

Nalcor Energy Churchill Falls Hydro Generating Station Unit A3 Modernization

CLIENT

Nalcor Energy

LOCATION

Churchill Falls, Newfoundland and Labrador

PROJECT DESCRIPTION

Nalcor Energy generates and transmits electricity to utility and industrial, residential and retail customers. Churchill Falls is located 240 km east of Labrador City and supports a community of 650 people. The Nalcor facility there contains 11 turbines with a rated capacity of 5,428 MW. The Churchill Falls Generating Station is the second largest underground hydroelectric plant in North America and one of the largest underground powerhouses in the world. On average the facility generates more than 34 terawatt hours of energy or roughly one percent of the world's hydroelectric power.

Black & McDonald (B&M) completed the installation and retrofit of all controls pertaining to the Unit A3 Hydro Turbine for CFLCo (Nalcor). In addition, many auxiliary systems and component upgrades were completed. B&M worked a total of 5,100 hours to complete the modernization.

B&M SCOPE OF WORK

The scope of work included:

- Supplying/installing all electrical materials and cables required to install owner supplied equipment and cable tray and supports
- Installing a new PLC cabinet for governor, intake gate, Instrument I/O, ESS and Generator I/O
- Installing new disconnect switches, power panel and transformer for AC distribution
- Disconnecting and removing all existing wiring/cables
- Dismantling and removing of existing unit control board and installing a new unit (20ft. x 6ft.)



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- Dismantling and removing an old exciter unit and replacing it with a new one
- · Retrofitting an exciter cooling water piping to existing system
- Dismantling and retrofitting Instrument I/O cabinet
- Retrofitting governor oil pumps, ISO fans and cooling water motor starters
- Retrofitting existing governor hydraulic actuator with new wiring, pressure switches, control blocks and stainless tubing for 600 psi
- Modifying hydraulic accumulator tank air system by placing a new air admission control board in the existing air piping line, 600 psi, government-regulated system
- Differential pressure transmitters for accumulator tank level, including tubing and wiring
- New instrumentation in turbine pit, pressure switches, water level transmitter, manual control station, LVDT cam and proximity switches and remove existing bearing RTDs

BENEFITS TO CLIENT

Using B&M's know-how, Nalcor benefitted from completing the project in four months efficiently, safely and satisfactorily, preparing it for future growth.



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