

World's Largest Ocean Observatory Nears Completion

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Canada is about to take the world on a 25-year non-stop research expedition—into the deep ocean.

Over the next two-and-a-half months, a team of scientists and marine engineers will complete the installation off British Columbia of NEPTUNE Canada, the world's largest and most advanced cabled <u>ocean</u> observatory.

Using three ships and at least one ROV, the team will lower five 13-tonne nodes and more than 400 instruments and sensors to the <u>seafloor</u> where they will be attached to an 800-km loop of powered fibre-optic cable laid in 2007.

Led by the University of Victoria, NEPTUNE Canada pioneers a new generation of ocean observation systems that—using abundant power and the Internet—provide continuous, long-term monitoring of ocean processes and events, as they happen.

Land-based researchers across Canada and around the world will use NEPTUNE Canada to conduct offshore and deep-sea experiments and receive real-time data without leaving their laboratories and offices.

"This is truly transformative science," says Dr. David Turpin, president of the University of Victoria. "At a time when our understanding of the oceans is clearly becoming more essential than ever, NEPTUNE Canada will play a leadership role in advancing our knowledge of the oceans in



ways not previously possible. We are launching a new era of <u>ocean</u> <u>exploration</u>."

Lying at depths of up to 2.6 km, the bright yellow nodes—which supply power and two-way communications—are protected in a trawl-resistant frame. All NEPTUNE Canada components and instruments are specially designed to withstand intense pressure and the cold, corrosive salt-water environment of the North Pacific. Many involve breakthrough technology being deployed for the first time anywhere in the world.

Much of the infrastructure for NEPTUNE Canada is being designed, manufactured and installed by Alcatel-Lucent and its main subcontractors.

"This extended cooperation with UVic in such an innovative and challenging project confirms our expertise and customer focus to address new market segments, such as scientific undersea observatories that can be highly beneficial to onshore researchers for real-time oceanic monitoring and scientific experiments," says Georges Krebs, chief operating officer of Alcatel-Lucent's submarine network activity.

The complex and technologically challenging installation process is being led by the cable ship Lodbrog (operated by Alcatel-Lucent) and supported by the research ship Atlantis (operated by Woods Hole Oceanographic Institution). The research ship Thompson (operated by the University of Washington) will lead the instrument portion of the installation.

"Scientists and staff at NEPTUNE Canada are delighted to begin the final phase of installation following a decade of planning," says Dr. Chris Barnes, director of NEPTUNE Canada. "Working with industry partners, we've developed a host of novel science experiments, advanced engineering and sensor technologies and innovative data management



systems. This is a very exciting time for ocean science."

Weather permitting, installation will be completed by late September (the installation of instruments at one node has been deferred to 2010). After several weeks of testing and commissioning the instruments, NEPTUNE Canada data will start flowing in late 2009.

Observations from NEPTUNE Canada will have wide-ranging policy applications in the areas of climate change, hazard mitigation (earthquakes and tsunamis), ocean pollution, port security and shipping, resource development, sovereignty and security, and ocean management. Its cutting-edge technologies are already generating commercialization and job creation opportunities.

"Today's launch demonstrates Canada as a global leader in ocean research," says Mike Lake, the parliamentary secretary to the Minister of Industry. "With the launch of NEPTUNE Canada, scientists and researchers around the world will have real-time access to enormous streams of data which will aid us in protecting our environment, supporting public safety and security, creating innovative new technologies and the jobs that go with them, and promoting research."

"By investing in NEPTUNE Canada, the province has demonstrated a major commitment to anchoring BC's reputation for world-class ocean science," says Iain Black, Minister of Small Business, Technology and Economic Development. "Today's beginning of the final phase of installing the world's first regional cabled ocean observatory moves us closer to the wide range of benefits NEPTUNE Canada will bring to our province, from fighting climate change to creating high-tech jobs."

NEPTUNE Canada is being developed through investments of more than \$100 million from the Government of Canada, the Canada Foundation for Innovation, the Natural Sciences and Engineering



Research Council of Canada, CANARIE, and the Government of British Columbia through the BC Knowledge Development Fund.

Provided by University of Victoria

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