Q. Re: Page B-20: Provide details of the occurrences of failed batteries in the past five (5) years and indicate the effect on the grid of each of these failures.

A. At the Holyrood plant there are four UPS systems. UPS # 1,2 & 3 are for each generating unit and UPS # 4 is for common station services. These UPS's provide critical AC station services for the generating units.

The following is the list of failed battery replacements that have occurred over the last 5 years:

UPS # 3 – Replaced one failed cell – May 24, 2005
UPS # 4 - Replaced two failed cells - May 24, 2005
UPS # 1 – Replaced three failed cells – May 24, 2005
UPS # 1 – Replaced battery bank – September 15, 2004
UPS # 2 – Replaced battery bank – September 23, 2004
UPS # 2 – Replaced three failed cells – June 16, 2003.
UPS # 1 – Replaced three failed cells – May 2, 2002

The failures on UPS # 1, 2 & 3 were detected during the regular PM inspections and the replacements were made before the failure could cause a generating unit outage.

The failure on UPS # 4 was not detected during the regular inspections. The failure caused an interruption to the station service controls systems which resulted in power outages to some areas of the plant, but fortunately there were no generating unit outages.

If the battery were to fail on UPS 1, 2 or 3 and was not detected then it could result in a unit outage and a loss of up to 170 MW to the system. A loss of this magnitude would initiate the under-frequency load-shedding scheme, which would interrupt the energy supply to major portions of the provincial system.

The battery monitoring system proposed would continuously monitor the batteries in all four UPS's and initiate an alarm should a battery or battery cell failure occur. This advance warning would ensure corrective action could be taken and generating unit outages would be prevented.