



Current and Wave Surveys for New Tidal Power Project

Thanks to an innovative partnership between Lester B. Pearson College of the Pacific, EnCana Corporation, Sustainable Development Technology Canada and Clean Current Power Systems Incorporated, Canada's first free-stream tidal power project will be built at the Race Rocks Ecological Reserve, offshore Vancouver Island in British Columbia.

The tidal power project will enable the world famous marine park to tap into surrounding ocean currents and convert tidal energy to electric power for its needs beginning in early 2006.

In order to determine the optimum site for the turbine in terms of depth and tidal current, ASL Environmental Sciences was contracted by Triton Consultants of Vancouver to collect ADCP (Acoustic Doppler Current Profiler) transect data to verify Triton's numerical model and to narrow down the potential installation sites. ASL then collected current and wave data over the course of a lunar month at one, and 15 days later, at another of the selected sites.

The system is planned to be operational in early 2006.

For more information see:

www.racerocks.com/racerock/energy/tidalenergy/tidalenergy.htm



Canadian Centre for Ocean Gliders – Depth Sounder

ASL has provided four acoustic ranging instruments (Recording Depth Sounders / RDS) for deployment in the science bays of Webb Research Slocum gliders. The RDS instruments are derived from ASL's moored upward looking sonar instrument, which feature very low power consumption levels.



The low power consumption, combined with small size and low weight make the RDS sonars ideal for small Autonomous Underwater Vehicles (AUV's) such as ocean gliders.

Container Terminal Expansion Input

ASL carried out current surveys in Prince Rupert for Westmar Consultants. Two tide gauges and an ADCP moorings were deployed and transect work was done. The Port of Prince Rupert intends to construct a container terminal and the current data is required for the design of the expansion of the existing Fairview Terminal.

Current Measurements for Underwater Cable Route

Anyox Hydro Electric Corp (www.anyox.com) is planning to install approximately 20 km of underwater cable to tie its hydroelectric output from the old Anyox mine site across the Alice Arm into the BC Hydro grid. Oceanographic current measurements were required for the design, engineering and operation of the cable. ASL Environmental Sciences were hired as subcontractors to Terra Remote Surveys, who were doing the submarine and terrestrial cable route survey, to collect the current data. Current data were collected at four marine crossings/landfalls in the Alice Arm, North of Prince Rupert, BC. Transect data with the Doppler Current Profiler attached to the survey boat, were collected along portions of the marine cable routes. Fifty-eight (58) transects were completed. As well, a single point Doppler Current Meter was deployed for several days at Alice Rock and at Hastings Arm (east), where the strongest currents were expected. The measurements were successfully completed by July 2005.

Product Sales

3 Acoustic *Water Column Profilers*™ have recently been sold to Oregon State University and 1 to Royalty Technology Instrument Ltd. of Taiwan.

The Water Column Profiler monitors the presence and location of zooplankton within the water column by measuring acoustic backscatter returns with ultrasonic frequencies. It also detects the presence of fish and high levels of suspended sediments.

**NEW
PRODUCT**

Continental Shelf Ocean Level Sensor

ASL's latest product is the *Continental Shelf Ocean Level Sensor* for Tsunami studies. This is a real-time, bottom-mounted upward looking water level instrument, which is deployed at the edge of the continental shelf to detect unusual water levels due to tsunami activity.

Upgrades of a Hydrothermal Vent ASFM Instrument

ASL is carrying out an upgrade to a specialized acoustic scintillation instrument for Dr. Daniela Dilorio of the Dept. of Marine Sciences at the University of Georgia. The instrument was originally built in 1991 by ASL and first used at the Endeavour Ridge hydrothermal vent site (2200m deep) to measure the flow and turbulence properties of the vent plumes. ASL is upgrading the receiver to expand the number of data channels, greatly increasing the instrument memory capacity and replace the obsolete control and signal processing electronics.



ASL receives an Award from National Research Council's Industrial Research Assistance Program

for successfully developing and applying innovative technologies linking scientific research to commercialization, jobs, and economic growth. Dave Anderson (left), MP for Victoria and Martyn Ward, NRC presented the award to David Lemon (centre), president of ASL.

3-D Circulation Modeling for Potential Ocean Tidal Turbine Site

Numerical modeling simulations of ocean currents and water levels have been computed for Canoe Pass between Quadra Island and Maude Island in Discovery Pass, British Columbia, Canada. Canoe Pass has a dam, or barrier, across it which blocks passage of water from the east into Seymour Narrows since the dam was built many decades ago. The numerical model studies are part of a site investigation to assess the potential for operation of an underwater turbine to generate electrical power.

The ASL-COCIRM numerical model used in this study is a full three-dimensional circulation model. The 3-D model was used to simulate the water flows and water levels through Canoe Pass if the dam were completely removed and replaced by a 40 m wide passage between Quadra and Maude Islands.

The 3-D model was demonstrated to have very good capabilities for simulating water level and currents in Seymour Narrows as well as at sites closer to Canoe Pass, under present and past conditions.

Predictions of the tidal currents were computed over a full year, which provided the average and maximum speeds at the centre of Canoe Pass.

