

# Prince Rupert Marine Risk Assessment Overview and Highlights



**The safety and security of vessels and cargo using the Port of Prince Rupert is a first-level priority for the Prince Rupert Port Authority (PRPA).**

For planning purposes, PRPA proactively commissioned Det Norske Veritas (DNV), an independent, globally-recognized foundation with the purpose of safeguarding life, property, and the environment, to undertake a navigational risk assessment of the safety of its vessel routes in the context of an expected increase in vessel traffic, and the potential incorporation of new vessel types and new cargoes using these routes.

The assessment is intended to provide a measure of safety for the Port of Prince Rupert in contrast to other ports and gateways worldwide using recognized risk assessment methodology. The assessment also provides a valuable benchmark of navigational risk to inform future programs to improve and enhance safety procedures and protocols at the Port of Prince Rupert.

DNV's assessment provides PRPA with a baseline marine risk profile and makes recommendations for further reducing and mitigating identified risks.

DNV was asked to use an assumption that traffic at the Port of Prince Rupert would reach 1,000 vessels by 2020, and that 100 LNG carriers and 100 tankers could be introduced into the traffic mix to reflect a diverse port operation.

The assessment's findings are summarized below.

## OVERALL FINDINGS

■ DNV found that based on current traffic levels and vessel mix, and after adjusting for local factors, a commercial vessel incident could be expected at a frequency of once every 23 years.

■ DNV found that based on the 2020 traffic level assumptions reflective of a sample composition of commercial ship traffic inclusive of LNG carriers and tankers, a vessel incident could be expected at a frequency of once

every 10 years, after adjusting for local factors.

■ DNV indicated that grounding is the most likely incident type; however, it also indicated that it is the incident type that can be most effectively mitigated by the use of escort tugs and pilots.

■ DNV suggested that additional mitigation measures be considered to further minimize the frequency

and consequence of an incident, including tug escorts, enhancement of navigational aids, and exclusion and/or security zones.

■ DNV found that the use of a close escort tug from the Triple Island pilot station to the terminal berth would further reduce the incident of groundings by an estimated 80%.

## VESSEL-SPECIFIC FINDINGS

■ DNV found that based on the 2020 traffic level assumptions that includes LNG carriers and tankers, after adjusting for local factors, incidents (which may or may not have tangible consequences to vessel or cargo) for specific ship types could be expected at the following frequencies:

Bulk carrier	Once every 28 years
Container ship	Once every 26 years
Cruise ship	Once every 64 years
LNG carrier	Once every 183 years
Tanker	Once every 173 years

■ DNV found that the use of an escort tug from the Triple Island pilot station to the port terminal would significantly reduce the frequency of incidents (which may or may not have tangible consequences to vessel or cargo):

LNG carrier	Reduced to once every 356 years
Tanker	Reduced to once every 337 years

■ DNV confirmed the low frequency of major LNG accidents. DNV found that after adjusting for local factors,

a fatality resulting from an incident involving an LNG carrier or tanker could be expected once every 876 years.

■ DNV quantitatively measured risk for oil tanker incidents. DNV found that after adjusting for local factors, a tanker incident that also involved an oil or bunker spill could be expected once every 781 years.

## PRPA ACTIONS RESULTING FROM DNV ANALYSIS

■ Based on DNV's analysis and recommendations, PRPA is taking action to further improve its safety and risk profile for existing vessels and existing cargo, their expected growth over the next decade, and the

introduction of potential new cargoes (including LNG carriers and tankers).

■ PRPA has embarked on a comprehensive revision of its Practices and Procedures for vessels operating in the Port of Prince Rupert to identify

potential scope for improvement. PRPA will be seeking to establish a standard of international best practices for all vessels.

## STUDY BACKGROUND AND ASSUMPTIONS

■ DNV's procedure uses worldwide incident frequencies for different vessel types, and then adjusts those frequencies based on an assessment of the local coast environment and traffic volumes. An "incident" is defined as an unintended event, such as a grounding or collision, which may or may not have tangible consequences to the vessel or cargo.

■ Specific adjustment factors were developed for specific portions of the route to and from a PRPA terminal. Relevant data includes route information, route length, navigation hazards, water depth, channel width, tidal streams, navigation systems, weather data, forecast vessel traffic, proposed ship specifications and terminal features.

■ Generally, these local adjustment factors were deemed by DNV to decrease risk when comparing Prince Rupert to global averages.

The full Det Norske Veritas analysis is available online at [www.rupertport.com/safety](http://www.rupertport.com/safety).