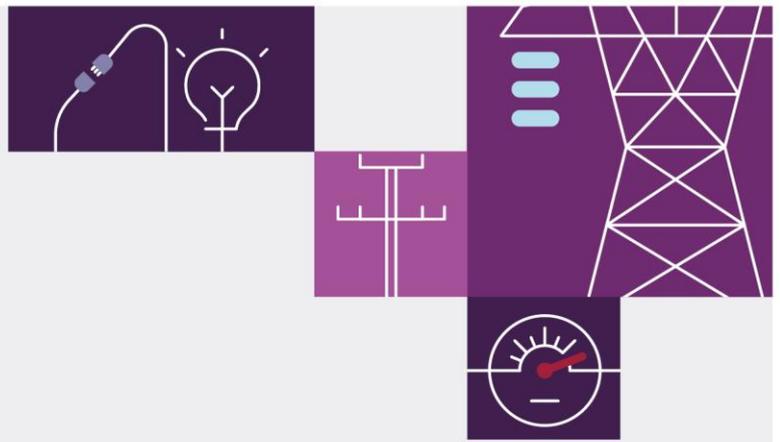


Dederang – Wodonga 330 kV line trip at Wodonga end only on 27 October 2021

April 2022

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.

Disclaimer

AEMO has made every reasonable effort to ensure the quality of the information in this report but cannot guarantee its accuracy or completeness. Any views expressed in this report may be based on information given to AEMO by other persons.

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Contact

If you have any questions or comments in relation to this report, please contact AEMO at system.incident@aemo.com.au.

The NEM operates on Australian Eastern Standard Time (AEST). All times in this report are in AEST.

Abbreviations

Abbreviation	Term
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AEST	Australian Eastern Standard Time
DDTS	Dederang Terminal Station
kV	Kilovolt
MW	Megawatts
NEM	National Electricity Market
NER	National Electricity Rules
TNSP	Transmission network service provider
WOTS	Wodonga Terminal Station

Incident review

This reviewable operating incident¹ 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 AusNet² and from AEMO systems.

Table 1 Summary of event – Dederang – Wodonga 330 kV line trip at Wodonga end only

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 27 October 2021 in Victoria. The incident involved the trip of the Wodonga (WOTS) to Dederang (DDTS) 330 kV line at the Wodonga 330 kV substation end only.
Incident classification	Other causes – human error.
Generation impact	Nil
Customer load impact	Nil
Pre-incident conditions	Prior to the incident, routine maintenance was being performed on the H3 Transformer/WOTS 330 kV Line Tie Circuit Breaker Management (CBM) relay at DDTS 330 kV substation on 27 October 2021.
Incident key events	<ol style="list-style-type: none"> At 1226 hrs on 27 October 2021 the DDTS - WOTS 330 kV line tripped at the WOTS end only. At 1239 hrs the DDTS - WOTS 330 kV line No. 1 CB was closed at WOTS, putting the line back on load. The No. 2 WOTS 330 kV busbar CB was restored at 1544 hrs on the same day.
Incident cause	<p>At 1226 hrs on 27 October 2021, AusNet staff were completing planned protection testing on the H3 Transformer/WOTS 330 kV Line Tie CBM. This work was being completed with the DDTS – WOTS 330 kV line in service. The CBM relay was isolated by AusNet technicians to allow the planned protection testing to commence. Given recent works on the protection scheme/CBM relay had been completed several days before the incident, AusNet had not received the “assembled forms”⁴ drawing which outlines all the outputs of the relay in a single diagram. However, site staff had obtained the schematic of the relay, which was used as a reference to identify the sources of tripping and perform necessary isolations. During this work an inadvertent trip signal was sent to WOTS 330 kV substation, tripping the DDTS – WOTS 330 kV line at the WOTS end only.</p> <p>Post-incident investigation by AusNet confirmed that before the testing works commenced, due to human error, the technicians did not identify and isolate all the outputs of the CBM relay despite having a schematic drawing available. The trip signal was sent via an un-isolated output from the CBM relay that was being tested.</p>
Power system response (facilities and services)	There were no other material impacts on the broader power system, load, or generation.
Rectification	<p>AusNet has identified and rectified the issue and has advised AEMO of the following corrective actions:</p> <ul style="list-style-type: none"> Installation of a test link and isolation point on the positive supply to the trip relay. This allows all the outputs on the relay to be isolated with one link, making the isolation more convenient. Re-arrangement of the links on the CBM relay panel to make visual identification of all trip outputs easier. Confirmed that ‘assembled forms’ drawings of the updated protection schemes at WOTS and DDTS 330 kV substations are available on AusNet’s drawing management system.

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 AusNet is a transmission network service provider (TNSP) for Dederang and Wodonga 330 kV substation.

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.

⁴ Such drawings outline all the outputs of a relay in a single place, making the process of identifying all relay outputs more reliable.

Details	
Power system security	The power system remained in a secure operating state throughout this incident and the Frequency Operating Standard ⁵ was met for this incident.
Reclassification	AEMO assessed whether to reclassify this incident as a credible contingency event ⁶ . The cause of this incident was identified and rectified by AusNet prior to the DDTS – WOTS 330 kV line's return to service. Therefore, AEMO correctly identified that reclassification was not required.
Market information	AEMO issued Market Notice 91988 at 1306 hrs on 27 October 2021 – Advice of non-credible contingency event (this market notice was issued in accordance with NER requirements).
Conclusions	AEMO has concluded that: <ol style="list-style-type: none"> 1. The cause of the DDTS – WOTS 330 kV line trip at WOTS 330 kV substation was human error leading to insufficient isolation being established during planned testing of the CBM relay associated with this circuit. During testing, an un-isolated CBM relay output sent a trip signal causing the trip. 2. To rectify this issue AusNet has re-arranged links on the CBM panel to make visual identification of all trip outputs easier. In addition, AusNet has confirmed that the “assembled forms” drawings of the updated protection scheme at WOTS and DDTS 330 kV substations are available on AusNet’s drawing management system. 3. The cause of this incident was identified and rectified by AusNet prior to the DDTS – WOTS 330 kV line's return to service. Therefore, AEMO correctly identified that reclassification was not required. 4. The power system remained in a secure operating state and the Frequency Operating Standard was met during the incident.
Recommendations	N/A

⁵ Frequency Operating Standard, effective 1 January 2020, available at <https://www.aemc.gov.au/media/87484>.

⁶ 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).