Contribution ID: **1231** Type: **Oral (Non-Student) / orale (non-étudiant)**

The automation of the NRC ice load monitoring system at the Confederation Bridge

Thursday 16 June 2016 13:45 (15 minutes)

Since 1997 the National Research Council Canada has been monitoring ice loads on the Confederation Bridge. It has proven a valuable research platform to examine full scale ice loading events on a sloped structure. Ice loading results from the bridge are still used today in order to validate numerical models which are used to optimize the designs of offshore platforms which could be subjected to ice loads. The ice load monitoring system is comprised of four tilt meters, two video cameras and an anemometer near the navigation span (centre) of the bridge. Historically, the calculation of ice loads on the bridge has been very labour intensive and requires a detailed analysis of the data from each of the 7 sources. This has limited the ice load analysis to extreme ice loading events.

Beginning in 2011 the NRC has been connecting the equipment to the internal power and communications network of the Confederation Bridge. By combining these new hardware upgrades with advances in computational power and image processing techniques the National Research Council now have all of the tools to develop a quasi-real-time ice load monitoring system. We will present an update of the current status of the ice load monitoring system and examine specific ice loading event which have occurred at the bridge.

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Session Classification: R2-6 General Instrumentation II (DIMP) / Physique générale des instruments II (DPIM)

Track Classification: Instrumentation and Measurement Physics / Physique des instruments et mesures (DIMP-DPIM)