

PLAYFORD 275KV EAST BUS TRIP ON 27 JULY 2010

PREPARED BY: Electricity System Operations Planning and Performance

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FINAL

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1 Introduction

On 27th July 2010 at 16:28 hours, the Playford 275kV East bus tripped causing both Playford B generating units 1 and 3 to trip and to off load the No.2 Playford – Davenport 275kV line. Playford generating units 2 and 4 were not in service at the time of the incident.

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 supplied by ElectraNet has been used to prepare this report. Data from AEMO Energy Management and Market Systems have 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

On 27th July 2010, in preparation for the replacement of circuit breaker BC2, part of the 275kV busbar surrounding BC2 was isolated as shown in Figure 1 below.

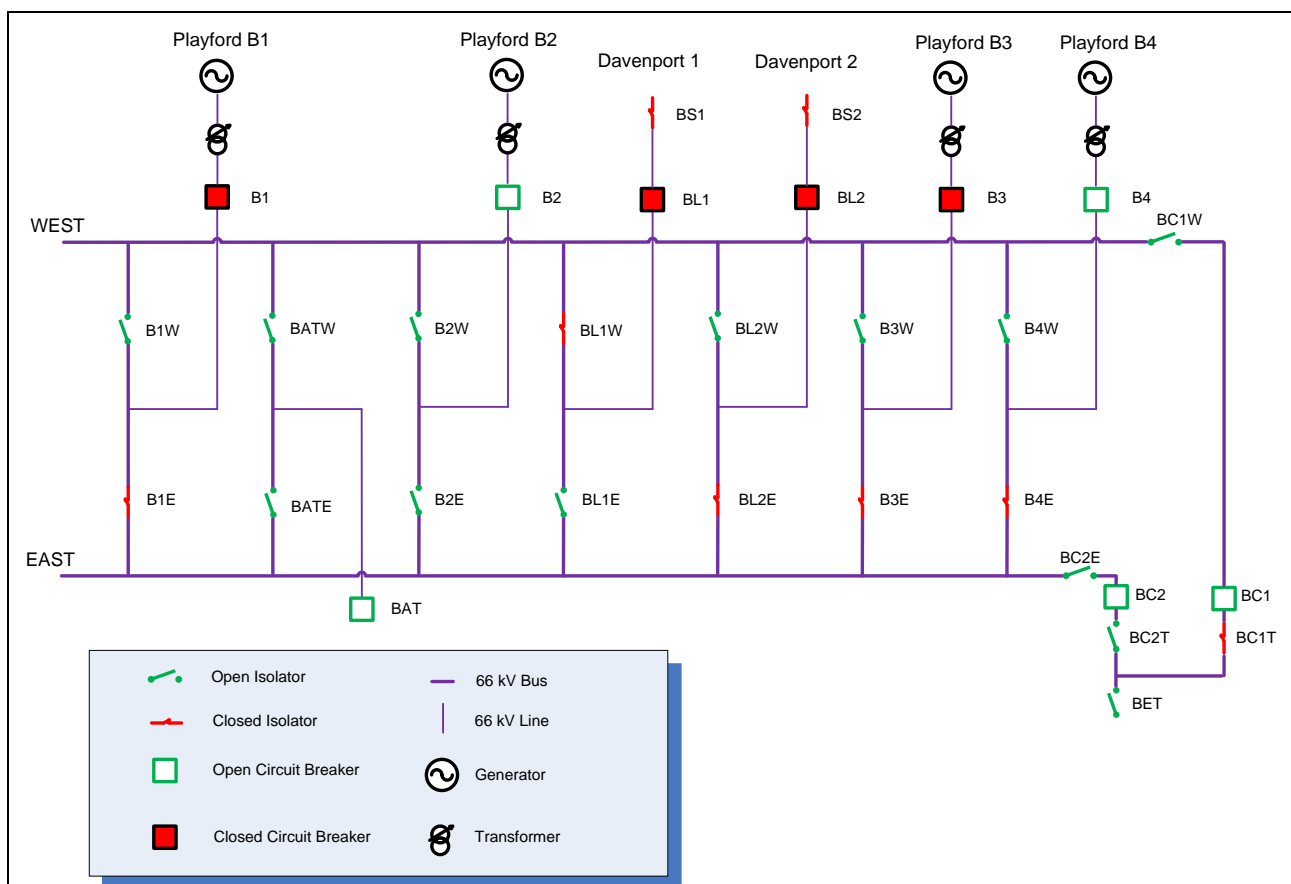


Figure 1 Playford 275kV system configuration during BC2 replacement

As part of the planned work, some of the secondary wiring associated with circuit breaker BC2 was being removed when one of the wires associated with the East bus zone protection inadvertently came into contact with an earth wire. The earth in this case was above the zero potential due to a non-related pre-existing earth fault.

This triggered trip signals to be sent to circuit breakers B1, B3, BL2 and BC2 (already open for CB replacement) due to the operation of the East bus zone protection and bus zone back-up protection simultaneously. The bus zone protection systems operated as designed to trip the circuit breakers.

Figure 2 below shows the state of the Playford bus following the operation of the bus zone protection.

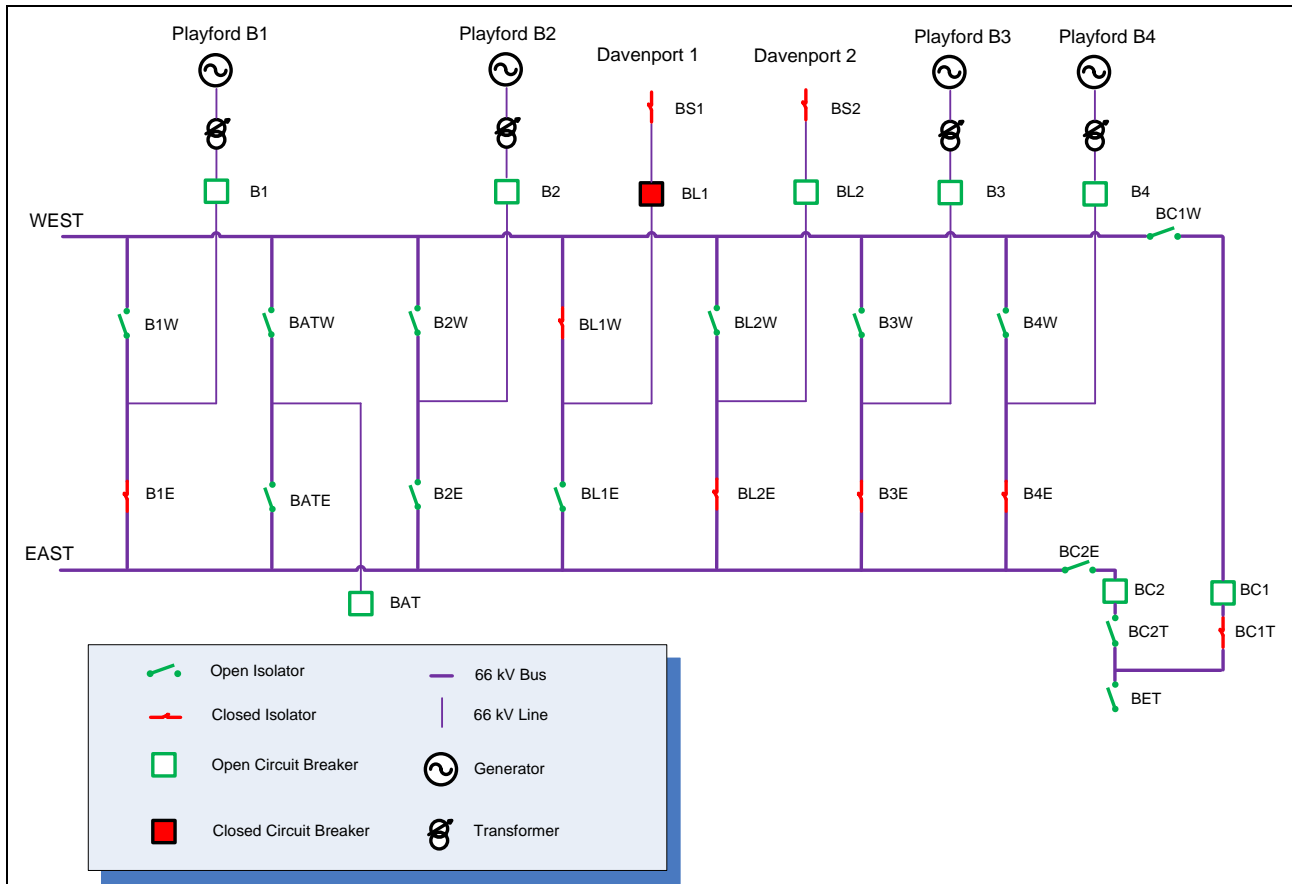


Figure 2 System configuration after East bus zone protection was activated

As a result of the bus bar trip, the No.1 and the No.3 generating units at Playford power station tripped, disconnecting approximately 85 MW of generation from the power system.

The generating unit No. 1 was brought back to service at 17:26 hours via the West bus while the generating unit No. 3 was returned to service via the East bus at 21:09 hours on the same day.

3 Power System Security Assessment

Approximately 85 MW of generation was disconnected from the power system as a result of this power system incident however the frequency remained within the frequency operating standard.

The power system remained secure throughout the event.

4 Follow Up Actions

Subsequent investigations by ElectraNet revealed that the inadequate secondary system isolation led to this incident. The earth wire was above the zero potential because of a pre-existing fault that provided a positive DC path to the bus zone protection systems. The faulty wiring connecting the DC positive to earth wire was repaired on 28 July 2010.

ElectraNet has issued instructions to relevant staff reinforcing the importance of properly isolating the relevant equipment when undertaking similar work in the future.

5 Conclusion

At 16:28 hours on 27 July 2010 the operation of bus zone protection of the 275kV East bus bar of the Playford 275 kV substation caused the tripping of generating units B1 and B3 and off-loading of the No. 2 Playford – Davenport 275kV line. Approximately 85 MW of generation was disconnected from the power system as a consequence. No power system security violations resulted from this incident.

The cause of the event was the failure to adequately isolate secondary systems combined with a pre-existing earth fault. The source of the earth fault was found and repaired by ElectraNet. Relevant ElectraNet employees have been issued with instructions to correctly isolate secondary systems when undertaking similar work in the future.

6 Recommendation

Nil.