

Webinar on Tug Escort and ERTV Analyses
June 8th, 2022

Ecology Staff:

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Attendees:

Adrian Nicoll, *Transport Canada*
Alan Sorum, *Prince William Sound Citizens Advisory Council*
Amber Bailey, *Farallon Consulting*
Amber Carter, *Amber Carter Government Relations*
Andy Ross, *Lummi Natural Resources Dept*
Audrey Martinez, *Nez Perce Tribe*
Bettina Maki, *WA Board of Pilotage Commissioners*
Blair Bouma, *Puget Sound Pilots*
Bob Gowe, *Transport Canada*
Brad Korpela, *Shaver Transportation*
Brendan Harris, *US Coast Guard, District 13*
Carol Reamer, *Makah Tribe - Port of Neah Bay*
Christina Koons, *San Juan County MRC*
Christopher Burns, *Jamestown S'Klallam Tribe*
Dan Morrison, *Centerline Logistics*
Dan Nutt, *Kirby Offshore Marine*
Don Noviello, *WA Dept of Fish and Wildlife*
Dustin Johnson, *Columbia River Pilots*
Fernando Sierras, *Marine Technology*
Frances Robertson, *San Juan County*
Fred Felleman, *WAVE Consulting*
Greg Hanon, *Communico*
Greg Vogel, *WA State Senate*
Gyulia Borbely, *Transport Canada*
Hans Kahl, *Skagit Dept of Emergency Management*
Heather A. Parker, *Navy Region Northwest*
Ish Looney, *US Coast Guard*
Jacob Lipson, *WA State House of Representatives*
Jaimie Bever, *WA Board of Pilotage Commissioners*
James Dunlap, *Dunlap Towing Company*
Janet Alderton, *Friends of the San Juans*

Jeffrey Slesinger, *Delphi Maritime*
Jill Lazo, *US Coast Guard, 13th District*
Jim Peschel, *Vane Line Bunkering*
Joel Coffey, *Centerline Logistics*
John Wright, *Polar Tankers*
Jon Hellberg, *Shaver Transportation*
Kara Cardinal, *Strait Ecosystem Recovery Network*
Karen Hays, *Alaska Tanker Company, LLC*
Kris Faucett, *Lund Faucett*
LaTrisha Ollom-Suggs, *Jamestown S'Klallam Tribe and City of Port Angeles*
Laura Lachance, *Dept of Fisheries and Oceans Canada*
Leah Harnish, *American Waterways Operators*
Louise Murgatroyd, *Transport Canada*
Lovel Pratt, *Friends of the San Juans*
M. W. (Mac) McCarthy, *Mac McCarthy, Inc.*
Mark Curtis, *Crowley Maritime*
Mark Homeyer, *Crowley Maritime*
Marta Green, *San Juan County*
Martha Grabowski, *Le Moyne College, Rensselaer Polytechnic Institute*
Melba Salazar-Gutierrez, *Auburn University*
Michael Lowry, *Western Canada Marine Response Corp*
Michael Myers, *Centerline Logistics*
Mike Manuel, *Transport Canada*
Mike Moore, *Pacific Merchant Shipping Association*
Nate Menefee, *US Coast Guard*
Olivia Choi, *Council of the Haida Nation*
Paul McCollum, *Port Gamble S'Klallam Tribe*
Peter Schrappen, *American Waterways Operators*
Phil Green, *San Juan MRC*

Rachel Aronson, *Maritime Blue/Quiet Sound*
Ramine Cromartie, *Western States Petroleum Assoc.*
Rein Attemann, *Washington Environmental Council*
Ria Bordian, *BP*
Robert Day, *Crowley Maritime*
Robert Lewis-Manning, *BC Chamber of Shipping*
Robert Poole, *Western States Petroleum Assoc.*
Ronald Pelot, *Dalhousie University*
Ross McDonald, *Sause Bros.*

Shayne Cothorn, *WA Dept of Natural Resources*
Sol Kohlhaas, *Marathon Petroleum*
Sven Titland, *Centerline Logistics*
Todd Hass, *Puget Sound Partnership*
Tom Glade, *Evergreen Islands*
Verner Wilson, *Friends of the Earth U.S.*
Vinnie Catalano, *Cook Inlet Regional Citizens Advisory Council*

The following summary notes are not intended to be a transcript but rather a review of the discussion session. Participant questions and comments are shown in bold text followed by Ecology responses. Ecology responses that have been added after the conclusion of the event are preceded by the text "Supplementary answer."

QUESTIONS:

Numerous large vessels traverse the waters of the Salish Sea. Large vessels can carry more than 1 million gallons of propulsion fuel. It is not only tank vessels that pose potential spills risks to our region. A requirement for tug escorts for tank vessels does not address the risks from non-tank vessels. Please address this. (Janet Alderton)

JD Leahy: For the tug escort analysis, the legislature directed us to look specifically at tug escorts for a particular set of tank vessels. In particular, we are looking at tug escorts for tankers, ATBs, and towed oil barges between 5,000 and 40,000 deadweight tons. We will not be modeling any scenarios where escorts are assigned to non-tank vessels.

However, we are aware of the potential for non-tank vessels to drift aground and spill fuel oil, and that potential is represented in the model. The ERTV analysis will provide a representation of how an ERTV serving the waters of Haro Strait, Boundary Pass, and Rosario Strait may reduce the risk of oil spills, including those resulting from large non-tank vessels like the ones you mention.

In terms of the ERTV analysis, my understanding is that is not specifically about the risk posed by tankers. (Blair Bouma)

JD: Yes, our modeled ERTVs respond to non-tank vessels and tank vessels that have experienced a loss of propulsion.

Does your analysis look at each ERTV location separately, or are you looking at the potential of having more than one ERTV? (Blair Bouma)

JD: We are independently looking at each location to evaluate the potential for an ERTV at that location to reduce risk. We are not looking at combinations of locations.

I would suggest Port Townsend as a potential location for ERTV based on prior experience with the currents and physical geography of Admiralty Inlet. (Blair Bouma)

JD: Thanks for this suggestion. *Supplementary answer:* We are directed under [RCW 88.46.250](#) to evaluate an ERTV that is serving "Haro Strait, Boundary Pass, Rosario Strait, and connected navigable waterways." Though

Port Townsend is not adjacent to the stated waters, we think that it is close enough to merit consideration, in particular due to the number of comments received suggesting its inclusion in the analysis.

I really like the inclusion of self-repair but I would still consider events where the ship regains propulsion prior to grounding a “near miss”. I feel like those should be quantified as some kind of event. (Blair Bouma)

JD: The accident chain approach we use in the model allows us to look at all events and potential interventions at the same time, so while we do not use the term “near miss” in the model framework all of these events will be included and evaluated.

Regarding not including line haul or ocean tugs, while true that they are usually towing I have personally witnessed those tugs responding to drifting vessels. Not including those tugs make the model a little more conservative as you are blocking out a few save possibilities. (Blair Bouma)

JD: As you say, it might be considered conservative to not allow the potential for line haul tugs to respond as tugs of opportunity to loss of propulsion events. But if we were to allow them to respond, we would have to address considerable complexity and uncertainty in terms of their suitability and availability. For example, the presence of absence of a barge, and the suitability of the tug given the weather, and capabilities of the tug. We feel that focusing on assist and escort tugs allows us a much cleaner assumption. If an assist/escort tug is underway, and not engaged in an assist, they should be capable of responding.

I am curious why this is even a question, my work in Prince William Sound Alaska years ago with many sea tests with tankers and ERVs and BAT rescue tugs ensured all tankers had tethered BAT tugs, seems like a no brainer.¹²³ (Paul McCollum)

JD: It’s true that the notion of escorting oil tankers has been around for some time. One of the novel aspects of this analysis is its focus on the potential to require escorts for ATBs and towed oil barges.

I am concerned about the proposed inclusion of escort tugs that are in service being modeled as emergency response vessels. How can escort tugs be included as tugs of opportunity if they are required to escort tankers? (Lovel Pratt)

JD: We feel that including escort tugs engaged in escorting as tugs of opportunity is an appropriate assumption. For example, it is explicitly included in the Puget Sound Harbor Safety Committee Standard of Care for Tanker Escorts ([link](#)). However, because the model can produce and evaluate each intervention independently, we will be able to model the potential benefit of an ERTV with and without the potential for engaged escort tugs to respond.

¹ Posted link: <https://www.pwsrcc.org/programs/maritime/tanker-escort-system/best-available-technology-for-tanker-escorts/>

² Posted link: https://www.google.com/search?q=best+available+technology+escort+tugs+in+PWS+Alaska&rlz=1C1GYPO_enUS960US960&sxsrf=ALiCzsbedDxjclpZwB59OgdOAu8BvEyzw:1654709519535&source=Inms&tbn=isch&sa=X&ved=2ahUKEwip8fiosZ74AhXzoI4IHcbEAWsQ_AUoAnoECAEQBA&biw=1325&bih=1040&dpr=1#imgrc=jbn19knl7zffnM

³ https://www.pwsrcc.org/wp-content/uploads/filebase/programs/maritime_operations/tanker_escorts/A%20Review%20of%20Best%20Available%20Technology%20in%20Tanker%20Escort%20Tugs.pdf

Supplemental answer: We will do additional research on the potential for engaged escort tugs being released to respond to a vessel in distress. Our approach also allows us to separately analyze escort tugs that are engaged and escort tugs that are not engaged.

One question I have is whether the model will include the escort tugs that are escorting the Trans Mountain Pipeline tankers, as required by the National Energy Board CERTIFICATE OC-065, Condition #133 that requires “enhanced tug escort between the Westridge Marine Terminal and Buoy J”?⁴ (Lovel Pratt)

It is our understanding that the cited requirements for an escort to attend a tanker all the way to Buoy J do not come into force until tankers start moving oil provided by the Trans Mountain Expansion Project. Tankers moving oil provided by existing Trans Mountain infrastructure do not fall under these additional escort rules. Since the additional escort rules are not yet in force, they are not represented in the model.

Supplemental answer: As part of our analysis, we will be completing a traffic simulation that will include projected levels of round-trip tank ship transits from the J-Buoy at the entrance to the Strait of Juan de Fuca to Westridge Terminal in Burnaby, BC. See section 4.3.4 of the Analysis Plan for additional details.

Could the ERTV analysis result in relocation of the Neah Bay tug? (Lovel Pratt)

JD: The model analysis is not designed to evaluate the Neah Bay tug, nor would model outputs be suitable for such an evaluation.

Supplemental answer: The Neah Bay ERTV response area is focused on offshore waters, and the waters of the Strait of Juan de Fuca, while the ERTV Analysis study area consists of the inland waters of the Salish Sea. We are including the Neah Bay ERTV in the model as a potentially responding tug to acknowledge that it may sometimes be able to respond to incidents in the inland waters, but the model analysis will not represent all the incidents to which the Neah Bay ERTV could respond.

Does the list of potential tug stations show that Canada is interested in participating? (Janet Alderton)

Supplemental answer: We selected potential tug locations based on geographic proximity, and potential to reduce oil spill risk in Haro Strait, Boundary Pass, Rosario Strait, and connected navigable waterways. We did not consider national boundaries when selecting potential locations.

Regarding Oil Outflow Risk Metrics, will you filter out the terminal spills from the historical outflow amounts from US/Canada incidents? In other words, will you only gather data from spills while vessels are underway? (Jeffrey Slesinger)

Supplemental answer: For development of our oil outflow distribution, we filtered out oil spills that our classification approach categorized as “Other.” “Other” spills are those *not* associated with collisions, allisions, groundings, loss of propulsion, loss of steering, sinking, and capsizing. See Tables 25 and 26 in the Model Description document for additional information on how we classified hazards for the purposes of establishing

⁴ Posted link: [https://docs2.cer-rec.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/90552/548311/956726/2392873/3781699/3781613/3797079/C00061-3 NEB Certificate OC-065 - Trans Mountain - Trans Mountain Expansion - A6V4G1.pdf?nodeid=3797180&vernum=-2](https://docs2.cer-rec.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/90552/548311/956726/2392873/3781699/3781613/3797079/C00061-3%20NEB%20Certificate%20OC-065%20-%20Trans%20Mountain%20-%20Trans%20Mountain%20Expansion%20-%20A6V4G1.pdf?nodeid=3797180&vernum=-2)

an oil outflow distribution. In general, that means that transfer and fueling spills are likely excluded from volumes that make up the oil outflow distribution.

In regards to the ERTV locations, is there a cost to vessel owners or others? Who determines the fees/costs? (Ria Bordian)

Supplemental answer: The ERTV Analysis is focused on potential reduction in oil spill risk from the placement of an ERTV serving the waters of Haro Strait, Boundary Pass, Rosario Strait and connected waterways. It does not address or evaluate the logistical or financial aspects of any placement.

When thinking about where to place tugs or escorts, not all locations are as likely to have a grounding. I find it unfortunate that the tug escort analysis is all or nothing. I find it absurd that we're going to congest the waters with escorts everywhere rather than focusing at subareas with higher risk. (Fred Felleman)

Alex: Scenario 3 simulates escorts throughout the waterway so that we can evaluate the potential benefit of escorts in each of the 13 geographic zones established by BPC. Scenario 3 allows us to examine tug escorts for each zone and determine which area might have a higher potential benefit from requiring tug escorts.

Supplemental answer: Taking this approach allows us to avoid prejudging which areas might be at higher risk in advance of completing the analysis. The geographic zones established by the Board of Pilotage Commissioners are here ([link](#)).

There is frequently a delay between when an LOP event happens and when it is reported. The quality of the data should be characterized. (Fred Felleman)

JD: I want to clarify info about the incidents we use to develop a probability distribution of ship self-repair times. We use Board of Pilotage Commissioners Marine Safety Occurrence reports and Neah Bay ERTV callout records. As you point out, there are all kinds of complexity with these incidents, including delays. These reports are written after the fact and are often highly detailed, and can include information such as conversations on the bridge.

We looked at 103 events that were LOP related. For 98 of events, there was enough information to determine the time that the loss of propulsion happened and estimate the time that power returned. For five events, propulsion never returned, i.e., there was no self-repair. For a portion of the events, it was a matter of hours before propulsion returned.

Supplemental answer: See Section 2.7 of the Model Description Document for further discussion.

The paucity of actual LOP events makes modeling risk challenging. My previous understanding was that you were going to use all the LOP events in both databases, regardless of location, but instead you are limiting the analysis to the local region only. How many records of actual incidents do you have? (Fred Felleman)

If we were to model less common event types, like collisions or groundings, we would likely need to use a wider geographic population of interest. However, LOP events are common enough that using a smaller population of interest, like the local area, still provides a relatively robust number of incidents.

Supplemental answer: We identified a total of 443 loss of propulsion events and 74 loss of steering events between 2002 and 2019 within the model domain. See Section 2.6.3 of the Model Description Document for a description of the methodology used and number of hazards identified.

How big is the region that you are using as a geographic filter for counting incidents? (Fred Felleman)

JD: The model domain consists of the Salish Sea and entrance to Strait of Juan de Fuca. We used this region as the geographic filter when counting hazards in the USCG MISLE and Canada's MARSIS databases.

Supplemental answer: See Figure 3 in the Model Description Document for a map of the model domain.

You are presenting probabilities as per-minute. How are you calibrating this risk? (Fred Felleman)

JD: The per-minute risk is calculated using underway minutes as the denominator/exposure variable. We established a count of underway minutes by evaluating the AIS messages for the model domain for each vessel type. We used the same geographic area (model domain) and the same time period (2002-2019) for our hazard counts as we did for underway minutes.

Supplemental answer: See Section 2.6.5 of the Model Description Document for further discussion.

Why would you not include tugs that are engaged in escorts? (Jim Peschel)

JD: We do include tugs engaged in escort as potential responders. The accident chain approach used in the model allows us to look at outcomes under different assumptions of tug availability, including the availability of tugs engaged in escort.

Why are you limiting emergency anchoring to vessels moving slower than 3 knots? (Jim Peschel)

JD: It is true that vessels might be able to slow down faster by dragging or bouncing an anchor, but there are numerous complexities with estimating how and when that might happen, and its potential effects on the drift speed of the vessel. Limiting the ability to anchor to vessels drifting at less than 3 knots assures that modeled vessels will need to slow down substantially before being able to anchor.

Supplemental answer: The rest of the criteria we are using for emergency anchoring was originally developed for a risk analysis tool called Marine Accident Risk Calculation System (MARCS). See Fowler, T. G., and E. Sorgard. 2000. Modeling Ship Transportation Risk. Risk Analysis 20:225–244

You mentioned examining the loss of the entire oil cargo, but this does not seem to make sense considering tank segregation. Suggest using federal guidelines on average or maximum probable loss. (Jim Peschel)

JD: We are using three values to characterize risk. 1) a count of drift groundings, 2) an estimate of oil outflow, and 3) volume of oil at risk. The 3rd metric, volume of oil at risk is not a representation of how much oil could spill, it is a representation of the maximum amount of oil involved in an incident. When evaluated as one of three metrics, this value highlights the possibility of a catastrophic event.

Did you find any LOP events in this area that led to a grounding, and what were the outcomes of that grounding? Did they lead to an oil outflow event? (Mike Moore)

Supplemental answer: Our count of LOP events was designed to establish a probability per minute of a loss of propulsion event happening in the local area. We did not review each loss of propulsion event for its eventual outcome. However, the analysis report will include a discussion of the historical risk of drift grounding events, as compared to historical risk from other incident types.

What about vessels with protected fuel tanks? (Mike Moore)

JD: The historical record does include vessels with protected fuel tanks. The point of the oil outflow model is not to specifically model oil outflow from one particular vessel, but rather to produce a range of possibilities of outcomes based on the data.

Does this analysis consider the potential for mitigating underwater noise from new ERTVs, whether by technological or operational measures? If not, could that be addressed in a future phase? (Rachel Aronson)

Supplemental answer: No. This analysis focuses on the effects on oil spill risks resulting from a potential new ERTV. Consideration of underwater noise falls outside the scope of this work.

Are you including time to approval to disconnect from escorted tug as part of the response time of tugs of opportunity? (Marta Green)

No, the approach as we have presented it today does not include any additional time for approval for disconnecting an active escort, in the event of an active escort responding to a vessel in distress.

I hope you have the sitrep for the coal carrier Continental Spirit, which lost power in Boundary Pass and dropped anchor before grounding on reef off Patos Island. (Fred Felleman)

Supplemental answer: We are aware of the incident, and have reviewed reports on what occurred. This particular loss of propulsion event is a concerning example of how a drifting ship can quickly get into trouble. However, in this instance the vessel was able to anchor, and was not reported to have grounded.

Has the rate for loss of propulsion increased over the 17 years of data? If so, will it be averaged or extrapolated to represent a trend? (Brad Korpela)

Supplemental answer: We are using a single count of loss of propulsion hazards across the selected time period. As a result, the calculated probabilities represent an averaged probability.

COMMENTS:

When looking at ERTV stationing, response time to certain locations are more relevant than others. I do think that those are considerations that need to be brought to bear. Also, very often vessels come through clustered. An ERTV could be called off the dock at critical times in order to reduce the time to response. (Fred Felleman)

Because of the pilotage rules, some of transits require additional movements when moving between US and Canadian waters. I want to point out that this has potential downsides. (Fred Felleman)

Sidney does not seem like a viable ERTV location. (Jim Peschel)

In talking to Trans Mountain, there is a lot of time where the tug will either be staged or repositioning in time. There is information available regarding how those tugs will be deployed that can optimize presence and availability. I think it is worthwhile to consider that information. (Mike Moore)

The results of our work ([link](#)) was that in 80% of instances an ERTV in either Sidney or Roche Harbor would be successful in rescuing a vessel that went adrift in Haro Strait or Boundary Pass. Studies by Clear Seas ([link](#)) suggested that tugs of opportunity would only be effective in 20-30% of events. (Marta Green)

As a possible input for your model, we will have an Offshore Supply Vessel (200 tons bollard pull) permanently stationed at Beecher Bay starting Q3 2023. Happy to email across the details. (Michael Lowry)