POWER SYSTEM OPERATING INCIDENT REPORT – TRIP OF NO.2 132 KV BUSBAR AT PIONEER VALLEY ON 4 FEBRUARY 2012

PREPARED BY: Electricity System Operations Planning and Performance

DATE: 16 May 2012

FINAL

Disclaimer

Purpose

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Abbreviations and Symbols

Abbreviation	Term
CB	Circuit Breaker
CBF	Circuit Breaker Fail
kV	Kilovolt
MW	Megawatt
NEM	National Electricity Market
NEMDE	National Electricity Market Dispatch Engine

1 Introduction

At 0309 hrs on 4 February 2012, the No.2 132 kV busbar at Pioneer Valley in Queensland tripped. The trip resulted in the off-loading of 132 kV lines; 7152 Alligator Creek – Pioneer Valley and 7120 Nebo – Pioneer Valley. The Pioneer Valley 132/66 kV Transformer No. 2 also tripped.

This report has been prepared under clause 4.8.15 (c) of the National Electricity Rules (NER) 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.

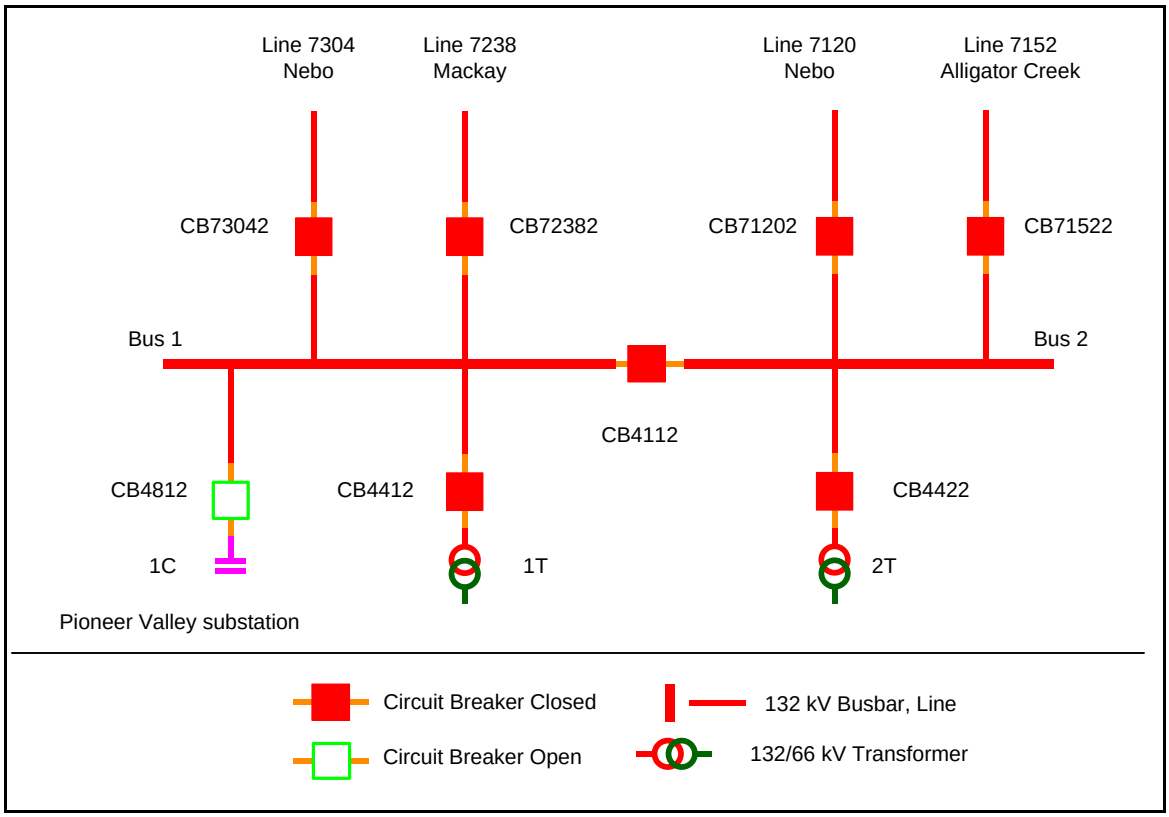
This report is largely based upon information provided by Powerlink. Data from AEMO's Energy Management System and Electricity Market Management System has also been used in analysing the incident.

All references to time in this report are to National Electricity Market time (Australian Eastern Standard Time).

2 Pre-Contingent System Conditions

The status of the power system prior to the incident is shown in Figure 1. For clarity only equipment relevant to this incident has been included in the diagram.

Figure 1 - Status of the power system prior to the incident

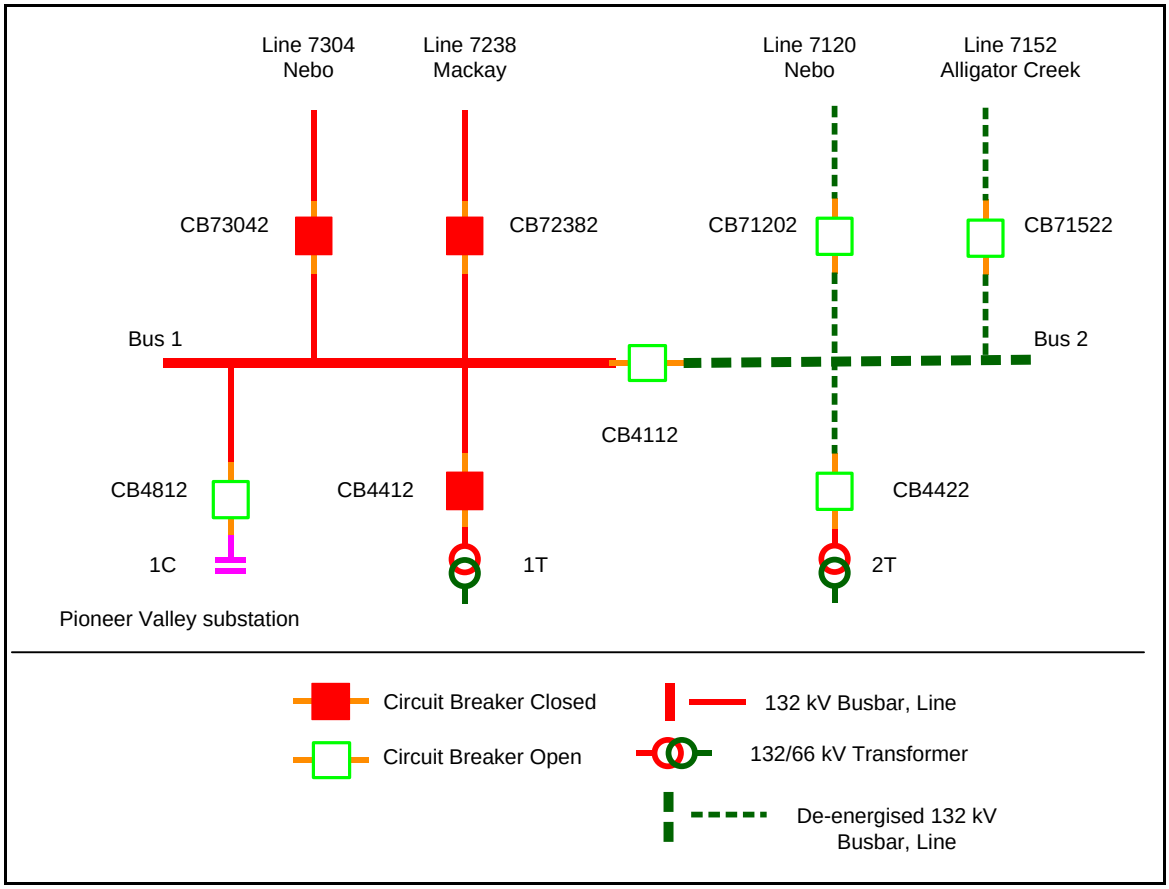


3 Summary of Events

At 0309 hrs on 4 February 2012, operation of Circuit Breaker Fail (CBF) protection was initiated from CB 71522. The activation of the protection scheme led to the tripping of CB 71522, CB 71202, CB 4112 and CB 4422 to clear the section of the No.2 132 kV busbar at Pioneer Valley. There was no loss of load as a result of the incident because the affected network elements remained energised from the remote ends.

The status of the power system immediately after the incident is shown in Figure 2.

Figure 2 - Status of the power system immediately after the incident



4 Immediate Actions Taken

Powerlink investigated the incident immediately and determined that the unexpected protection operation was caused by a faulty protection relay on the Alligator Creek – Pioneer Valley 132 kV line.

Powerlink staff dispatched to the station confirmed that there were not any external causes for the CBF protection to operate. Powerlink staff confirmed that the tripping was caused by a faulty protection relay on line 7152, isolated the faulty protection relay and conducted relevant protection tests before the No.2 132 kV busbar was re-energised via CB 4112 at 0711 hrs on 4 February 2012. CB 71202, CB 4422 and CB 71522 were closed at 0711 hrs, 0714 hrs and 0729 hrs respectively on 4 February 2012.

At 0400 hrs on 4 February 2012, AEMO issued Electricity Market Notice No.37647 advising that the No. 2 132 kV busbar at Pioneer Valley had tripped. AEMO determined that the incident would not be reclassified as a credible contingency because there were no external factors that contributed to the trip and the faulty protection relay that most likely caused the incident had been identified and isolated before returning the busbar into service.

5 Follow-up Actions

On 6 February 2012, Powerlink staff replaced the faulty relay and it was returned to the manufacturer for investigation and repair. The manufacturer is expected to complete its investigations by 30 June 2012. Powerlink will notify AEMO of any relevant outcomes of the manufacturer's investigation.

6 Power System Security Assessment

The power system voltages and frequencies remained within the normal operating bands and the power system remained in a secure operating state throughout the incident.

The provision and response of facilities and services were adequate to maintain power system security.

7 Conclusions

The No.2 132 kV busbar trip at Pioneer Valley on 4 February 2012 was caused by a faulty protection relay. The faulty protection relay was replaced on 6 February 2012.

AEMO is satisfied that Powerlink has carried out the appropriate work to mitigate the risk of a similar incident occurring in the future.

AEMO correctly applied the criteria published in section 12 of its Power System Security Guidelines in assessing that the circumstances of this incident did not warrant reclassifying similar incidents as a credible contingency event.

8 Recommendations

Powerlink will notify AEMO if there are any relevant outcomes contained in the manufacturer's investigation report by July 2012.