Q. **Transmission Operations**

Describe Hydro's Supervisory Control and Data Acquisition (SCADA) system and how it interfaces with Hydro's Energy Management System (EMS).

A. Hydro's Energy Management System (EMS) is the Monarch system from Open Systems International. It was commissioned in June 2006.

The SCADA function of the EMS is performed by the OpenSCADA module. This module retrieves data from Remote Terminal Units located in the terminal and generating stations and stores the real time data in a proprietor database.

Any EMS application that requires real time data, will acquire this from the SCADA database using an Application Programming Interface (API). The API is a set of functions contained in a Dynamic Link Library that provide programmatic access to various EMS data or system functions.

Some of the notable features of OpenSCADA are:

1. Secured operation via Areas of Responsibility and logins;
2. Efficient data processing for very large systems supporting hundreds of thousands of points;
3. Efficient multi-level tagging;
4. Support for continuous SCADA snapshots for archiving; and
5. Alarm processing system which includes advanced alarming techniques such as:

a. Efficient alarming for a number of conditions including multiple limits; Rate of Change and Sudden Rate of Change;
b. Archiving of alarms in the Historical database;
c. Alarm filtering based on a number of indicators;
d. Alarm query and sort capability; and
e. Capability to process thousands of alarms with no degradation in system performance.