TRIP OF DAVENPORT 275 KV WEST BUS ON 9 OCTOBER 2017

REVIEWABLE OPERATING INCIDENT REPORT UNDER THE NATIONAL ELECTRICITY RULES

Published: **26 March 2018**

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

INCIDENT CLASSIFICATIONS

Classification	Detail
Time and date of incident	1153 hrs Monday 9 October 2017
Region of incident	South Australia
Affected regions	South Australia
Event type	Busbar trip
Generation Impact	No generation was disconnected or limited as a result of this incident.
Customer Load Impact	No customer load was disconnected as a result of this incident.
Associated reports	Nil

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 effort to ensure the quality of the information in this report but cannot guarantee its accuracy or completeness. Any views expressed in this report are those of AEMO unless otherwise stated, and may be based on information given to AEMO by other persons.

Accordingly, to the maximum extent permitted by law, AEMO and its officers, employees and consultants involved in the preparation of this report:

- make no representation or warranty, express or implied, as to the currency, accuracy, reliability or completeness of the information in this report; and
- are not liable (whether by reason of negligence or otherwise) for any statements or representations in this report, or any omissions from it, or for any use or reliance on the information in it.

Copyright

CONTENTS

1. OVERVIEW

This report relates to a reviewable operating incident[1] that occurred on Monday 9 October 2017 at Davenport Substation in South Australia. This incident involved the trip of the West 275 kV busbar, and occurred during Primary Injection testing of the protection system.

No generation or customer load was lost as a result of this incident.

As this was a reviewable operating incident, AEMO is required to assess power system security over the course of this incident, and assess the adequacy of the provision and response of facilities and services and the appropriateness of actions taken to restore or maintain power system security[2].

AEMO has concluded that:

- The trip of the West 275 kV busbar at Davenport Substation was caused by incorrect isolation of the secondary protection systems due to a failure by ElectraNet field staff to follow standard procedures.
- All protection systems operated as designed.
- The power system remained in a secure operating state during this incident, hence no action was required by AEMO.
- AEMO notified the market about this incident appropriately and in timely manner.
- The cause of incident was identified and AEMO was satisfied that reoccurrence of this incident was unlikely, therefore this incident was not reclassified as credible contingency.

This report is prepared in accordance with clause 4.8.15 of the National Electricity Rules (NER). It is based on information provided by AEMO and ElectraNet [3].

Australian Eastern Standard Time (AEST) is used in this report. Local time in South Australia in October is AEST plus half an hour.

2. THE INCIDENT

On Monday 9 October 2017 at 1153 hrs, the West 275 kV busbar at Davenport Substation tripped during Primary Injection testing of the current transformers (CTs) associated with the Cultana No. 1 line. No transmission lines were offloaded as a result. Refer to Appendix A for a diagram of Davenport Substation before and immediately after the event.

No generation or customer load was lost as a result of this incident.

The West 275 kV busbar Davenport was returned to service at 1210 hrs on 9 October 2017.

The probability of a busbar fault is very low, so it is an unexpected event known in power system security terms as a non-credible contingency event[4].

3. ELECTRANET INVESTIGATION

The following is based on information provided by ElectraNet as Transmission Network Service Provider (TNSP) of the area in question.

[1] See NER clause 4.8.15.
[2] See NER clause 4.8.15(b).
[3] Information provided by ElectraNet has been provided on a without prejudice basis and nothing in this report is intended to constitute, or may be taken by any person as constituting, an admission of fault, liability, wrongdoing, negligence, bad faith or the like on behalf of ElectraNet (or its respective associated companies, businesses, partners, directors, officers or employees).
[4] NER clause 4.2.3 – Credible and non-credible contingency events; AEMO *Power System Security Guidelines*, Section 10 – Definition of a non-credible contingency event.

Prior to the incident, the Davenport – Cultana No. 2 line was isolated for replacement of the CTs associated with circuit breaker (CB) 6590 at Davenport. As part of the commissioning process for these new CTs, field crews were carrying out Primary Injection testing. As the test current was increased, the 275 kV West Bus Zone protection operated and all 'in service' 275 kV CBs connected to the 275 kV West Bus tripped.

The reason for the trip of the West 275 kV bus was identified as the secondary systems not being isolated correctly. The reason for the incorrect isolation was identified as a failure to correctly follow established procedures.

The busbar was returned to service at 1210 hrs on 9 October 2017.

4. POWER SYSTEM SECURITY

AEMO is responsible for power system security in the National Electricity Market (NEM). This means AEMO is required to operate the power system in a secure operating state to the extent practicable, and to take all reasonable actions to return the power system to a secure state following a contingency event, in accordance with the NER[5].

This section assesses how AEMO managed power system security over the course of this incident.

The power system remained in a secure operating state following the trip of the Davenport West 275 kV busbar at 1153 hrs, and no action was required by AEMO.

No constraints were required to maintain power system security over the course of the incident.

4.1 Reclassification

AEMO assessed whether or not to reclassify the event as a credible contingency[6].

For this incident, AEMO received information from ElectraNet prior to the busbar being returned to service, and was satisfied that the cause had been identified and the incident was unlikely to reoccur.

AEMO issued Market Notice 59394 at 1208 hrs to notify the market that the incident would not be reclassified as a credible contingency[7].

For this incident, the power system remained in a secure operating state over the course of the incident.

AEMO correctly assessed the incident and did not reclassify the incident as a credible contingency event.

5. MARKET INFORMATION

AEMO is required by the NER and the operating procedures to inform the market about incidents as they progress. This section assesses how AEMO informed the market over the course of this incident.

For this incident, AEMO was required to inform the market on the following matters:

- The occurrence of a non-credible contingency event – notify within two hours of the event[8].
  - AEMO issued Market Notice 59394 at 1208 hrs, 15 minutes after the event.

No other notifications were required.

[5] Refer to AEMO's functions in section 49 of the National Electricity Law and the power system security principles in clause 4.2.6 of the NER

[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 re-classification criteria were applied – NER clause 4.8.15 (ca).

[7] AEMO generally informs the market about operating incidents as the progress by issuing Market Notices, which are published on AEMO's website at https://www.aemo.com.au/Market-Notices.

[8] AEMO is required to notify the Market of a non-credible contingency event within two hours of the event – AEMO, *Power System Security Guidelines,* Section 10.3.

6. CONCLUSIONS

AEMO has assessed this incident in accordance with clause 4.8.15 of the NER. In particular, AEMO has assessed the adequacy of the provision and response of facilities or services, and the appropriateness of actions taken to restore or maintain power system security.

AEMO has concluded that:

- The trip of the West 275 kV busbar at Davenport Substation was caused by incorrect isolation of the secondary protection systems due to a failure by ElectraNet field staff to follow standard procedures.
- All protection systems operated as designed.
- The power system remained in a secure operating state during this incident, hence no action was required by AEMO.
- AEMO notified the market about this incident appropriately and in timely manner.
- The cause of incident was identified and AEMO was satisfied that reoccurrence of this incident was unlikely, therefore this incident was not reclassified as credible contingency.

APPENDIX A. POWER SYSTEM DIAGRAM

The diagrams below show the status at Davenport Substation before and immediately after the event.