



Backgrounder by T Buck Suzuki Foundation (TBSEF)

November 12, 2020

Regarding the Brookes Bell Report: Prince Rupert Port Anchor Related Risks

by Ivan Todorov, Master Mariner, dated September 15, 2020, commissioned by (TBSEF)

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Commissioning the Report

This summer TBSEF commissioned a report into the matter of anchor drags.

There were 22 large vessel anchor drag incidents in the Prince Rupert area in the four years to 2018 and there were 29 in the winter of 2019/2020. Two anchor drag incidents, one in 2000 and one in 2007, both in the inner harbour, resulted in grounding, one with a hull breach. So far, no incidents have resulted in a fuel spill.

The rate of anchor drag incidents in this area is increasing and is over a magnitude higher, per vessel visit, than in the Vancouver area. The purpose of commissioning the report was to better understand the significance of the risk and the need for and possible mitigation.

The firm of marine experts chosen, Brookes Bell, was founded in 1903. The report was authored by a Master Mariner with over 15 years at sea, 10 as the senior officer of oil tankers.

TBSEF Response to the Report

TBSEF is working towards implementation of the report's recommended safety measures to prevent an oil spill in the Skeena estuary. We are advocating:

1) Minister of Transportation and Prince Rupert Port Authority attend to safety issues raised in Brookes Bell's "Prince Rupert Port Anchor Related Risks" report

- most urgently, ensure that large vessels do not remain in inner harbour anchorages when wind forecasts make it unsafe.

2) The Transportation Safety Board conduct an investigation into the twelve Jan 28-30th 2020 Rupert area anchor drag related occurrences as recommended by report.

3) The environmental assessment of the Vopak project, which is now underway, include a risk assessment analysis of related anchoring risk, possible mitigation and residual risk as described and recommended by the Brookes Bell report.

Summary (by TBSEF) of the Report's Key Findings and Recommendations

Key Finding Inner Harbour- it is found to be the area of most serious risk

- Large vessels are likely to drag anchor in high winds (even winds lower than storm force 48 knots) as the inner harbour does not meet good holding ground and minimum scope of chain parameters (industry standard per INTERTANKO).
- Hazards, which are nearby and downwind, present risk of grounding if the vessels' crew fails to immediately regain control over and manage the dragging.
- Uncontrolled dragging is highly probable.
- Timely assistance is unlikely in event of uncontrolled drag.
- Single hulled bulk carriers often anchor here and many have fuel tanks in the bottom.
- If breached, ½ million to 5 million liters of fuel oil could leak.
- Ship Masters are no longer warned of the poor holding ground by Port Guidance and Sailing Directions.
- Port Guidance does not give Masters an option to leave the inner harbour to outer anchorages or to sea. Nor does the port proactively relocate vessels to safer outer harbour anchorages when high winds are forecast.

Key Recommendations Inner Harbour

PRPA reconsider their policy regarding inner anchorages, in order to:

- 1) Direct Masters to leave when wind is forecast to be above safe levels
- 2) Reinstate warnings, in the Port Guide, of poor holding ground
- 3) Provide a clear option in the Port Guide for Masters to leave when wind is forecast to be above safe levels

Note: Mooring buoys were considered in the report but not endorsed, as the risk of failure of vessels' mooring lines, to the buoys, would still exist and leaving the anchorage area would still be advisable when high winds are forecast.

Key Findings Outer anchorages

- All are safer than inner harbour in a storm because there is more room.
- Having 11 vessels dragging anchors (one twice) during a violent storm from January 28 to 30th 2020 was a serious test of the Prince Rupert port operating and emergency procedures.
- These 12 incidents constitute a repetitive event and a reason to believe it may result in an accident.

Key Recommendations Outer Anchorages

- Port review, if it hasn't already done so, its capacity to assist vessels which drag in the outer harbour
- Provide a clear option in the Port Guide for Masters to leave and proceed to sea until weather subsides to safe levels
- If not already doing so, Port explore Just in Time options to limit anchoring
- TSB instigate an investigation of Jan 2020 occurrences, consider this report, hopefully uncover additional solutions/safety measures and make recommendations
- Carry out a detailed risk assessment (RA) before the planning stage of a new oil terminal quantifying the current and future residual risk levels. Basically, eliminating or minimising the drift grounding incidents, related to failed anchoring, has a consequential effect on the potential pollution incidents and, therefore, this should be considered in the RA. Consideration of further mitigation measures in an updated future residual risk is advisable to be completed as part of the initial formal RA.

Direct Excerpts from Brookes Bell Report

The above summary was prepared by TBSEF. Below are related excerpts direct from the report with paragraphs from the report noted for ease of reference. The full report is available.

- [regarding 12 dragging occurrences Jan 28-30th 2020]: *“These events provide the Board [TSB] with reasonable grounds to believe they could, if left unattended, induce an accident. Therefore, an independent investigation would be of benefit and, hopefully, lead to improving the implemented safety practices and policies.”* (5.11 e)
- *“A detailed risk assessment (RA) is advisable to be carried out before the planning stage of a new oil terminal quantifying the current and future residual risk levels.... Basically, eliminating or minimising the drift grounding incidents, related to failed anchoring, has a consequential effect on the potential pollution incidents and, therefore, this should be considered in the RA. Further mitigation measures are normally suggested. An updated future residual risk is advisable to be completed as part of the initial formal RA.”* 5.68 and 5.69
- *“During severe adverse weather, even seabed with good holding parameters is unlikely to hold vessels at anchor (Figure 10). Damage to the anchor equipment and an uncontrolled dragging of anchors is highly probable, particularly in view of the nature of seabed [Inner Harbour]– soft rock with thin layer of mud.”* 5.11 b

- *"I note that the mud on rock type of seabed for the inner harbour anchorage area is no longer included in the GPE and latest sailing directions (paragraph 4.5). This type of seabed provides the lowest anchor holding power coefficient. It will be beneficial if this important information is reinstated in the relevant nautical publication available to masters. This will provide valuable insight as to what they should expect from the ship's anchoring system with respect to its holding capacity and better plan for contingencies."*

5.23

- *"For harboured or sheltered waters – maximum current speed of 2.5 m/s (4.8 knots), maximum wind speed of 25 m/s (48 knots) and a minimum scope of chain cable of 6 [INTERTANKO appendix]. The Prince Rupert inner harbour does not meet the good holding ground and scope of chain cable parameters."*

5.36.a

- [Regarding inner harbour anchorages] *"At a dragging speed of half to one knot, a vessel such as TRADE UNITY can be aground in about 30 to 15 minutes. However, the uncontrolled dragging is usually at greater speeds of between three to four knots. This suggests that, unless the vessel can immediately regain control over the anchor dragging, there will be a high likelihood of grounding. Whether a standby tug and a pilot can effectively respond at such a short notice is, therefore, questionable or rather unlikely."* 5.26

- *"In view of the potential for fuel oil spill and loss of cargo, again, the inner harbour area remains more vulnerable because of the types of vessels using anchorage positions no.2 to no.7, being predominantly bulk carriers. These vessels may have bunker tanks located in the double bottom area."* 5.36 b

- *Vessels having the bunker tanks located in the double bottom area, or having side tanks extending down to the keel plating (ship's bottom) will present a higher risk of oil spill in the event of a grounding and hull breach in way of the bunker tanks. The amount of bunker spilled will depend on the quantity carried in the breached tanks, but it can be estimated to be from as low as 500 m³ [500 thousand liters] from one tank to as high as 2,000 to 5,000 m³ [5 million liters] from more tanks."* 5.49 b

Further points of particular importance are:

- *"I have not been able to locate an option in the port guide for the vessels to leave the port and wait outside the inner/outer harbour areas until the weather subsides.... Whether these vessels should have been instructed to anchor or proceed to sea is something that requires further consideration"* 5.11b+c

- Prince Rupert Port Information Guide suggests that the local by-laws prevail and allow the port authority to order a vessel to remain at anchor or to proceed to sea:

"The PSOC's primary responsibility is for the safe, secure and efficient operations of shipping traffic. This is achieved through assigning berths and anchorages in the port area, enforcing regulations, patrolling the port area and keeping traffic ways clear and coordinating information on traffic movements." -

Paragraph 2.2 of the guide

"In accordance with the Canada Marine Act and the Port Authorities Operations Regulations 10. PRPA will direct any entry, departures, anchorages, berthing, and movements." Paragraph 2.3