

**Closing Remarks to Panel on
Roberts Bank Terminal 2 Project (RBT2),
26 August, 2019**

**Submitted by James Ronback
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Director of Boundary Bay Conservation Committee**

Dear CEAA Panel,

1. The opportunity to provide closing remarks is much appreciated.

However given the magnitude, complexity and the potential impacts on public and marine safety and the fragile integrity of the Fraser River estuary's ecosystems that are affected far beyond this Roberts Bank Terminal 2 Project (RBT2) footprint, the CEAA review process did not give adequate resources and time for the affected public and communities and non-government organizations as they did for the First Nations, in order to provide a properly informed independent review and comments on this project. Thus this RBT2 project will have many unintended and unexpected consequences, i.e, statistical black swans.

1. About 1,500 containers are lost from ships each year. Most of the ships are less than two failures from a catastrophe. The losses could be reduced by a 1000 fold if the container ships were required to have at least two independent power and control systems for propulsion and navigation in order to not flounder in the crowded shipping lanes around RBT2 after the first critical failure.
2. The cumulative traffic around RBT2 will increase dramatically as the Vancouver Port Authority keeps on proposing and approving more projects resulting in transporting products some of which contain very volatile and hazardous cargoes that can cause high consequence events. Container ships will face potential collisions with tankers containing liquid natural gas (LNG) or diluent used to create dilbit are just two examples of many. This increasing traffic in addition to using pilots has to be safely and remotely

controlled by the Vancouver Port Authority controllers to maintain separation between all traffic to minimize potential rare but horrific catastrophes.

3. It is unfortunate that late changes to the terms and conditions provided by the Minister of Environment and Climate Change did not include covering the related piloted shipping routes up to 80 nautical miles in Canadian waters of the RBT2 up to the international waters of the Pacific Ocean. This is a major gap in the scope of the EIS and it needs to be corrected. The cumulative effect of accidents related to RBT2 traffic such as spills, collisions, groundings, fire and explosions spills do not stop at 10 nm from RBT2.
4. As Panel members you are faced with a major task how to weigh the pros and cons of all the potential impacts of RBT2 during the life of the project:
5. For example, there are only about 80 Southern Resident Killer Whales remaining that live around Haro and Orca Straits. This raises a question: How much is a whale worth? (see: How much is a whale worth? by Mark Leiren-Young in Opinion, Energy | September 1st 2016 <https://www.nationalobserver.com/2016/09/01/opinion/how-much-whale-worth>). Does its value go up if they are progressively expatriated and approach extinction as a result of their interaction with the increased number of containers, tankers with high energy cargoes and passenger ships and tugs polluting and destroying their habitat thus resulting in increased stress and unintended harmful physical contact..
6. When a collision, fire and a horrific fuel vapour air explosion occurs that results in casualties. What is the value of a human life? When is the system safe enough? How many casualties and ecological disasters are you going to tolerate in the life cycle of the project in the name of progress?

To assist in your deliberations in making risk informed decisions In addition to the 13 recommendations I offered in my submissions #1658 and #1790, I offer the following additional recommendation:

#14 Use Micromorts to convey System Safety risks

During the life of a complex project like RBT2, the Panel and proponent should use micromorts to easily convey the system safety risks of RB2 project to the public. The micromort was the brainchild of engineer Ronald A. Howard from Stanford University, who wanted an accurate unit to gauge the 'risk of death' we

experience on a regular basis. Basically, a micromort stands for a one-in-a-million chance of death.

So if you have 2 micromorts, you have a two-in-a-million chance of dying. (See: <https://www.sciencealert.com/this-unit-of-measurement-figures-out-how-likely-you-are-to-die-from-certain-activities> and <https://en.wikipedia.org/wiki/Micromort>).

Since the inadequacies of the review process have not been corrected and the system safety shortcomings have not been addressed, I oppose the RBT2 project.

Yours safely,

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