trips during future protection works.
Power system security	The power system remained in a secure operating state throughout this incident and the Frequency Operating Standard was met for this incident.

[1] Reviewable operating incidents are defined by NER clause 4.8.15(a) and the AEMC Reliability Panel Guidelines for Identifying Reviewable Operating Incidents.

[2] Transgrid is the Transmission Network Service Provider (TNSP) for New South Wales and Australian Capital Territory.

[3] See NER clause 4.8.15(a)(1)(i), as the event relates to a non-credible contingency event; and the AEMC Reliability Panel Guidelines for Identifying Reviewable Operating Incidents.

	Details
Reclassification	AEMO assessed whether to reclassify this incident as a credible contingency event[4]. The cause of this incident was identified and rectified by Transgrid prior to the affected equipment's return to service, and AEMO was satisfied that another occurrence of this event was unlikely under the current circumstances, therefore AEMO correctly identified that reclassification was not required.
Market information	• AEMO issued Market Notice 101475 at 1514 hrs on 4 September 2022 advising that the Uralla 330 kV B busbar and 330 kV CB 5012 had tripped. • AEMO issued Market Notice 101476 at 1719 hrs on 4 September 2022 advising that the equipment had returned to service and the cause of the incident had been identified.
Conclusions	AEMO has concluded that: 1. On 4 September 2022, during work on the NESF protection system, a trip signal was inadvertently sent tripping the Uralla 330 kV B busbar and 330 kV CB 5012. 2. The cause of this incident was identified and rectified by Transgrid and NESF, and AEMO was satisfied that another occurrence of this event was unlikely under the current circumstances, therefore AEMO correctly identified that reclassification was not required. 3. The power system remained in a secure operating state throughout this incident. 4. The root cause of the incident has been identified as human error. The NESF staff had not sufficiently isolated the NESF protection panel for their work and this allowed a trip signal from NESF to trip in-service equipment at Uralla 330 kV substation.
Recommendations	1. AEMO recommends that network service providers review working practices and procedures to ensure they include a cross-check of all available sources to identify the sources of tripping (for example, site drawings, databases, and as-built diagrams) prior to commencing work and performing necessary isolations. 2. AEMO plans to share the findings from this event with the Power System Security Working Group by Q2 2023.

[4] AEMO is required to assess whether or not to reclassify a non-credible contingency event as a credible contingency event – NER clause 4.2.3A(c) – and to report how the reclassification criteria were applied – NER clause 4.8.15(ca).

Figure 1 Pre-incident diagram

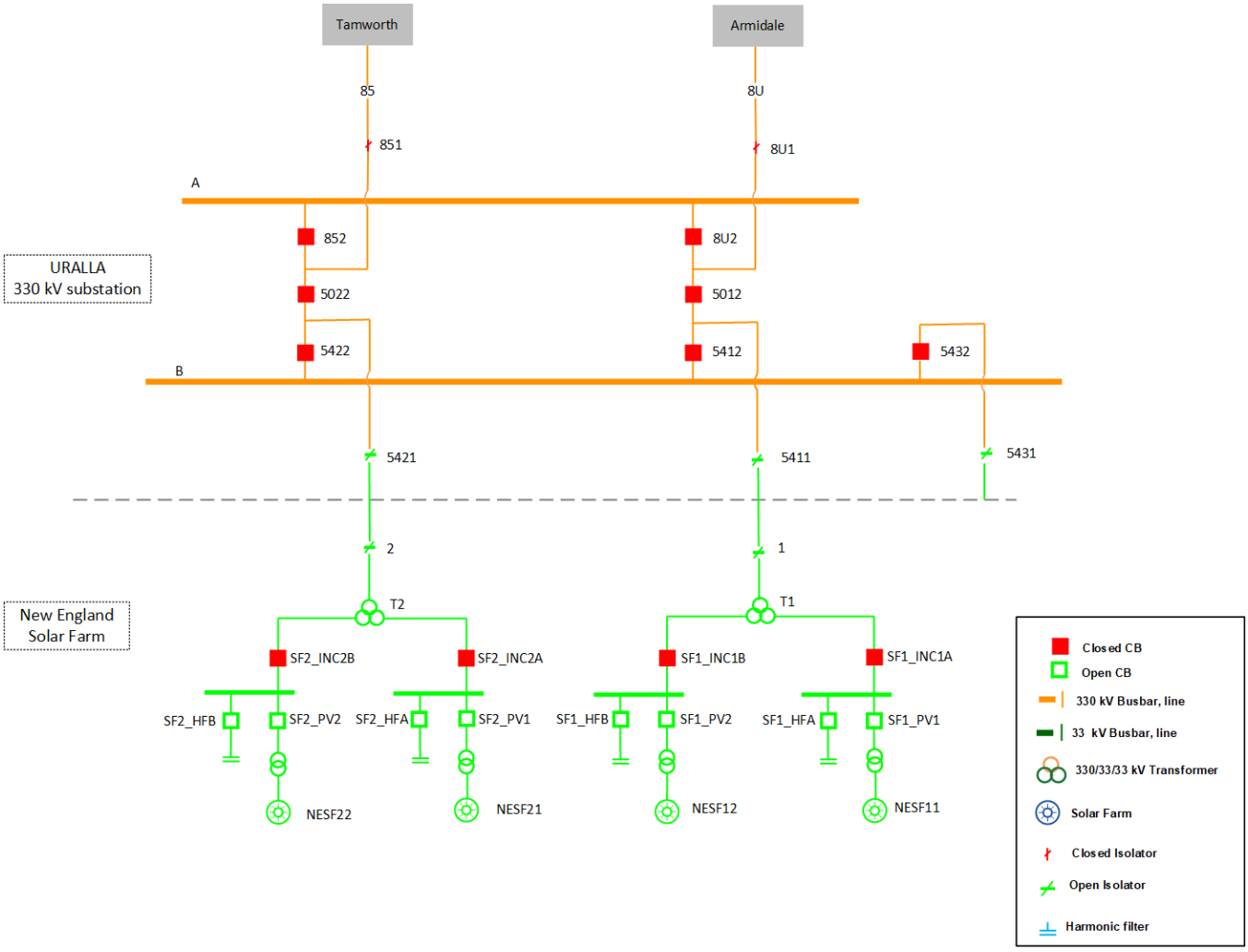

Figure 2 Post-incident diagram