POWER SYSTEM OPERATING INCIDENT REPORT – TRIP OF NO.1 AND NO.2 GEELONG TO MOORABOOL 220 KV LINES ON 8 MARCH 2012

PREPARED BY: Systems Capability

DATE: 5 July 2012

FINAL

Disclaimer

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Abbreviations and Symbols

Abbreviation	Term
EMS	Energy Management System
EMMS	Electricity Market Management System
kV	Kilovolt
MW	Megawatt
NEM	National Electricity Market
MLTS	Moorabool Terminal Station
GTS	Geelong Terminal Station

1 Introduction

At 1418 hrs on 8 March 2012, the No.1 and No.2 Geelong (GTS) – Moorabool (MLTS) 220 kV lines in Victoria simultaneously tripped and locked out, during communication circuit modification work by SP AusNet. The No.1 line was returned to service at 1527 hrs and the No. 2 line was returned to service two minutes later.

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.

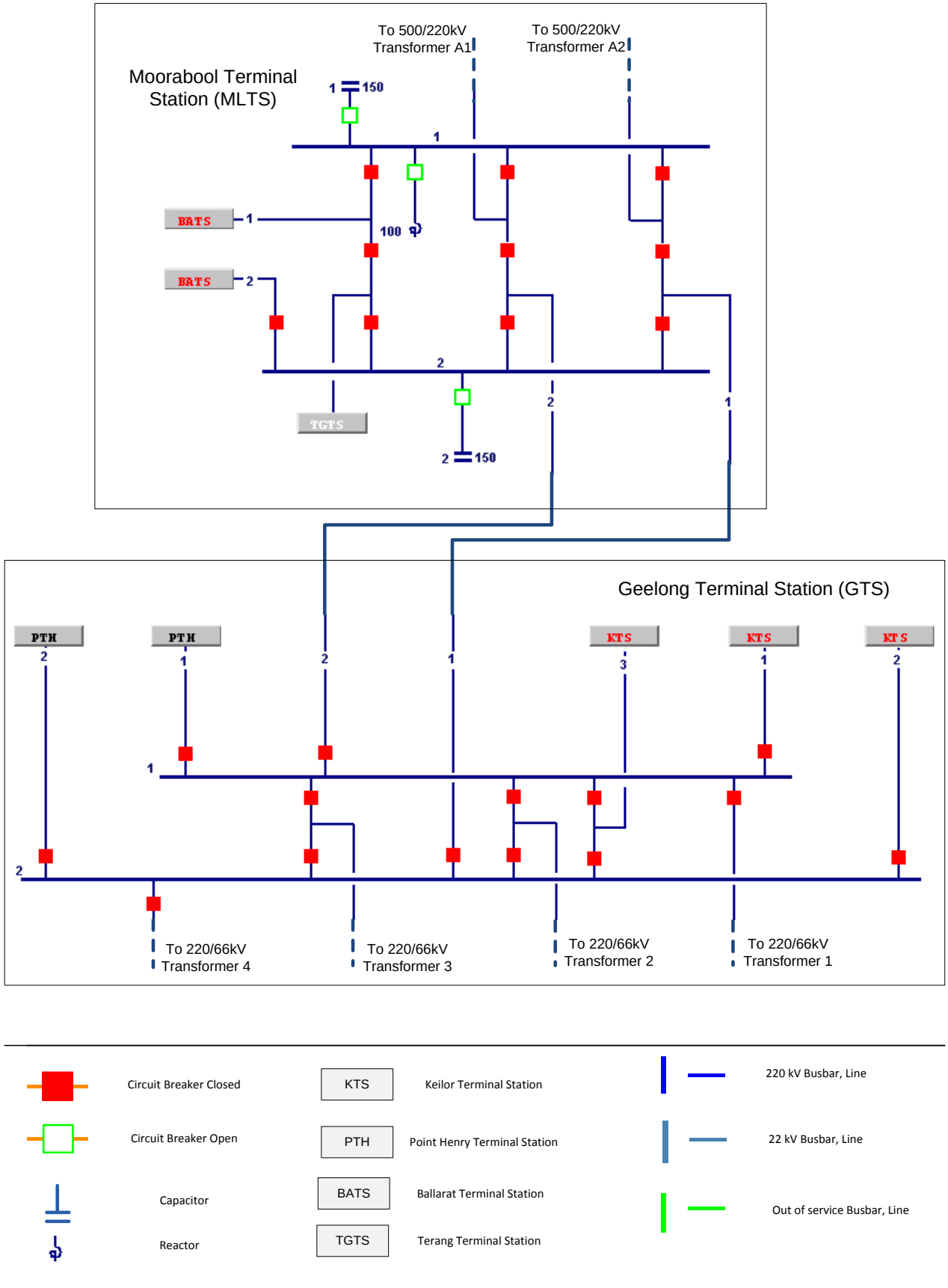
This report is largely based upon information provided by SP AusNet. Data from AEMO's Energy Management System (EMS) and Electricity Market Management System (EMMS) has also been used in analysing the incident.

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

2 Pre-Contingent System Conditions

Prior to the incident all 220 kV lines in the vicinity of MLTS and GTS were in service. 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.

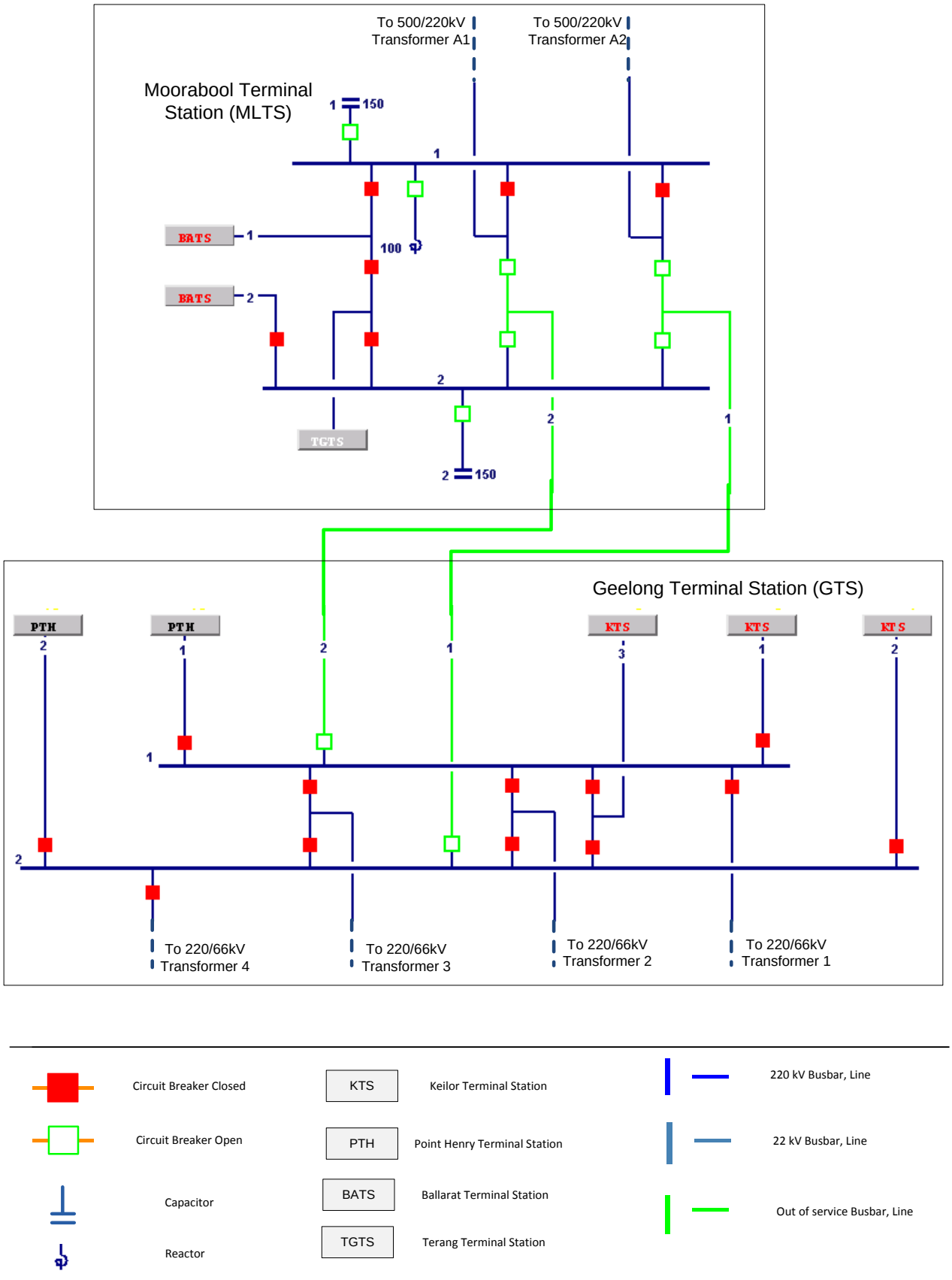
Figure 1: Status of the power system prior to the incident



3 Summary of Events

At 1418 hrs on 8 March 2012, the No.1 and No.2 MLTS – GTS 220 kV lines tripped and locked out on the operation of the current differential protection scheme (X protection) of the two lines at GTS.

Figure 2: Status of the power system following the incident



4 Immediate Actions Taken

At 1527 hrs SP AusNet returned the two lines to service after restoring the communication circuits to previous routes.

At 1532 hrs AEMO issued Electricity Market Notice No.38272 to notify the market of the incident as a non-credible contingency event, and to advise that a similar event would not be reclassified as a credible contingency, given the circumstances of the incident were unlikely to reoccur.

5 Follow-up Actions

SP AusNet investigated the incident and found that the procedure undertaken during the communication circuit modification work caused asymmetrical send-receive signal paths in the communications circuits and unsynchronised multiplexers resulting in the operation of the protection relays[1], thereby tripping the lines.

SP AusNet will review their field work procedures to include requirements for coordination between protection and communications groups and isolation of relevant protections before conducting work on communications such as these to avoid similar occurrences in the future.

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.

7 Conclusions

The No.1 and No.2 MLTS – GTS lines simultaneously tripped due to asymmetrical send - receive signal paths in the communications circuits and the unsynchronised multiplexers.

There was no loss of load, and power system security was maintained throughout the incident.

AEMO correctly applied the criteria published in section 12 of its Power System Security Guidelines[2] in assessing that the circumstances of this incident did not warrant reclassifying similar incidents as a credible contingency event.

8 Recommendations

SP AusNet will update their field work procedures to prevent such an incident from reoccurring. SP AusNet will complete this action by the end of October 2012.

[1] The No.1 and No.2 MLTS – GTS lines use current differential protection that relies on the receipt of current measurements from remote end of the line via communication circuits.

[2] Clause 4.2.3B of the NER requires that AEMO establish criteria to use when considering whether a non-credible contingency event is reasonably possible. This is published in AEMO operating procedure SO_OP 3715 Power System Security Guidelines, which is available at: http://www.aemo.com.au/electricityops/3715.html