

POWER SYSTEM INCIDENT REPORT

MULTIPLE CONTINGENCIES IN NORTH QUEENSLAND ON 16TH AND 17TH FEBRUARY 2010

PREPARED BY: ESOPP

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FINAL

1. INTRODUCTION

At 17:35 hrs on 16th February 2010, both 7134 Townsville GT to Tully tee Cardwell 132kV line and 7135 Kareeya to Ingham South tee Cardwell 132kV line simultaneously tripped. As a result, approximately 3MW of load at Cardwell was interrupted. The load was restored at 17:53 hrs on the same day.

At 20:36 hrs on the 17th February 2010, both 7134 and 7135 lines tripped again resulting in loss of approximately 5MW of load at Cardwell. The load was restored at 20:52 hrs on the same day. Investigation by Powerlink indicates that both trips were attributable to lightning strikes on the lines resulting in high voltage faults on both lines.

This report has been prepared under clause 4.8.15 of the National Electricity Rule 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.

Information for this report has been provided by Powerlink. Additional information has been obtained from AEMO's Energy Management System and Market Management System.

All references to time in this report refer to Market time (Australian Eastern Standard Time).

2. SUMMARY OF EVENTS

At 17:35hrs on 16th February 2010, 7134 Townsville GT to Tully tee Cardwell 132kV line and 7135 Kareeya to Ingham South tee Cardwell line simultaneously tripped as a result of high voltage faults on both lines during severe thunderstorms. Figure 1 and Figure 2 in the following pages show the statuses of the network before and after the trips have occurred. Only network components that were affected by this incident are presented.

The incident on the 16th February resulted in both lines supplying Cardwell substation tripping, causing a 3MW load interruption. Both lines returned to service at 17:52hrs restoring the load at Cardwell.

At 17:35hrs on 17th February 2010, 7134 and 7135 lines tripped again during a severe thunderstorm resulting in a load interruption of approximately 5MW at Cardwell. The 7135 line and the load were restored at 20:52hrs on 17 February 2010.

7134 line was returned to service at 16:55hrs on 18 February 2010 after the replacement of a damaged surge arrester on this line at Ingham East substation.

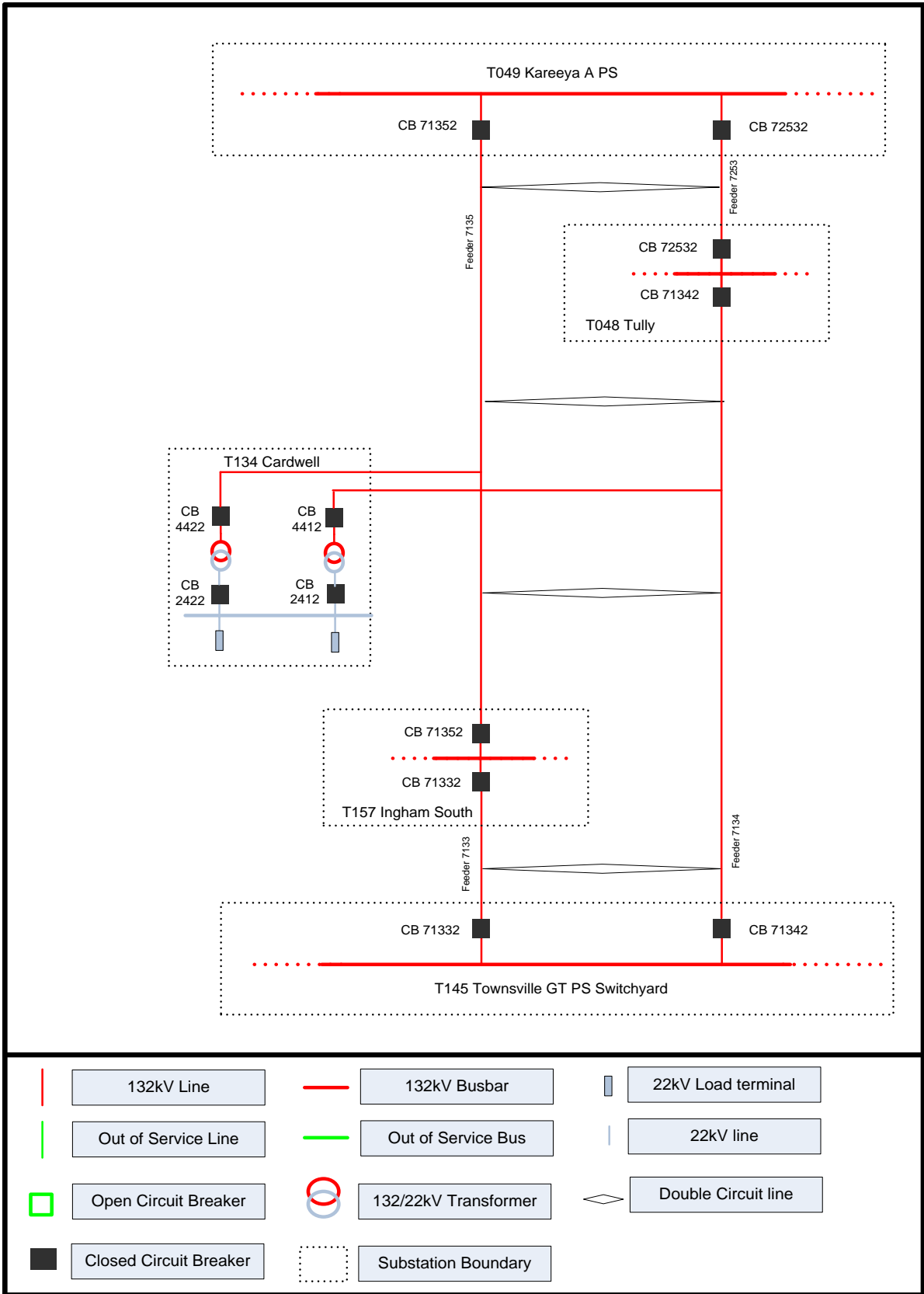


FIGURE 1: STATUS OF 132KV SUBSTATIONS INVOLVED IN BOTH CONTINGENCY EVENTS BEFORE THE TRIPS HAVE OCCURRED

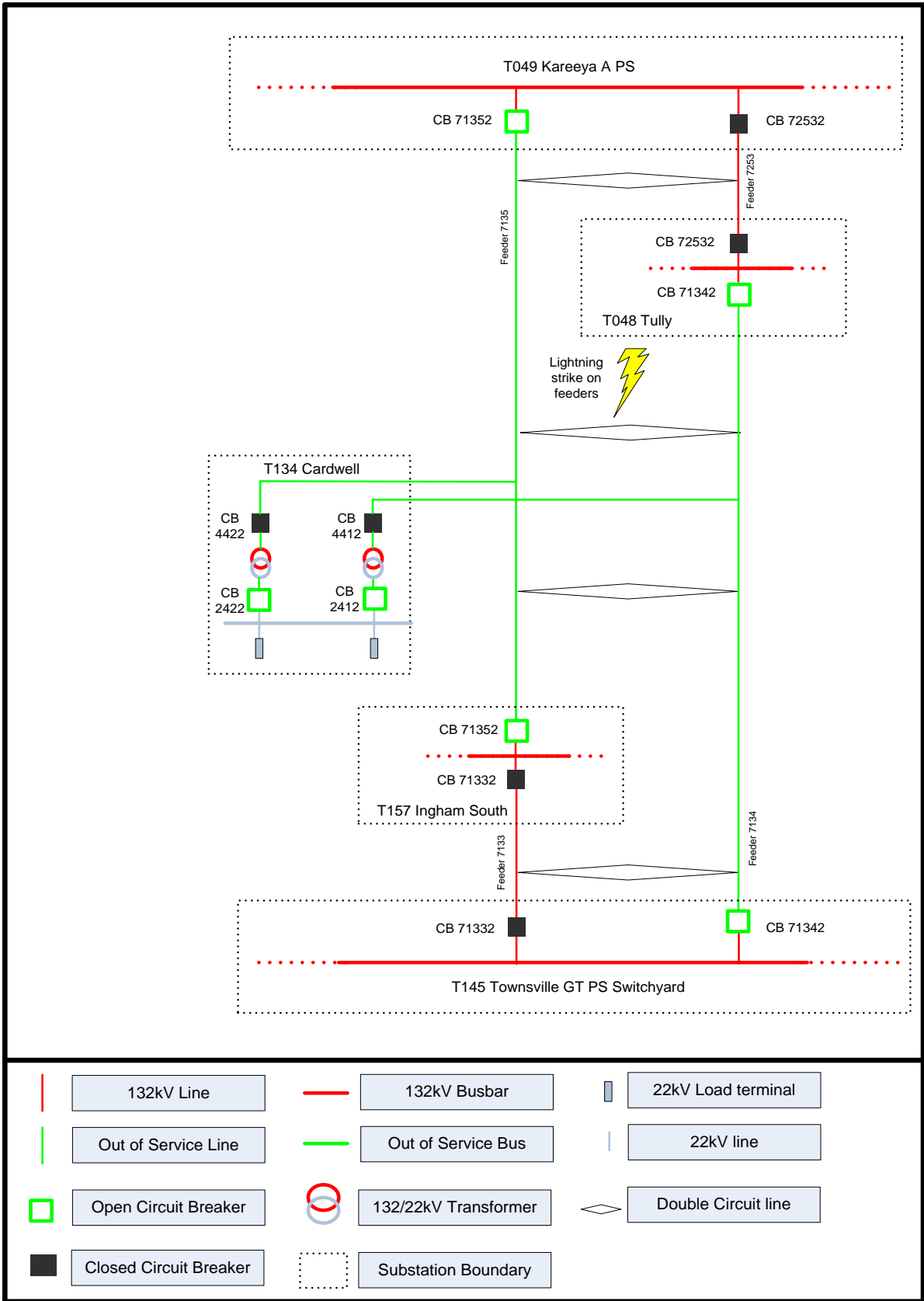


FIGURE 2: STATUS OF 132KV SUBSTATIONS INVOLVED IN BOTH CONTINGENCY EVENTS AFTER THE TRIPS HAVE OCCURRED

3. ANALYSIS OF EVENTS

According to Powerlink's reports on the two incidents, the lightning tracker system recorded lightning strikes consistent with the predicted fault locations by the protection relays. The lightning strikes in the two incidents resulted in high voltage faults on both 7134 and 7135 lines coincidentally. Protection systems operated correctly and cleared the high voltage faults on both lines in both occasions.

Following the second event it was found that the surge arrester on 7134 line at T164 Ingham East had developed an electrical fault during the incident on the 17th February 2010. The surge arrester was replaced and 7134 line was returned to service at 16:55hrs on 18th February 2010

4. POWER SYSTEM SECURITY

There were no power system security violations during this event. The power system frequency remained within the normal operating frequency band.

5. FOLLOW UP ACTIONS

Subsequent line patrol of 7134 and 7135 lines found flashed insulators at a location consistent with the distance to the fault predicted by protection relays.

6. CONCLUSIONS

At 17:35hrs on the 16th February 2010, the 7134 line from Townsville GT to Tully tee Cardwell and 7135 line from Kareeya to Ingham South tee Cardwell simultaneously tripped. As a result, 3MW of load was interrupted. At 20:36hrs on the 17th February 2010, the same lines simultaneously tripped again resulting in the loss of 5MW of load at Cardwell Substation.

Investigations established that both trips were caused by lightning strikes on the lines, resulting in high voltage faults. Load was restored with the return to service of the lines tripped during the events.

7. RECOMMENDATION

Nil.