POWER SYSTEM INCIDENT REPORT: TRIP OF 7153 AND 7154 132KV LINES IN QUEENSLAND ON 14/02/2010

PREPARED BY: Electricity System Operations Planning and Performance

FINAL

1. Introduction

At 17:40 hrs on 14 February 2010, both 7153 Lilyvale – Clermont and 7154 Clermont – Barcaldine 132kV lines tripped resulting in loss of 6MW load at Clermont and 19MW load at Barcaldine. The 7153 line auto-reclosed 10 seconds later, restoring the load at Clermont. Barcaldine power station was not in service at the time of the event.

This report has been prepared under clause 4.8.15 of the Rules 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 supplied to AEMO by Powerlink and Ergon. Data from AEMO's Energy Management and Market Systems has also been used in analysing the event.

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

2. Summary of Events

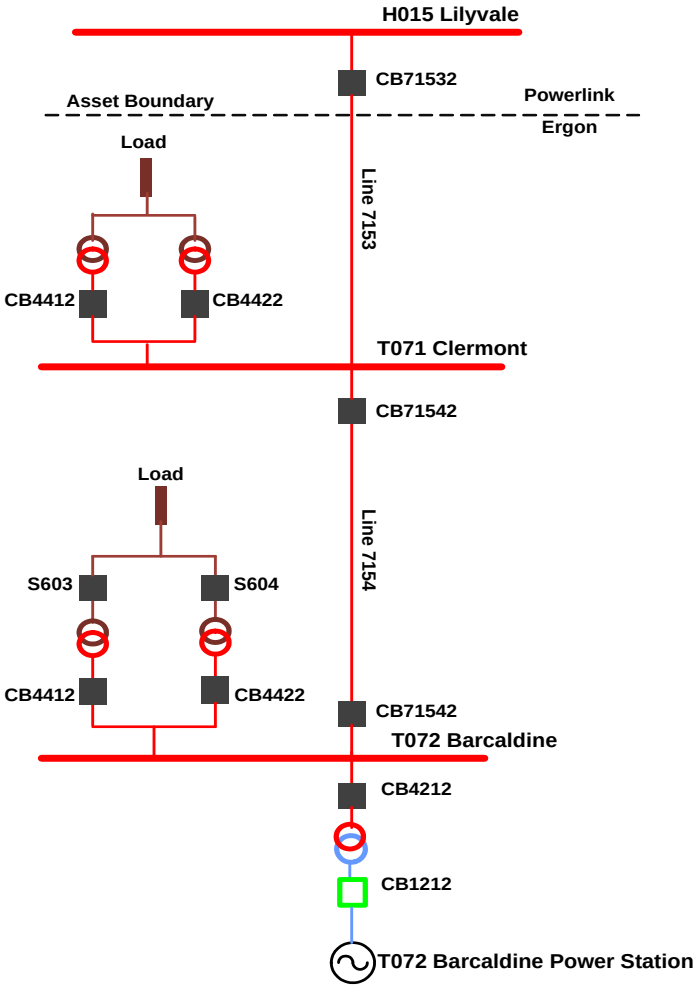

Figure 1: Network Topology before trip of the two lines

At 17:40 hours on 14 February 2010, a high voltage fault occurred on the 7153 Lilyvale – Clermont 132kV line, estimated to be within 5kms from the Clermont substation. The fault is believed to have been caused by lightning activity experienced close to Clermont substation at the time.

The distance protection systems at Clermont substation covering the 7153 line detected the fault and tripped CB71542 at the Clermont end of the Clermont - Barcaldine line. The protections at the Lilyvale substation also detected the fault within its Zone 2 reach and tripped CB 71532 in Zone 2 time. The trip of both lines resulted in the loss of 132kV supplies to Clermont and Barcaldine substations, interrupting approximately 25 MW of load.

Barcaldine Power Station was not in service at the time of the event.

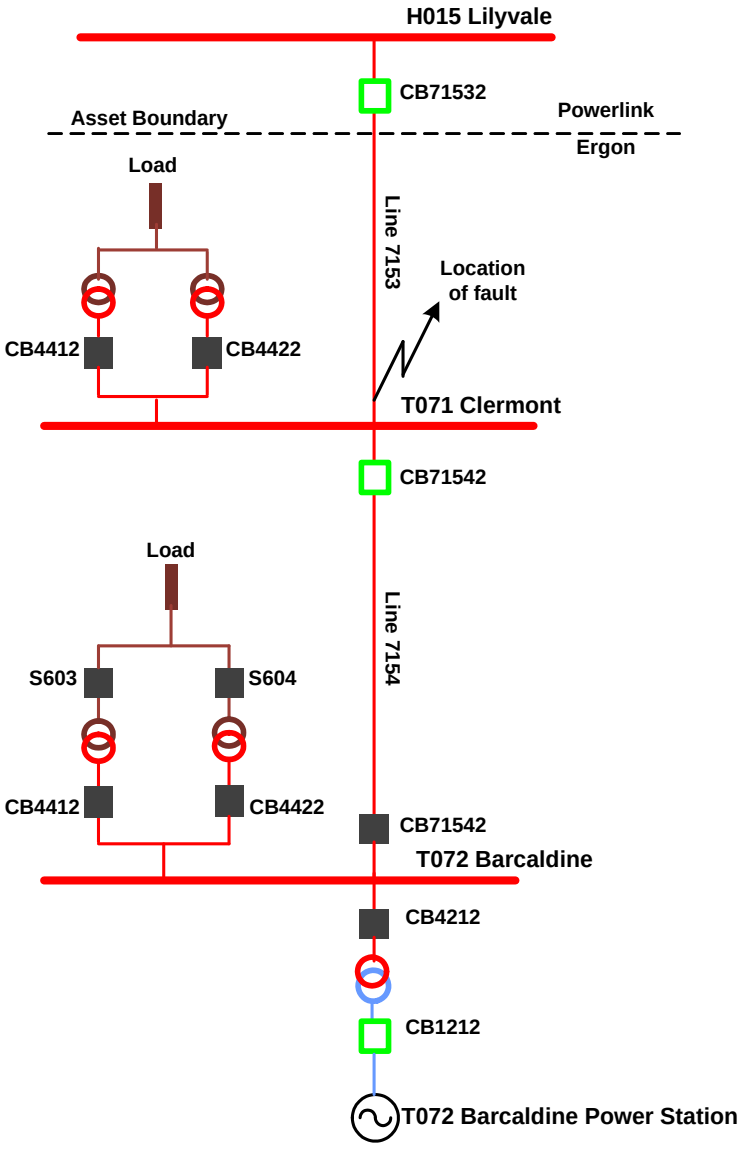

Figure 2: Network topology immediately after trip of the two lines

Ten seconds after the trip, 7153 line auto-reclosed restoring supply to the 132kV Clermont substation and the load supplied from Clermont (approx.6MW). The 7154 line and the load supplied from Barcaldine substation remained out of service.

The CB 71542 and 66 kV transformer circuit breakers S603 and S604 at Barcaldine were manually opened before energising the 7154 line to progressively restore Barcaldine substation. The 7154 line was re-energised by 18:04 hrs. Once the 7154 line was returned to service, the transformer circuit breakers were closed and load at Barcaldine was restored by 18:15 hrs.

Subsequent line patrol by Ergon Energy revealed physical damage to insulators of 7153 line, very close to Clermont.

Based on the information available on the event, on 17 February 2009, AEMO issued Market Notice 30442 informing that the loss of 7154 line is likely to result in the loss of 7153 line.

3. Power System Security Assessment

During the event, loss of approximately 6 MW of load was experienced at Clermont for a period of 10 seconds and approximately 19MW at Barcaldine for 35 minutes. Due to the relatively low load loss, no frequency excursions were experienced.

There were no power system security violations during the event.

Ergon Energy and Powerlink have confirmed that the operation of protection systems during this event were as designed.

4. Follow up

Based on the most recent information available, AEMO no longer considers the loss of 7153 Lilyvale - Clermont 132kV transmission line and 7154 Clermont - Barcaldine 132kV transmission line as a credible contingency and Market notice 32076 issued.

5. Conclusion

On 14 February 2010 at 17:40 hrs, both 7153 Lilyvale – Clermont and 7154 Clermont – Barcaldine 132kV lines tripped due to a high voltage fault on the 7153 line. The high voltage fault has been attributed to lightning activity in the vicinity of Clermont substation. There was loss of 6 MW load at Clermont and 19MW load at Barcaldine as a result of the event. The 7153 line auto-reclosed 10 seconds later restoring the load at Clermont. The load at Barcaldine was restored by 18:15 hrs. The protection systems at Lilyvale and Clermont operated as designed during this event.

6. Recommendation

Nil