Ice Profiler™ at LNG Terminal Site

The port of Gros Cacouna on the St Lawrence River downstream of Quebec City is the proposed site of an LNG offloading terminal. Trow Engineering, on behalf of TransCanada and Petro-Canada, hired ASL to collect and process current, wave and ice data at the proposed terminal location.

From October through November 2004 an ADCP was moored on site and provided high quality current and wave data. The current data were supplemented by drogued drifter tracks collected by ASL's project partner, Procean Environment Inc.

In November an ASL Ice Profiler was added to the mooring to collect ice draft data over the coming winter. A second ADCP was also added as, at present, the RDI ADCPs cannot simultaneously collect wave and bottom track data. The bottom-track data are needed to measure the ice velocity. The project is planned for one year, but may be extended.


BC Hydro uses new Shallow Water Ice Profiler™

ASL has introduced a new, smaller and more cost effective version of our well-known Ice Profiler product for use in rivers and lakes at depths up to 10 meters. This new product, the Shallow Water Ice Profiler, (SWIP) builds on the success of the Ice Profiler but differs in that it is powered by cable connections to the shore, provides real time output and, because it is intended for shallow water applications, does not require a pressure housing. In addition, all but essential components have been moved to a shore panel, thus minimizing replacement costs if the underwater unit is lost to ice. These developments not only optimize the product for shallow water applications, but also have resulted in significant price reductions.

BC Hydro of Burnaby, BC Canada, is using the SWIP on the Peace River where they own and operate the Bennett and Peace Canyon dams. During the winter months, ice in the river starts to form and can cause flooding through ice jamming. BC Hydro therefore has an interest in managing flood risk while optimizing power production. One method is to use river ice computer models to help forecast and avoid ice jam problems. However, extensive field data are needed to calibrate these models.

The new Shallow Water Ice Profiler (SWIP) from ASL is being used to collect these data at the town of Peace River, Alberta, the largest community on the Peace River with ice jam flooding potential. The SWIP has been placed on the riverbed and will measure the position of the bottom of the ice floes. Comparing the data to a measured water level, the thickness of the ice can be calculated. The SWIP will also be able to measure the surface ice concentration since it will give values equal to the water surface for readings with no ice. Once a solid ice cover forms, the SWIP will monitor the ice thickness growth and erosion during the rest of the ice season.
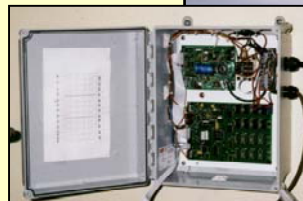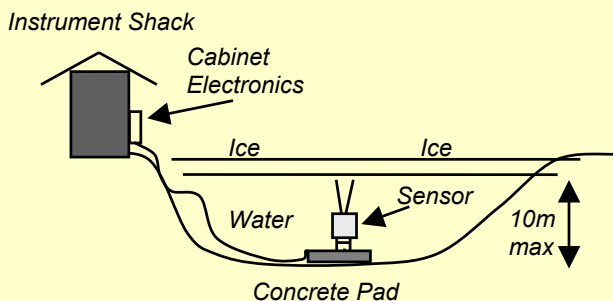
ASL's 3-D Numerical Model Approved for Use In Environmental Assessment of Canadian Power Plant Expansion

The use of an advanced numerical model to predict water flow patterns and water temperatures at the confluence of the Columbia and Pend d'Oreille Rivers has been approved by regulatory agencies involved in the Waneta Expansion Project proposed by Columbia Power Corporation of Castlegar, BC Canada.

Following verification studies supported by extensive field testing and peer review by government scientists, the model has now been accepted by Environment Canada, the Department of Fisheries and Oceans and the BC Environmental Assessment Office for use in the environmental permitting process.

The model, developed by ASL, is based on the fully three-dimensional Navier-Stokes equation along with a second order turbulence closure scheme.

Implemented with a very high resolution 3m horizontal grid size, with 10 vertical layers, the model is being used to predict the physical effects of varying discharge levels from a planned Waneta Expansion Plant to be located near the existing the Waneta Dam on the Pend d'Oreille River just upstream of the confluence with the Columbia River in BC Canada.

ASL Goes North to Alaska

ASL has completed a project that provided winter ice draft and ice velocity data in Cook Inlet, Alaska. These data will be used to calibrate computer models of ice loads on multi-legged offshore oil platforms and these models will then be used for studies of more severe ice environments.

Because of high tidal currents (up to 6 knots), ASL designed a low profile bottom frame to incorporate the Ice Profiler™, ADCP, and other instruments. The instruments were deployed at a depth of 29 meters in December 2003 and recovered last summer. ASL is providing detailed analyses of the data collected for input to the computer models.

Ice Profilers™ in the Beaufort Gyre

ASL has just sold another *Ice Profiler* to Woods Hole Oceanographic Institute for deployment next summer. This will be added to the three that were deployed in the Beaufort Gyre Experiment in the summer of 2003. They were successfully recovered and redeployed last summer. The WHOI researchers are studying the Beaufort Gyre phenomenon and its impact on the Arctic climate system.

For more info see: http://www.whoi.edu/beaufortgyre/

NEW PRODUCT

IRIS:
Image **R**ecorder for **I**magenex **S**onar

ASL has developed a new product called IRIS (Image Recorder for Imagenex Sonar). IRIS is a data logger that is fully compatible with Imagenex Model 881A Sonar. IRIS has very low power consumption, which allows extended deployments of 3-4 months with its standard alkaline battery pack. It has up to 1 Gigabyte of data storage on compact flash. ASL has already sold one to the University of South Carolina and another to Florida Gulf Coast University.

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ASL staff with our Japanese agent Yasuhide Hara of Sanko Tsusho Co. Ltd., Tokyo. yasuhide.hara@nifty.ne.jp