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Eugene, OR 97403-1272

Prof. William Wilcock
School of Oceanography
University of Washington,
Seattle, WA 98195-7940

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Dear Professors Toomey, Hooft and Wilcock:

I am pleased to write on behalf of the NEPTUNE Canada Project in support of your proposed seismic tomography experiment (ETOMO) at the Endeavour segment of the Juan de Fuca ridge during this summer. Previous seismic experiments along the Endeavour ridge have provided important insights to the distribution of magma chambers beneath the active hydrothermal vent field. These have influenced the design of your ETOMO experiment to address sub-crustal processes and controls on hydrothermal vent communities in the deep sea. In particular, the results should generate much new data to understand the controls and distribution of the vent communities within the Endeavour Marine Protected Area established by the federal Department of Fisheries and Oceans.

NEPTUNE Canada (www.neptunecanada.ca) is funded at over $100M from federal and provincial granting agencies, with an additional $20M of in-kind support. This will be the world's first regional cabled ocean observatory and is part of a bi-national (Canada/US) effort to instrument much of the Juan de Fuca tectonic plate and adjacent continental margin. The US National Science Foundation will formally contract Ocean Leadership to manage the Ocean Observatories Initiative (OOI) later this month (nearly $400M over 5 years). About 40% of that amount will be used to establish a cabled ocean observatory on the southern part of the Juan de Fuca tectonic plate that will complement the NEPTUNE Canada observatory. These observatories will transform the ocean sciences and provide immensely useful data to scientists, government regulators, policy makers and the public on issues such as earthquakes, tsunamis, ocean/climate change and marine ecosystems.

The 800km backbone cable, branching units, repeaters and spur cables to and from the Port Alberni Shore Station for the NEPTUNE Canada observatory was installed in fall 2007. Further technical developments, involving some entirely new technologies, have now allowed completion of the final phase of the infrastructure program: four observatory nodes were successfully established in the last five weeks and the final one at Endeavour will be installed in

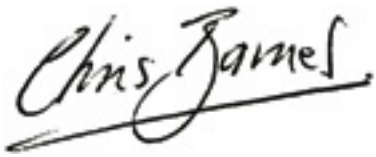
the next two weeks. This work has been achieved by Alcatel-Lucent, our primary contactor, using a cable ship together with the research vessel *R/V Atlantis* (Woods Hole Oceanographic Institution) as the support vessel hosting the ROPOS remotely operated vehicle. Starting next week, the *R/V Thompson*, with ROPOS will be used by NEPTUNE Canada from mid-August to mid-September to deploy the secondary cables, junction boxes and over 100 scientific instruments. It will combine with the cable ship to install the Endeavour node. These five nodes will extend from the coast (Folger Passage), the continental slope, the abyssal plain, to the ocean-spreading ridge (Endeavour ridge) and in water depths between 100-2660 meters. At the Endeavour site, the volcanic eruptions, hot vents and black smoker benthic communities will be investigated by an array of sensor networks using the abundant power (10kW/node) and high bandwidth communication (4-10 Gb/sec) of the subsea system.

Your proposed seismic tomography experiment (ETOMO) will be complementary and will provide new information that will be extremely useful to NEPTUNE Canada's current and future scientific studies of the Endeavour system. In particular, your experiment will provide for the first time:

- Three-dimensional sub-seafloor seismic structure, which is useful for understanding the magmatic and hydrothermal processes that generate the hydrothermal vents and foster their associated ecosystems that are the focus of the NEPTUNE Canada node at Endeavour.
- Baseline constraints on the seismic velocity structure that will allow more accurate location of both local and regional earthquakes using the NEPTUNE Canada seismic network. Such information is vital to understanding plate tectonic processes and their affects on earthquake occurrence and distribution and associated natural hazards in the north-east Pacific (earthquakes, tsunamis, major slope failures, gas hydrate release).

Lastly, we appreciate and understand the immense logistical, scientific and financial effort and commitment that you and your team have achieved to mount this exciting and important ETOMO research program and wish you a successful completion later this summer.

Sincerely,



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