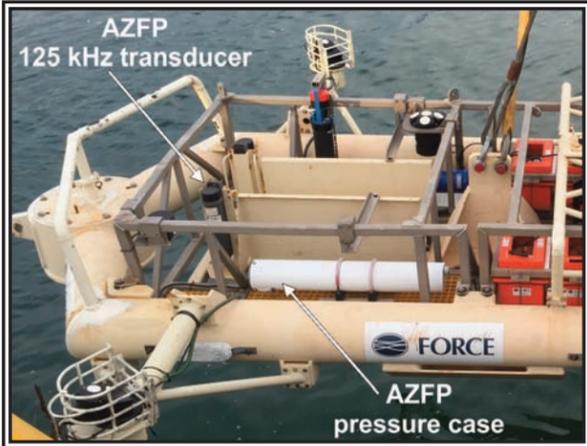


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FAST 1 platform prepared for transit to the Minas Passage for deployment (placement of AZFP instrument indicated). Photo credit: Darren Pittman

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Ocean Moor Technical Services is a small Nova Scotia registered company formed in 2009. OMTS provides contracting and consulting services focusing on oceanographic applications, instrumentation, mooring design, deployments & recovery, project management, and also in data acquisition and analysis.

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Simrad is also a world leader in equipment for underwater science. Single and multibeam echo sounders and sonars are used on research vessels all around the world. Scientists rely on Simrad's technology and accurate readings.

The equipment being used by FORCE on their FAST platform is the WBAT a "cutting edge" subsea innovation rising from a need to monitor marine life autonomously.

New Research Platform Deployed in Minas Passage

By Matt Lumley

A new underwater monitoring platform has been deployed in the world's highest tides, designed to capture environmental data from the Bay of Fundy. "FAST-3," the third sensor platform built and deployed by the Fundy Ocean Research Center for Energy (FORCE), was successfully lowered to the sea floor in the Minas Passage on Friday, February 2.

"FORCE was created to explore whether in-stream tidal energy can be a safe, viable alternative to fossil fuel use, and help protect our ecosystem from the long term impacts of climate change," said FORCE general manager Tony Wright. "As part of this exploration, it's critical each turbine technology demonstrates it can co-exist with other uses of the Bay."

FAST-3 includes a suite of sensors to gather data on fish presence and behaviour, including an acoustic zooplankton and fish profiler and an autonomous scientific echo sounder.

"This platform will help us continue to enhance our marine life monitoring program," said Wright. "While international research indicates fish and marine mammals generally avoid in-stream tidal turbines, we need to test those findings here in the Minas Passage, with the best tools available."

Results from the current FAST-3 deployment will help FORCE identify the best sensor settings and operating schedule for future data collection at the FORCE demonstration site.

Dr. Haley Viehman, a post-doctoral fellow at Acadia University, will be analyzing the data upon retrieval. This work builds on her previous research at the University of Maine, where she studied fish interactions with an in-stream tidal turbine deployed in Cobscook Bay.

"I'll be examining how fish use the water column, and how their densities and depths vary with respect to time of day, tidal stage, and current speed," said Viehman. "Understanding when fish are present, and how fish are spread out in the water column, will help us assess the potential for interaction with an in-stream tidal turbine at this location."

The FAST-3 platform design and build team is principally based in Nova Scotia. A partial list of contributors includes:

- CulOcean Consulting Ltd. (Halifax, NS) – site characterization and selection
- Earle MacAloney Excavation Ltd. (Parrsboro, NS) – on-land platform management
- Huntley's Sub-Aqua Marine (Kentville, NS) – vessel supply and marine deployment



FAST-1 trials in Parrsboro harbour.

The Simrad WBAT system is at the forefront of monitoring marine life, capable of being submerged to a maximum depth of 1500 meters and for prolonged periods of up to 15 months.

When deployed, the WBAT is self-contained and will record data with the acoustic settings chosen by FORCE at the given time intervals. Between data recording events the WBAT will be in "deep sleep" conserving energy and extending battery life. When the system is retrieved the data can be transferred to a processor for analyses.

- Kongsberg Maritime Canada Ltd. (Dartmouth, NS) – equipment supply and technical support
- OceanMoor Technical Services (Falmouth, NS) – marine technical management
- Open Seas Instrumentation (Musquodoboit Harbour, NS) – platform design and construction
- Seaforth Geosurveys Inc. (Dartmouth, NS) – platform deployment location evaluation and selection
- Velocity Machining & Welding (Dartmouth, NS) – high precision components for FAST-3 platform fabrication
- WPV Designs (Fall River, NS) – instrument mount fixtures design and fabrication
- ASL Environmental Sciences (Saanichton, BC) – equipment supply and technical support

Reliable site data is critical to all aspects of in-stream tidal energy development, including both turbine design and understanding any effects on the marine ecosystem. The Fundy Advanced Sensor Technology (FAST) program encompasses three separate underwater platforms, onshore radar, meteorological instruments, and a tide gauge. The first platforms - FAST-1 and FAST-2 - have been in use since late 2015.

"Not many oceanographic sensors are designed for conditions like the extreme high flows at the FORCE site," said Andrew Lowery, FORCE's technical director and FAST program lead. "Our platforms are designed to help us advance our ability to capture data in these challenging and complex conditions."

Wright added: "Not only does the FAST program add to our understanding of the site, it helps inform our research and monitoring programs as they continue to evolve."

FORCE's Monitoring Work Continues

By Matt Lumley

Independent of FAST sensor platform research, FORCE conducts an environmental effects monitoring program for fish, lobster marine mammals, seabirds, and marine noise. All these findings will be made public; work to date can be found online at fundy-force.ca/environment/.

FORCE works with academic and industry research partners, including the Sea Mammal Research Unit Consulting (Canada), University of Maine, Acadia University, Luna Ocean Consulting, JASCO Applied Sciences, Ocean Sonics, Nexus Coastal Resource Management, and EnviroSphere Consultants, to collect data and report results to the public and regulators.

"Monitoring this technology in marine environments around the world has been encouraging so far, with no

observations of any significant effects," said Melissa Oldreive, FORCE's environmental programs director. "We need to test those findings here at FORCE. While we do, any effects during turbine demonstration are expected to be extremely small: a single turbine occupies a tiny fraction of the cross-section of the Minas Passage - less than 0.1 per cent."

Added Wright: "Monitoring work is critical understanding if this new technology is both sustainable and viable. And it will take time to have all the answers. But this research is critical - we need to look at alternatives to burning fossil fuels. The evidence around climate change impacts continues to mount, including population level shifts in the marine ecosystem on which all of us depend."

Deadline for the April issue of

Cumberland NEWS is Mar 21

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FORCE (Fundy Ocean Research Center for Energy)
1690 Hollis Street, 10th floor • PO Box 2573, Halifax, NS B3J 1V7
902.406.1166 x2 • matt.lumley@fundyforce.ca
fundyforce.ca • facebook.com/fundyforce • twitter.com/fundyforce