POWER SYSTEM INCIDENT REPORT SIMULTANEOUS TRIP OF BRAEMAR POWER STATION UNITS 1 AND 2 ON 10 JANUARY 2011

PREPARED BY: ESOPP

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FINAL

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1 Introduction

At 1708 hrs on 10 January 2011, generating units 1 and 2 at Braemar Power Station tripped simultaneously, resulting in a loss of 300 MW of generation in Queensland.

This report has been prepared under clause 4.8.15 of the National Electricity 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 provided by Alinta Energy. 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 1708 hrs on 10 January 2011, generating units 1 and 2 at Braemar Power Station tripped resulting in a loss of 300 MW of generation in Queensland. Prior to the event, unit 1 was at 151 MW and unit 2 was at 149 MW.

Generating units 1 and 2 at Braemar are fed off a common gas supply system, with two parallel supply paths in the gas supply system. The high gas pressure protection operated on one supply path, closing that gas supply path due to sensing a high gas pressure. As a result, both 1 and 2 generating units continued to draw gas from the remaining supply path. A single gas supply path only has the capacity to supply a single unit. This led to insufficient fuel supply and combustion failure which caused both units to trip.

Generating unit 3 had been continuously operating at full load during the previous two days and remained at 151 MW during the incident.

It was also noted that there was no operation of electricity power system equipment at Braemar substation or any other substations in the vicinity of Braemar.

AEMO was informed by Braemar Power Station that the fault was isolated and no further coincident tripping would be likely. Based on this advice, AEMO determined that reclassifying the loss of both No.1 and No.2 generating units at Braemar power station as a credible contingency was not required.

There were some delays in returning the generating units 1 and 2 into service due to local flooding experienced in the area. The unit 1 was returned to service at approximately 1930 hrs on the same day. Specialist personnel were transported to the power station on 11 January 2011 to investigate the fault and make unit 2 available for service.

AEMO issued Market Notice No. 34013 at 1913hrs and Market Notice No. 34015 at 1955 hrs on the day of the incident to advise of the incident.

Figures 1 and 2 below show relevant parts of the power system before and after the incident.

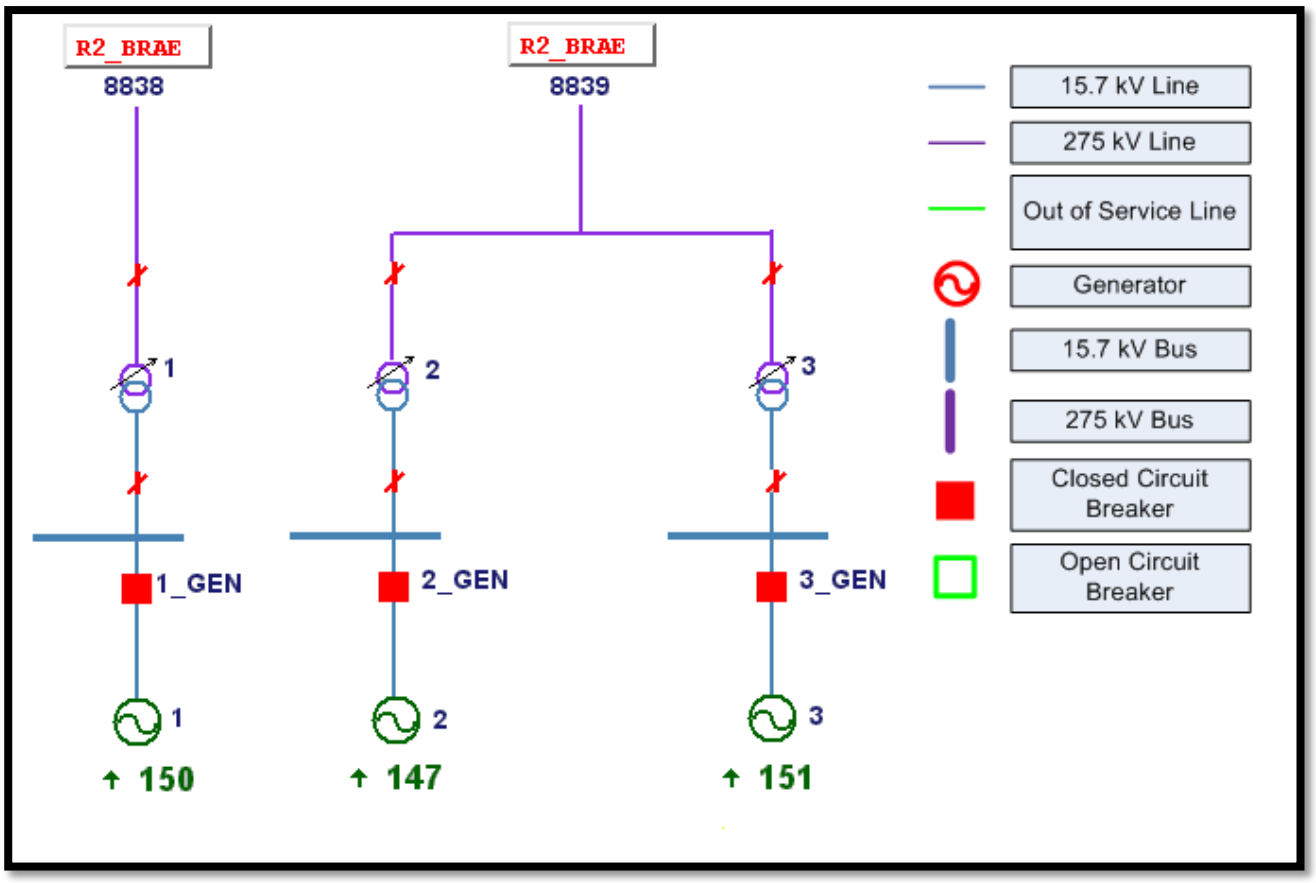

Figure 1 –Braemar Power Station before the event

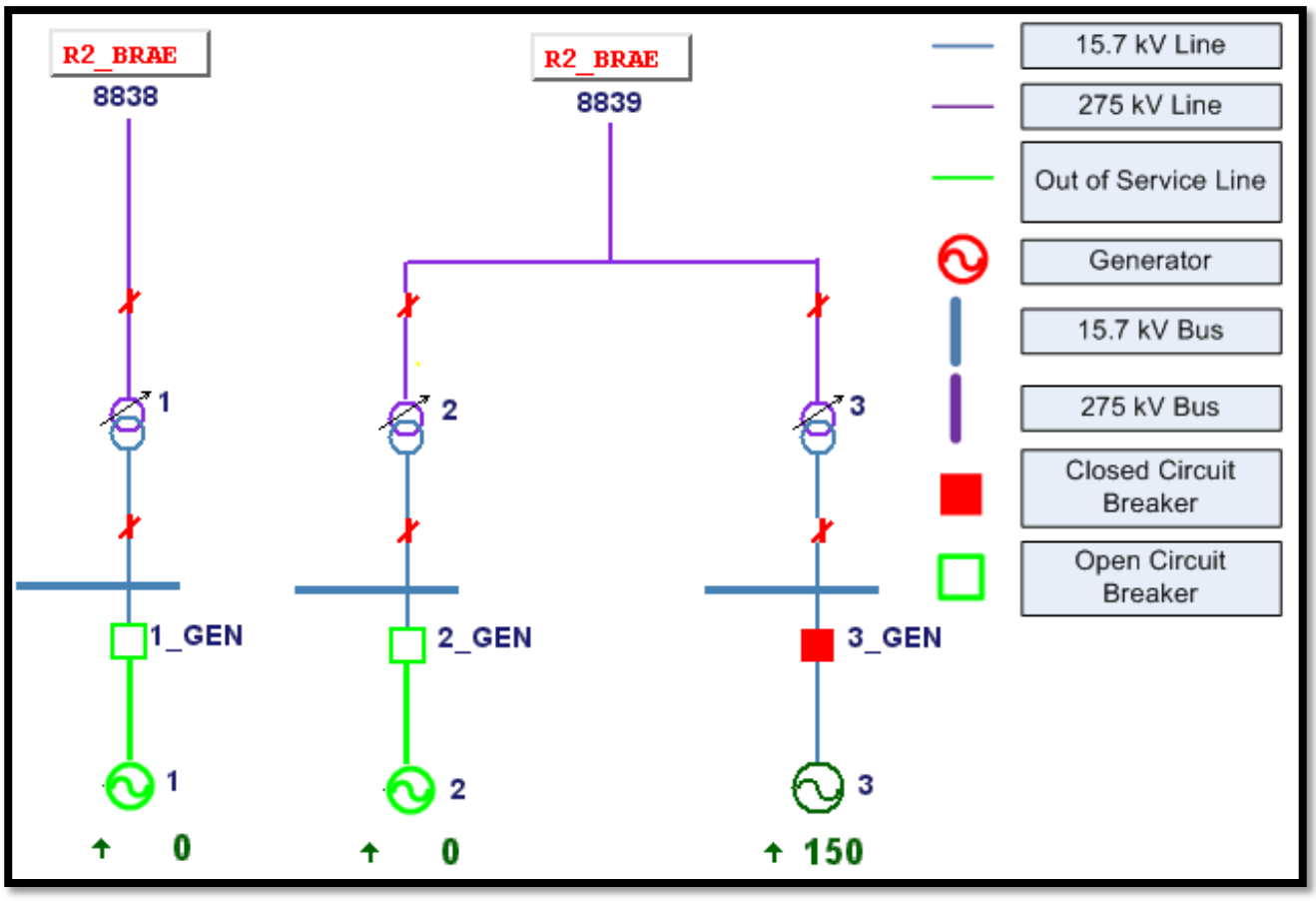

Figure 2 – Braemar Power Station immediately after the event

3 Follow up actions

The following actions were undertaken by Alinta Energy in response to this incident:

- Pressure reducing regulators were tested by independent consultants and found to operate successfully under test conditions
- The over pressure protection device was tested and found to be slightly low in calibration. This device was re-set and tested
- Engineering review of the system indicated that the settings of the high pressure shut down valves were low and these devices have since been reset
- Pressure transmitters were tested and found to be within calibration
- As a precautionary measure, all the related gas pressure reducing regulator valves were inspected and overhauled
- After subsequent investigations, Alinta Energy plans to install a cross over connection between the gas supply system feeding 1 and 2 generating units and the gas supply system feeding the 3 generating unit. This will ensure the shutdown of one gas supply path is unlikely to result in tripping of generating units due to insufficient fuel supply.

4 Power System Security

This event resulted in a loss of 300 MW of generation. There were no violations of power system security during the event. The system frequency remained within the normal operating band during this incident.

AEMO made the decision not to reclassify the loss of Braemar 1 and 2 generating units as a credible contingency based on information provided by Alinta Energy.

5 Conclusions

An incorrect operation of high gas pressure protection caused the trip of generating units 1 and 2 at Braemar Power Station. It has not been able to establish the exact cause of this protection operation. Alinta Energy has undertaken suitable actions to minimise similar occurrence in the future.

6 Recommendations

Alinta Energy proposes the following corrective actions in relation to this incident and they are accepted by AEMO. Alinta Energy will inform the progress of these actions by mid June 2011.

1. Alinta Energy will investigate whether any improvements can be made to the existing routine test and inspection regime of the gas yard to ensure ongoing reliability.
2. Alinta Energy will investigate options to improve real time data recording for future fault finding.
3. Alinta Energy will install a cross over connection between the gas supply system feeding 1 and 2 generating units and the gas supply system feeding the 3 generating unit.