Q. Reference: Generation Hydro - Lookout Brook Hydro Plant Refurbishment and Tab 1.2 Lookout Brook Hydro Plant Refurbishment - Section 8 - Battery Bank.

(a) What is the expected service life of the C & D Technologies lead – antimony battery bank that was installed in 1996?

(b) Is there a hazard associated with the type of battery bank producing hydrogen gas during charging in its present location?

(c) In section 8 it states, "To eliminate the requirement to construct a separate battery room the battery bank will be replace with gel cell technology." Please elaborate on the source of this 'requirement'.

(d) How often is the battery bank charging and how long does the charging take?

(e) Is it necessary for personnel to be present during battery bank charging?

A. (a) The life expectancy of an lead-antimony battery bank is between 10 and 15 years. Battery banks used in power plants typically have a higher rate of failure than those in substations due to the high ambient temperatures and higher load cycling experienced in hydro plants.[1]

(b) Yes. The hydrogen produced during charging presents an explosion hazard that has resulted in the requirement for mechanically ventilated battery rooms with explosion proof electrical fixtures for all new installations.

(c) The requirements for battery banks to have mechanically ventilated battery rooms are included in the Canadian Electrical Code, Part 1 (C22.1-09):

(1) Rule 26-544, Location of storage batteries, states "Batteries with exposed live parts shall be kept in a room or enclosure accessible only to authorized personnel".

(2) Rule 26-546, Ventilation of battery rooms or areas, states "Storage battery rooms or areas shall be adequately ventilated."

The gel cell technology batteries planned for Lookout Brook are sealed units which do not emit hydrogen gas while charging. They will not require a separate battery room to achieve adequate ventilation.

(d) The battery bank is being continuously charged with a trickle charge and is switched to a higher rate of charge for a 24-hour period once per month. This is controlled automatically by the battery charger.

[1] All battery chargers are now purchased with temperature compensation to address this problem.

(e) No. However, personnel work in the hydro plant during the battery bank charging process.