



CONNECTION ASSESSMENT & APPROVAL PROCESS ASSESSMENT SUMMARY

Applicant: Ontario Power Generation Inc.

**Project: Chat Falls GS – Automate Station, Replace
Governors, and Upgrade Protection
Schemes**

CAA ID: 2002 – EX094

**Long Term Forecasts & Assessments Department
Consistent Information Set Department**

Date: December 20, 2002

1.0 Description of Proposal

Chat Falls GS is a hydroelectric generating station located on the Ottawa River at the provincial boundary with the Province of Quebec in eastern Ontario. The generating station has eight generating units with a maximum station continuous rating of 192MW. The Ontario Power Generation Inc. (OPG) and Hydro Quebec (HQ) share joint ownership of the station. OPG owns units G2 to G5, while HQ owns units G6 to G9. However, OPG has an agreement with HQ to operate and maintain their facilities at Chat Falls GS.

Chat Falls GS was placed in service in the early 30's and is presently locally controlled. Some of the facilities require upgrading or replacement to extend the life of the generating station.

The applicant is proposing to:

- ❖ Replace the existing mechanical governors for all eight generating units with new digital governors
- ❖ Replace the existing mechanical and electrical generating unit protection for all units
- ❖ Replace existing transformer protection for all generating unit step-up transformers T10, T20, and T30
- ❖ Replace existing bus protection for the 13.8kV buses B1, B2, B3, B4, and Q
- ❖ Convert the local control scheme to a remote control scheme from Chenaux GS by replacing the existing hard wired bench board system with a new microprocessor based control system

The electrical power output of the station and the connection to the IMO-controlled grid will not be changed.

The scheduled in-service date of the proposal is Q4 2003

2.0 Assessment

The Connection Assessment and Approval process does not cover work involving protection and control systems. The Transmission System Code, issued by the Ontario Energy Board, and the Connection Agreement between the applicant and the transmitter HONI govern the proposed replacement of protection systems for generating units, unit step-up transformers, and low voltage station buses. This assessment will assume that the proposed protection modifications would comply with the requirements specified in the Transmission System Code.

The applicant will not be changing the electrical power output of the generating station and the connection facilities to the IMO-controlled grid. Consequently, the proposed work at Chat Falls GS is not expected to have any adverse impact on the thermal loading of the transmission facilities, voltage profile of the system, or the fault levels in the area.

The proposed replacement of the existing mechanical governors with new digital units will affect the performance of the turbines. Studies will be required to evaluate the performance of the new governors and their impact on the turbine units, but at this stage, the applicant is unable to provide final simulation model and governor parameter values for the new governors. However, the applicant has assured the IMO that the new governors will meet the applicable *Market Rules* and the new units will likely perform better than the existing units. As long as the new governors match the performance levels of the existing units, the proposed replacement of governors would have no adverse impact on the IMO-controlled grid.

Chat Falls GS – Automate Station, Replace Governors, and Upgrade Protection Schemes

Chat Falls GS is one of two generating stations presently providing black start capability to the IMO-controlled grid. The existing Ancillary Services contract covering black start capability will expire in April 2003. Upon the completion of the proposed modifications at Chat Falls GS, the generating station will be automated and remotely controlled from the control centre at Chenaux GS. Black start capability at Chat Falls GS will no longer be available.

Whether Chat Falls GS is locally or remotely controlled would not have any impact on the IMO-controlled grid. However, the loss of black start capability could impact on the capability to restore the IMO-controlled grid. The IMO is fully aware of the development at Chat Falls GS and has taken this into consideration in the present Request for Proposal for the new Ancillary Services contract.

3.0 Connection Requirements

After final testing and fine tuning of the new digital governors, the applicant must submit simulation model and final governor parameter values that are suitable for simulation studies to confirm that the new governors will at least match the performance levels of existing units.

4.0 Notification of Approval

Based on the above assessment, it is recommended that subject to meeting the connection requirement specified, a Notification of Approval for the proposed modifications at Chat Falls GS be issued to the applicant.



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