

Power System Operating Incident Report – Trip of Eraring – Kemps Creek 500 kV Transmission Line at the Kemps Creek End on 3 February 2014

PREPARED BY: AEMO Systems Capability

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STATUS: FINAL

Version Release History

VERSION	DATE	BY	CHANGES	CHECKED BY	AUTHORISED BY
1	4 April 2014	S Darnell	FINAL	S Darnell	P Biddle

Incident Classifications

Time and date and of incident	0031 hrs Monday 3 February 2014
Region of incident	NSW
Affected regions	NSW
Event type	OTH - Other
Primary cause	OE & CON – Operating Error and Non-Conformance
Impact	Nil
Associated reports	Nil

Abbreviations

Abbreviation	Term
AEMO	Australian Energy Market Operator
kV	Kilovolt
MW	Megawatt
NER	National Electricity Rules

Disclaimer

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1 Introduction

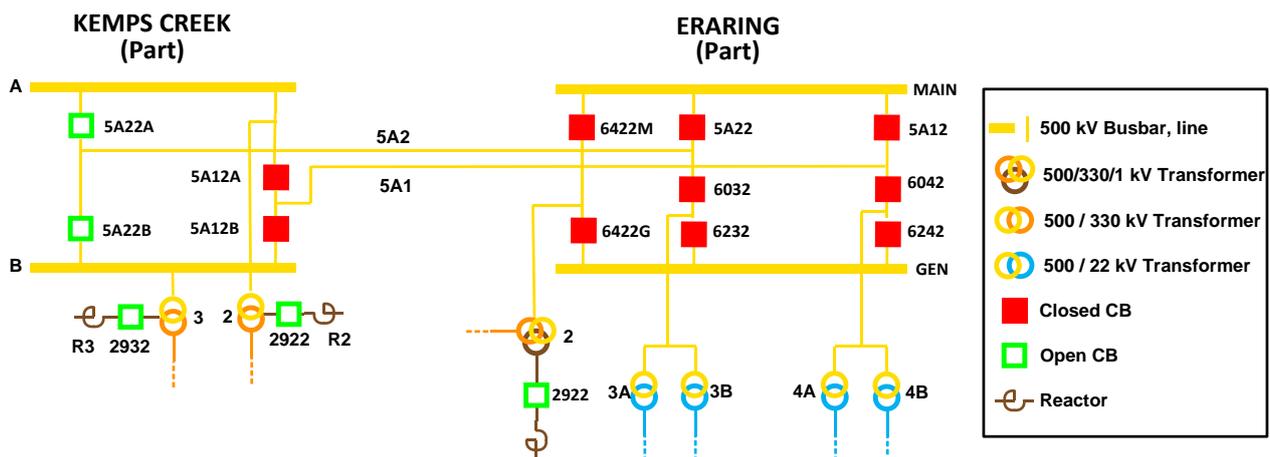
This report reviews a power system operating incident¹ that occurred on Monday 3 February 2014 at Kemps Creek Substation in New South Wales. The purpose of this incident review is to assess power system security over the course of the incident². This report is based upon information provided by Transgrid³. National Electricity Market time (Australian Eastern Standard Time) is used in this report.

2 The Incident

On Monday 3 February 2014 at 0031 hrs the Eraring – Kemps Creek 500 kV transmission line (5A2 Line) opened at the Kemps Creek end. The line remain energised from the Eraring end. No load or generation was lost as result of this incident.

The reason for investigating this incident is that a transmission line opened at one end only. This is an unexpected event known in power system security terms as a non-credible contingency. Generally, transmission lines open at both ends under fault conditions.

The status of the power system after the incident is shown below. Circuit breakers 5A22A and 5A22B at Kemps Creek opened.



3 Investigation

Transgrid investigated this incident and found that a defective protection relay at Kemps Creek Substation caused the 5A2 line to open at the Kemps Creek end. Transgrid then isolated the relay and returned the 5A2 line to service at 0213 hrs. Transgrid replaced the defective relay and returned the protection system to service at 1300 hrs the same day.

¹ AEMO is required to review this incident as it is classified as a non-credible contingency that satisfies the requirements of a reviewable operating incident under the National Electricity Rules (NER) - NER v60 Clause 4.8.15(a)(1)(i) and AEMC Reliability Panel Guidelines for Identifying Reviewable Operating Incidents.

² The NER requires AEMO to 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 - NER v60 Clause 4.8.15 (b).

³ Transgrid is the Transmission Network Service Provider in the New South Wales region.

4 Power System Security

This section assesses how AEMO managed power system security over the course of the incident⁴.

AEMO invoked constraint set N-ERKC_ONE⁵ at 0040 hrs and revoked it at 0220 hrs once the 5A2 line had returned to service. This action ensured power system security whilst the line was out of service.

AEMO issued Market Notice 44875 at 0104 to notify the market of the non-credible contingency event⁶.

AEMO then issued Market notice 44878 at 0659 hrs to notify the market that AEMO had reclassified the incident as a credible contingency because the cause of the event had not been identified⁷. AEMO cancelled the reclassification via Market Notice 44880 at 1305 hrs once the cause of the incident had been identified and rectified.

Power system security was maintained over the course of the incident.

5 Conclusions

1. The Eraring – Kemps Creek 500 kV transmission line opened at the Kemps Creek end because of a defective protection relay.
2. Power system security was maintained over the course of the incident.

6 Recommendations

There are no recommendations arising from this incident.

⁴ AEMO is responsible for power system security in the NEM and is required to operate the power system in a secure operating state (NER Clause 4.2.4 (a)). AEMO must thereby ensure that the power system is maintained in, or returned to, a secure operating state following a contingency event.

⁵ N-ERKC_ONE – invoked for one Eraring to Kemps Creek line (5A1 or 5A2) out of service

⁶ AEMO is required to notify the market of a non-credible event with two hours of the event - AEMO, *Power System Security Guidelines*, Section 10.3

⁷ For a non credible contingency event AEMO is required to assess whether or not to reclassify a non credible contingency event as a credible contingency (NER Clause 4.2.3A (c)) and to report how re-classification criteria were applied NER Clause 4.8.15 (ca). AEMO has to determine if the condition that caused the non-credible contingency event has been resolved.