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**School of Earth and Ocean  
Sciences**

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Prof. Douglas R. Toomey  
1272 Geological Sciences  
University of Oregon  
Eugene, OR 97403-1272

**RE: Seismic Tomography experiment led by Toomey, Hooft and  
Wilcock on the Endeavour segment of the Juan de Fuca ridge  
August 2009**

Dear Dr. Toomey,

I am writing to express my very strong support for your upcoming seismic tomography experiment. I am a member of the international community studying mid-ocean ridge processes, and the lead scientist for the Endeavour node of the NEPTUNE Canada cabled observatory. I expect that the new understanding gained from your study will have a profound impact on our understanding of the interdependent geological, hydrological and biological processes active at, and near, the Juan de Fuca Ridge. My confidence is based upon the record of the three lead scientists, all of whom have considerable experience conducting such experiments and whose published articles have strongly influenced the community. In particular, I'd like to stress that this team of scientists have responsibly lead seismic tomography cruises in settings very similar to the proposed Endeavour segment site along the East Pacific Rise, where there are hot vents hosting comparable ecosystems. To my knowledge, the biologists working in these areas have not recognized any impacts of these kinds of experiments on the ecosystems.

The objectives of the upcoming cruise are critical to achieving the broad goals of the Endeavour node of NEPTUNE Canada. The experimental design of the node was planned to study the long term interactions of geological, chemical, and biological processes. The strongest link between these components of the system is heat – heat

is supplied by magmatic activity, the amount of heat controls the vigor of hydrothermal circulation. The vigor of hydrothermal circulation influences the extent and nature of chemical exchange and hence the fluid chemistry, which directly impacts the biological communities. There is thus a direct link between benthic ecosystems and the one of the main objectives of your tomography experiment – to understand the magmatic heat pump.

I provide here a few reasons why this experiment should be supported by the Canadian system. There are many more, but as time is short I will conclude by re-iterating that I strongly support the upcoming tomography experiment.

Sincerely,

*Kathryn Gillis*

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Professor and Director