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NAVIGATION SAFETY ASSESSMENT PROCESS NATIONAL GUIDELINES

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TABLE OF CONTENTS

SECTION 1

1.1 PURPOSE

The purpose of this document is to help Transport Canada, partnering governments and agencies, Indigenous groups, and project proponents improve their understanding of the Navigation Safety Assessment Process, and how this process and the studies and information requirements described within these guidelines can be incorporated into impact assessments under the *Impact Assessment Act*. These guidelines do not supersede any project-specific guidance provided by Federal Authorities or the Impact Assessment Agency of Canada.

1.2 INTRODUCTION

In 2021, Transport Canada decided to discontinue the **voluntary** TERMPOL review process for proposed marine terminals and transshipment sites (a designated location for transferring cargo between 2 vessels, including anchorage areas) where a proposal would also be subject to a federal impact assessment under the *Impact Assessment Act*. Instead, the department would provide expertise and knowledge on navigation safety assessments to support its integration as a part of the Impact Assessment Agency of Canada's designated projects undergoing a process under the *Impact Assessment Act.*

The *Impact Assessment Act* considers relevant factors under Section 22, including potential impacts associated with accidents and malfunction of a project. The *Impact Assessment Act* is intended to support and foster reconciliation with Indigenous people in Canada, while being transparent, efficient and timely contributing to a positive investment climate in Canada. The Impact Assessment Agency of Canada is responsible for administering the *Impact Assessment Act* and leading the government's assessments for projects. As a federal authority under the IAA, Transport Canada is required to provide expertise related to its mandate at the request of the Impact Assessment Agency of Canada's impact assessment process. A relevant provincial organization other than the Impact Assessment Agency can also ask for an assessment. All other requests for NSAP expertise outside of an IA process will be managed on a case-by-case basis.

More information on the Impact Assessment Agency's process

More information on the Impact Assessment Agency's project review process and timelines.

1.3 NAVIGATION SAFETY ASSESSMENT PARTICIPANTS

In order for the department to complete a comprehensive navigation safety assessment, we must also involve other maritime safety experts including other federal/provincial/municipal government departments and agencies including, but not limited to:

- the Canadian Coast Guard
- Port authorities, pilotage authorities;
- pilotage associations, and
- Indigenous organizations

These experts make up the Navigation Safety Assessment Advisory Group which requests and reviews your submission. The group is chaired by Transport Canada's regional representative for marine safety and security.

The TC Regional Impact Assessment Coordinator works closely with the group to coordinate expertise and established agency timelines. They also participate in group discussions and share information to make sure the group's work is in line with the agency and the assessment process.

1.4 SCOPE

A navigation safety assessment's scope may vary on the Impact Assessment Agency of Canada's determination and the nature and location of the proposed project, which may include:

- geographical area
- relevant studies
- elements within those studies
- terminal type and cargo
- vessel type
- shipping route
- boundaries (in other words, which Port Authority is responsible)
- vessel traffic

The advisory group may ask you to consider other topics including:

- a general overview of the marine terminal
- vessel design and operation
- navigational and physical characteristics of transit routes and approaches to the terminal
- cargo transfer
- risk and accident analysis along the transit route and at the marine terminal, and measures to reduce these risks
- pollution prevention measures
- contingency plans

The navigation assessment **does not** include standards for the marine terminal's site, design, construction, or operation of the terminal's land-based shore installations, hinterland cargo handling or storage facilities. However, the assessment **does** address the parts of the terminal's operation and contingency planning that apply to the design vessels (class or type of vessel you expect to use at the proposed site) using the terminal.

Note: If sailing to the Great Lakes or entering a Canadian coastal port involves transiting through waters that aren't under Canadian jurisdiction, you should contact the appropriate administration for any additional requirements that may affect the transit of their vessels.

Marine security

Vessel and terminal security requirements are governed through national and international regulatory frameworks that are beyond the scope of a safety assessment. The review process doesn't consider intentional wrongdoing.

The federal government has an effective, risk-based approach for dealing with threats that affect marine vessels and facilities. All vessels and terminals must comply with Canadian laws and international frameworks for vessel and terminal security.

This includes the:

- *Marine Transportation Security Act*
- *Marine Transportation Security Regulations*
- *International Vessel and Port Facility Security Code*

1.5 PARTS OF A NAVIGATION SAFETY ASSESSMENT

The success of a navigation safety assessment depends on your submission and the quality of its data and analysis. You're responsible for making sure studies meet high industry and international standards.

In support of the review, you must consider a range of subjects when planning their project, including:

- navigational safety of the design vessels (class or type of vessel you expect to use at the proposed site) routes
- services available to help with safe navigation, like:
    - fixed and floating aids
    - vessel traffic services
    - electronic position fixing systems
- requirements for pilotage, tug escort and radio communications along the route(s)
- if the design vessel (class or type of vessel you expect to use at the proposed site) is well suited to navigating the proposed route and docking at the design vessels' berth (a location where ships are moored to load or unload cargo)
- operational safety of the design vessel's cargo containment and handling
- adequacy of the design vessel's berth and related terminal service requirements
- possible effects of increased shipping activity on regional shipping networks, including fishing, recreational boating and vessels not required to carry an automatic identification system (AIS)
- concerns about pollutant cargoes carried by other vessels
- risks to communities along the route
- marine contingency planning, pollution prevention measures and emergency response

Research studies will help assess and show how you will carry out the marine transportation parts of the project safely. Through studies, you can show that they have

- identified major incident hazards in the context of their proposed operation
- evaluated risks of these hazards
- evaluated how to acceptably reduce those risks, using the best available technology and practices

You and vessels must always comply with all applicable laws, including:

- *Canada Shipping Act, 2001*
- *Impact Assessment Act*
- *Fisheries Act*
- *Oceans Act*
- *Canada Marine Act*
- *Marine Transportation Security Act*
- *Marine Liability Act*
- *Pilotage Act*
- *Canadian Navigable Waters Act*
- *Arctic Waters Pollution Prevention Act*

You must also consider international and domestic industry best practices and relevant marine programs and services.

PUBLIC ENGAGEMENT

You may engage with the marine community and Indigenous groups as they have an interest in these types of projects and hold important local and traditional knowledge. You should incorporate these engagements into any other community engagement you plan in support of the impact assessment.

In following with the Government of Canada's commitment to developing programs and policies in an open and transparent way, Transport Canada will continue to participate in discussions with Indigenous groups through the Impact Assessment Agency's formal public and Indigenous consultation process for proposed major resource projects.

SECTION 2

2.1 NAVIGATION SAFETY ASSESSEMENT REQUIREMENTS

The following information is for proponents that need a navigation safety assessment under the Impact Assessment Agency's designated project review process. It can also be used as a guideline for the Navigation Safety Assessment Advisory Group to compile and analyze the essential navigation and vessel safety considerations of proposed marine projects.

Participating in a navigation safety assessment process for a new, modified, or recommissioned marine terminal or transshipment site (a designated location for transferring cargo between 2 vessels, including anchorage areas) requires you to compile and analyze diverse data sets from many sources. This data will ultimately help develop the safety criteria for vessels, and help you develop your impact assessment and pollution prevention program.

You must provide all information required by the Advisory Group under the Impact Assessment Agency's designated project review process (in other words, the information requirements listed in Tailored Impact Statement Guidelines).

You must use good judgment when choosing and applying data sources. Keep in mind, the Navigation Safety Assessment Advisory Group may ask for more information on any topic. In some cases, you may need to compile primary data instead of relying on existing information.

Studies must also confirm that the proposed project complies with all marine safety laws that apply. Studies should also identify and consider the standards, procedures, codes, protocols, recommendations, and best practices that apply.

You mut use the templates from the Impact Assessment Agency of Canada for your assessment. This will make it easier for the Advisory Group to review your proposal.

At minimum, your assessment must include the information listed in this section.

2.2 ORIGIN, DESTINATION AND MARINE TRAFFIC VOLUME SURVEY

The goals of this survey are to quantify and describe all marine traffic within the regional marine traffic network. For this survey, you must identify:

- the types and sizes of vessels that operate in the region, particularly those that the design vessel vessels (class or type of vessel you expect to use at the proposed site)will most likely

encounter en-route to and from the proposed terminal or transshipment site (a designated location for transferring cargo between 2 vessels, including anchorage areas)
- variations in traffic density statistics including those projected because of your vessels
- special operational areas (for example: naval and airborne exercise areas, offshore exploration and exploitation activities and seaplane activities)
- network focal points, or nodes, which show the geographical locations where close-quarter situations are likely to occur and, where there's crossing traffic
- major fishing grounds and the periods they're used by fishers, data on the fish species including spawning times and locations
- major traffic routes, including seasonal variations due to changes in climate or other causes
- sensitive biological and human environments along or near the proposed routes, sensitive species habitats, ecosystems, or other human or biotic environments that may be particularly vulnerable to contamination, and
- possible alternative routes that the design vessel could take

A local marine traffic survey focused on the immediate geographical area of the proposed marine terminal. The goals are to identify:

- the types and sizes of vessels around the terminal
- details of local fishing operations
- details of local recreational and other marine activities, and
- routing traffic support services in the terminal area and approaches

Statistical data could be gathered from:

- the Coast Guard's Marine Communications and Traffic Services records
- port and Harbour Master's records
- the Department of Fisheries and Oceans
- local marine recreational interests, and
- consultants' reports

2.3 ROUTE ANALYSIS, APPROACH CHARACTERISTICS AND NAVIGABILITY SURVEY

The goals of this survey are to assess vessel and route safety, the negative effects of vessel accidents and public safety matters related to transporting bulk oil, liquefied gas, chemicals, or other identified cargoes in vessels that serve the marine terminal system or transshipment site (a designated location for transferring cargo between 2 vessels, including anchorage areas).

The route analysis, approach characteristics and navigability survey are a major part of the review. The survey should be considered in terms of the design vessel's (class or type of vessel you expect to use at the proposed site) applicable characteristics, the physical characteristics of the approach route to the terminal or transshipment site and prevailing atmospheric factors.

The survey should:

- confirm that the loaded design vessel (class or type of vessel you expect to use at the proposed site) can safely navigate the channel, or channels, between the proposed marine terminal or transshipment site and its coastal approaches, or vice versa

    - As a rule of thumb, the survey should start at the termination of the vessel's ocean passage, at the first landfall, or sea buoy (inbound) and end at the start of the vessel's ocean passage (outbound)
- identify hydrographic factors that could affect the safety of the design vessel (like tides)
- identify the suitability, if any, of alternative routes to the proposed marine terminal or transshipment site
- identify any climatic or oceanographic factors that affect navigational safety
- identify any navigational hazards or vessel maneuvering problems along the route
- identify any physical structures along the route (like bridges, power transmission lines, narrows, bars etc.)
- identify the need, if any, for improvements to existing aids to navigation or vessel traffic services
- identify the need, if any, for escort/assist tugs
- identify the coastal communities located close to the intended route
- identify the geographical locations of suitable emergency and holding anchorages for the design vessel
- provide a depicted base of collations with data acquired for the Origin, Destination and Marine Traffic Volume Survey, the Offshore Exercise and Offshore Exploration and Exploitation Activities Survey and the Fishing Vessel Operations Survey
- identify supplemental, but significant, matters like the geographic location of the pilot station, the regional radiocommunications infrastructure, and any other relevant matters
- identify the nature of seabed, the width of navigable water along the route and to determine an abort point for the design vessel

Data sources could include:

- Canadian nautical charts
- nautical publications like:
    - annual and monthly editions of the Canadian Notices to Mariners
    - Radio Aids to Marine Navigation
    - Sailing Directions
    - List of Lights, Buoys and Fog Signals
    - Canadian Tide and Current Tables
    - Atlas of Tidal Currents
    - Canadian Aids to Navigation System
    - Ice Navigation in Canadian Waters
    - Joint Industry-Government Guidelines for the Control of Oil Tankers and Bulk Chemical Carriers in Ice Control Zones of Eastern Canada (JIGs), TP 15163
    - Winter Navigation on the River and Gulf of St. Lawrence: Practical Notebook for Marine Engineers and Deck Officers, TP 14335
    - Guidelines for Navigation under the Confederation Bridge, TP 13681
    - MANICE, published by Environment Canada
- oceanographic data from Fisheries and Oceans Canada
- climatic data, including ice and iceberg information, from Environment and Climate Change Canada
- Canada Port Authorities
- Pilotage Authorities
- consultant's reports

Note: If the proposed route involves a transit through waters not under Canadian jurisdiction, you should contact the appropriate administration for any requirements that could affect the transit of their vessels.

2.4 SPECIAL UNDERKEEL CLEARANCE STUDY

This study must consider all factors that could affect underkeel clearance. It should also show that the design vessel (class or type of vessel you expect to use at the proposed site) always has an enough underkeel clearance.

The design vessel's minimum underkeel clearance:

- should be 15% of its maximum permissible draught in sheltered waters (after considering squat and other factors), or
- meet the requirements set and published by the appropriate government authority for a specific waterway

The Navigation Safety Assessment Advisory Group might consider a proposal for a minimum underkeel clearance of less than 15% of the design vessel's deepest draught in the approach. You should support your proposal with explicit operational details and calculations related to each of the following factors:

- minimum chart datum measurements supplemented with tidal heights over a specified time period
- accuracy of predicted tidal heights, and predicted times of high water and low water
- details of any tidal surges and wind set-up
- allowances for the degree of accuracy in the hydrographic survey (chart datum) and for dredging tolerances
- incidence and degree of channel silting between maintenance dredging, and identification of all critical depth areas
- increase in effective draught due to the rolling, pitching, and heaving of the vessel under wave action within the vessel channel and at the terminal or transshipment site (a designated location for transferring cargo between 2 vessels, including anchorage areas)
- estimated squat for the design vessel(s) calculated for each critical depth area, based on the maximum permissible operating vessel speed in the area, and the most constricted channel section within the critical depth area
- effects of listing, sagging, or hogging
- nominal trim and changes of trim experienced by the design vessel (class or type of vessel you expect to use at the proposed site)
- draught and trim changes attributed to any changes in water density
- any climatic and related depth anomalies
- nature of the bottom
- allowance for maneuverability in shallow water
- identification of any turns on the proposed route that might cause the vessel to heel and allow for the increase in draught
- an operational plan to ensure safe transit

2.5 TRANSIT TIME AND DELAY STUDY

The **transit time** part of this study will help assess the safest coastal zone and/or inland waterway speed profile for the design vessels (class or type of vessel you expect to use at the proposed site)

going to and from the proposed marine terminal or transshipment site (a designated location for transferring cargo between 2 vessels, including anchorage areas).

The **delay** part will help you identify probable causes, locations, durations and frequencies of delays in the movements of all marine traffic through a vessel channel (or channels) that connect the coastal approaches and proposed marine terminal or transshipment site.

You can get this information by:

- drawing conclusions from the route analysis, approach characteristics and navigability study
- completing simulated or actual test runs using a vessel with similar in characteristics to the design vessel
- asking for data from the Canadian Coast Guard's Marine Communications and Traffic Services
- getting advice from the relevant Pilotage Authority
- asking vessel masters to complete questionnaires

2.6 CASUALTY DATA SURVEY

As the breach of a vessel's cargo containment system, or hull, is usually due to a grounding or a collision, the goal of this survey is to develop a way to calculate the likelihood of these incidents by analyzing casualty data within terms of:

- the mathematical probability of casualties in the future while taking into account the extra traffic within the regional zone of the proposed marine terminal or transshipment site (a designated location for transferring cargo between 2 vessels, including anchorage areas)
- the inferred vulnerability of the design vessel over a specified period of time, and
- the inferred vulnerability of the marine environment or of communities located close to the intended vessel route

You should use a wide variety of casualty data in your survey. Make sure to include both large and small scale incidents.

You can find this data from many different sources, like:

- classification societies
- protection and indemnity (P&I) clubs and underwriters
- Transportation Safety Board casualty records or summaries
- Canadian Coast Guard Marine Communications and Traffic Services records
- United States Coast Guard casualty records or summaries
- International Maritime Organization (IMO) summaries
- Pilotage Authorities, and
- consultants' reports

2.7 VESSEL SPECIFICATIONS

The goal of this survey is to determine the suitability of the design vessels (class or type of vessel you expect to use at the proposed site) you've chosen. Plans or technical documents of the design vessels should include:

- The length overall (L.O.A.), length between perpendiculars (L.B.P.), breadth, beam and depth
- the light draughts and air draughts
- the summer and winter draughts and corresponding deadweight and displacement
- both gross and net tonnages
- vessel classification and identification of the Classification Society
- ice class, where applicable, as designated by the responsible Classification Society
- cargo capacity
- cargo containment and cargo transfer systems
- main propulsion system (summary description)
- steering gear arrangements
- main and auxiliary engine cooling systems
- de-icing or re-circulation systems
- vessel stability data, both intact and damaged
- maneuvering data and information according to International Maritime Organization standards
- intended vessel navigational equipment
- intended radio and internal communications equipment to be installed, and
- intended crewing and certification standards

2.8 SITE PLANS AND TECHNICAL DATA

The goal of this survey is to give you guidelines on the level of detail that your site plans and development studies should include. This survey should include:

- an overall site plan that shows the location of the proposed structures in relation to existing structures and coastal features in the area
- general arrangement plans with bottom contours of at least 3 m (10 ft.) that show the proposed location and size of:
    - all structures, floating and fixed
    - turning basins and other maneuvering areas
    - separation between adjacent berths (a location where ships are moored to load or unload cargo), between vessels and structures and between berths and navigational channels
    - proposed anchorage areas
    - existing and proposed submarine pipelines, cable and other underwater installations
    - description and simulation of the proposed vessel maneuvering procedures for docking and undocking under normal and maximum operating parameters
    - areas to be dredged or filled, volumes involved and type of equipment to be used, type and source of fill, analysis and proposed disposal of dredged spoil
    - provincial environmental standards may also apply
- wind data based on actual wind speeds recorded near the site from Environment Canada's Atmospheric Environment Service
- wave data based on the actual wave climate recorded at the site or estimated from the recorded wind data from Environment Canada's Atmospheric Environment Service.
    - The data may be presented in the form of wave energy spectra or wave height period parameters and direction at the locations of the berths and proposed structures. If site specific information isn't available, you can use regional averages to estimate likely wind and wave patterns

- hydrologic survey and simulation showing, among other things, the tide and current data, taking into account variations with depths and direction, to be provided at each berth and its adjacent maneuvering area, and to include predicted changes in tidal depths and current directions and velocities attributable to the construction of the proposed marine terminal or dredging in the terminal area

You should also provide the basic terminal design, operating and safety parameters, including:

- the dimensions of the largest and smallest vessel for each terminal
- description of the terminal identification/obstruction lighting
- description of any docking monitoring system
- description of any mooring load monitoring system
- description of instrumentation for monitoring the wind, wave and current conditions
- description of the intended berthing strategy
- maximum operating parameters assumed in the terminal design, in terms of wind, wave, currents and ice conditions beyond which:
    - vessels should not dock or undock
    - cargo transfer operations should stop
    - the vessel should vacate the berth (a location where ships load or unload cargo)
- Ice data, including:
    - nature, type, coverage and movement of ice
    - mechanical properties of the ice
    - predicted ice formation, season and duration at the terminal
    - average ice thickness
    - simulation showing the ice's effect on the terminal structures
- descriptions of:
    - the fire protection system
    - lighting at the berth and zones where transfer operations would take place
    - any docking monitoring system
    - any automated mooring system
    - any mooring load monitoring system
    - the control and instrumentation system, the oil leak detection system and the emergency shut-down equipment
    - instrumentation for monitoring the wind, wave and current conditions
    - waste management plan, including waste, garbage, oil and noxious liquids
    - pollution prevention equipment and contingency plans at the marine terminal or transshipment site (a designated location for transferring cargo between 2 vessels, including anchorage areas).

2.9 CARGO TRANSFER AND TRANSSHIPMENT SYSTEMS

If you plan to install an automated stability calculation and cargo transfer control system in the design vessel (class or type of vessel you expect to use at the proposed site), then your submission should include an abstract of the system's capability and limitations. It should also include the relevant details of the design vessel's stability characteristics and the Approval Authority.

This list many different types of data. Your submission should only include the types of data that applies to your proposed project:

- general details of cargo arms and flexible hoses connecting the vessel to the terminal
- general details of cargo manifold and loading arm connections
- inspection, testing and maintenance requirements for dock cargo hoses and loading arms

- general details of surge control facilities
- number and size of cargo transfer arms, their height above an identified datum, and their operational envelope
- design flow rates, pressures and temperatures and liquid characteristics in different cargo transfer lines
- intended cargo transfer rate between vessel and terminal
- detailed information on the forces exerted on the manifold by each loading arm
- visual and audible alarms for loading arms when reaching their limiting angle within their operating envelope, including:
    - the point at which the cargo transfer will be automatically stopped, and
    - the specified limit of loading arm envelope when the flange coupler between the vessels manifolds and loading arm will be released automatically (emergency release system, powered emergency release coupling) or manually
- loading arm and shore manifold warming up and cooling down procedures
- tanker manifold restrictions and compatibility with loading arms
- pre-cargo transfer circulation test
- general details of purging, venting and inerting cargo lines
- visual and audible warning systems at the berth (a location where ships load or unload cargo) and main control rooms
- monitoring systems from the control room on shore for:
    - loading arms (drift and range alarms), gas sensors and fire detection
    - primary, secondary and emergency communication systems
    - automatic and manual shut down methods following a valve power failure in hydraulic, pneumatic or electric systems
    - cargo pressures, temperatures and transfer rates
    - activating a fixed fire protection device
    - safety equipment storage
- fire detection and protection equipment, including main and auxiliary fire pumps discharge and rate capacity for berth and vessel
- vapour emission control systems, their alarms, number, sensitivity, and the details of continuous and/or intermittent sampling within the berth area
- general details of electrical discontinuity arrangements between the vessel and the terminal
- source of emergency power supply
- general details about reception facilities for ballast and contaminated ballast from oil tankers
- general details about the arrangement to receive tank washings from oil tankers and/or chemical carriers
- special arrangements required by the nature of a particular substance being handled or transferred

The safety of the crew, vessel and the marine terminal berth or transshipment site (a designated location for transferring cargo between 2 vessels, including anchorage areas) may be threatened by the simultaneous transfer of certain bulk cargoes and loading of vessel’s stores.

Follow the procedures for a thorough cargo transfer safety check list system which are included in the *International Safety Guide for Oil Tankers and Terminals (ISGOTT)* and/or *the Oil Companies International Marine Forum (OCIMF).*

2.10 CHANNEL, MANEUVERING AND ANCHORAGE ELEMENTS

The goals of this study are to determine the suitability of existing channels for the design vessel (class or type of vessel you expect to use at the proposed site) and to identify areas of concern where navigation needs special attention. Proposed vessel channels, anchorages and emergency containment areas should be depicted on large scale nautical charts or engineering plans.

You should use the latest versions of:

- the Canadian Coast Guard *Guidelines for the Safe Design of Commercial shipping Channels*
- the *PIANC Harbour Approach Channels Design Guidelines*
- other relevant documents

2.11 BERTHING AND SINGLE POINT MOORING

2.11.1 Berthing

The goal of this study is to determine if the available or proposed berths (a location where ships are moored to load or unload cargo) can handle the design vessel (class or type of vessel you expect to use at the proposed site) . Berths and moorings should be able to handle every kind of vessel the terminal is meant for under normal conditions. You must show that the berths and moorings can safely handle the design vessels which will use them. This can be shown through simulations or in other ways.

Your berthing strategy should be a major part of the Route Analysis, Approach Characteristics and Navigability Survey. Consider these guidelines:

- determine the wind velocity limits for design vessel berthing arrivals and departures
- determine the wind velocity and direction which would require the design vessel to leave the berth
- determine any other limiting environmental/operational criteria
- provide speed of approach measurement devices and a way to communicate this information to the berthing vessel
- determine maximum current measurements near the berth and its effect on berthing operations
- find tidal range, velocities and directions and the maximum recorded spring tide measurements
- determine prevailing wind statistics relative to the direction the berth is facing
- consider how bathymetry near the berth and its approaches could affect berthing strategy
- consider berth loading and dolphin fendering aspects
- consider the use of mooring points, mooring techniques, quick release hooks, and mooring line monitoring systems
- determine how the design vessel will be docked and undocked and the number of tugs required

Transferring some bulk cargoes and vessel's stores at the same time can threaten the safety of the vessel and terminal berth. You must submit plans for the safety and security of the vessel and its personnel while alongside the berth.

Make sure that berthing and mooring arrangements can handle all types of design vessel(s) the marine terminal or transshipment site (a designated location for transferring cargo between 2 vessels, including anchorage areas) is meant for under normal conditions. This can be shown through simulations or in other ways.

Consider the relevant standards, recommendations and guidelines of different international authorities and associations, like those from the Oil Companies International Marine Forum (OCIMF) and the World Association for Waterborne Transport Infrastructure (PIANC).

Calculate the loads on different parts and structural elements of the terminal berths (a location where ships are moored to load or unload cargo). These should include:

- dead loads of all piping, mechanical equipment, their liquid contents, superstructures and supporting structures
- berthing forces from normal fender thrusts and horizontal and vertical frictional shear forces
- mooring forces from wind, current, ice and wave pressures on largest vessels in ballast and full displacement conditions, at the maximum operating conditions
- seismic forces from any horizontal direction computed for the dead loads and superimposed static loads, as well as seismic loads transmitted through pipeline anchors. Compute seismic forces following the methods in the National Building Code. For piled structures, assume seismic forces are concentrated at the deck elevation.
- temperature loads due to thermal expansion and contraction of the structures, including those transmitted through pipeline anchors
- wind load on the structures, superstructures and equipment
- wind, wave and ice pressures on parts of the structure. Base wind and wave forces on a storm loading with an average expected recurrence of every 50 years.
- live loads of moving vehicles and cranes
- earth fill and hydrostatic pressures

Each structural part should resist bending moments and shear forces in two directions: torsional and axial.

Find the permanent loads and transient peak loads for each structure. Allowable stresses and design procedures should generally follow the National Building Code requirements. You may consider increased allowable stresses, depending on how often the loading is likely to occur, the load duration and related risks.

Consider the following for berthing and unberthing procedures:

- determine the wind velocity limit for design vessel(s) berthing and unberthing
- determine the wind velocity limit that would require the design vessel(s) to leave the berth
- find the characteristics and maximum measurements of currents near the berth, and their effect on berthing
- determine berthing loads and fender system design, including dolphins
- determine design berthing velocity and normal berthing velocity
- find tidal range, velocities and directions, and the maximum spring tide measurements
- find water level statistics
- determine prevailing wind statistics relative to the direction the berth is facing
- consider how bathymetry (shallow waters, bank effect) near the berth and its approaches could affect berthing strategy

- consider using mooring points, mooring techniques, and equipment like quick release hooks and mooring line monitoring systems
- determine how design vessels will berth and unberth depending on the type of propulsion and auxiliary systems, such as thruster and the number of tugs required
- consider the number of mooring launches and personnel required for mooring
- consider using a manoeuvring simulator
- determine any other limiting environmental and/or operational factors

Consider providing berthing aid systems to measure approach speed and share it with the design vessels.

2.11.2 Single point mooring provisions and procedures

You should determine and clearly show if a proposed single point mooring is suitable for the design vessels, and if it can be safely used in the local environment.

International Standards and Classification Societies have specific guidance on constructing and operating single point moorings. Using a Classification Society's vetting of plans, procedures and satisfactory surveys is the best way to determine if a single point mooring is suitable. This will lead to assigning a Class notation that certifies current Class Rules are followed.

2.12 GENERAL RISK ANALYSIS AND INTENDED METHODS OF REDUCING RISKS

2.12.1 General risk analysis

- The goal of this study is to review your risk analysis of uncontrolled pollutant cargo (oils and chemicals) and hazardous cargo (liquefied gases and some chemicals) releases, either en-route or at a terminal or transshipment site. These are usually caused by: a 2-vessel collision
- a vessel grounding
- a vessel hitting a fixed object
- improper cargo transfer
- a fire or explosion

Base predictions on a realistic worst-case accident in the terminal area and at selected positions along the coastal route.

Your risk assessment should include:

- the chances of realistic incidents that would breach the vessel's cargo containment system
- the risks of navigational and operational procedures
- the chances of a major cargo transfer incident at the terminal dock
- the geographical boundaries and the effects of an uncontrolled release of cargo on the marine environment and nearby coastal communities
- the risk of an incident becoming uncontrollable

Your analysis shouldn't be limited to a mathematical index (chance of an incident) but should also include risks to:

- populations of coastal zones along the intended route
- the terminal berth and surrounding area
- the marine environment, fish and wildlife habitat

Gas plumes need to be modelled in certain cases. The technology for modelling large, liquefied gas vapor clouds is constantly evolving. You must choose a particular gas cloud model. Any risk or dispersion model should include an analysis of how sensitive the model is to changing assumptions or values. Predictions of gas cloud dimensions must be based on defined, worst-case, realistic incidents where one cargo tank is released instantly at selected locations along the route and at the terminal or transshipment site.

Determining the risk to public safety within a port that has been selected as the site of a marine terminal or surrounding a transshipment site (a designated location for transferring cargo between 2 vessels, including anchorage areas) normally requires determining:

- the vulnerability of the carrier's cargo containment system after a collision or grounding within a given marine area
- the chance that liquefied gas or other noxious substances will be released within a given marine area
- a realistic quantity, rate, and duration of bulk cargo release and the size of the vapor cloud or other pollutant
- how close populations are to the incident
- the location and edges of possible ignition sources

2.12.2 Methods of reducing risks

It's vital to consider ways to reduce possible risks. Each proposal is different, but there are general examples:

- use safe navigational and operational systems
- create a proactive pollution prevention program
- keep vessels with hazardous cargoes clear of primary shipping lanes and major shipping focal points to reduce the chance they come close to other vessels
- recommend more aids to navigation to improve navigational safety along the intended route
- schedule liquefied gas or chemical carrier movements for periods with the lowest traffic in busy waters
- use recognized and effective vessel traffic services which improve vessel safety in coastal regions
    - these include monitoring traffic movements, regulated speed profiles, warning broadcasts, and regulating vessel movements at critical parts of the route to provide a clear channel for the design vessel
- limit environmental or climatic requirements for vessels loaded with pollutant or hazardous cargoes when navigational safety within the terminal zone is an issue
- use tug escorts
- use careful berthing procedures and tug assistance
- create a contingency plan for the marine terminal system and practice the plan regularly
- make sure vessels with crews are properly trained for the type of cargo(es) they handle and vessel they operate
- keep enough crew onboard at all times for the vessel to be able to get underway quickly in an emergency
- moor vessels bow-seaward when the terminal berth is in a narrow arm of water, so the vessel can move seaward immediately and without help from tugs in an emergency
- implement standardized cargo transfer system inspections and safe cargo transfer operations

- raise awareness of standardized safety and cargo transfer procedures with terminal operations publications designed to inform crews of vessels serving the proposed marine terminal[1]
- prohibit venting of large amounts of flammable or poisonous gases near people
- provide proper reception facilities at chemical and oil terminals
- schedule the bunkering and provisioning at a time that allows vessel maintenance and keeps personnel safe during cargo transfer
- control visitor access while the vessel is alongside the dock
- follow internationally accepted safe management practices set out in IMO resolutions, ISM and/or ISO Standards
- make sure any vessel you charter:
    - follows proper chartering standards
    - meets the same requirements and standards of the design vessel(s) described in the proponent submission

2.13 PORT INFORMATION BOOK

The Port Information Book provides a vessel's personnel and others with the details the specific route to and about the marine terminal system or transshipment site. Items in the book must meet the industry standard for this type of document.

Transport Canada requires only a table of contents for the impact assessment phase of the agency's review process. **You must provide the Port Information Book to the relevant agencies 6 months before terminal operations begin.**

Items covered in the Port Information Book should include:

- pilot boarding procedures and operational limitations
- tug assistance requirements and tugs information
- port entry information, including:
    - typical transit routes
    - local navigation conditions
    - anchorage procedures
    - underkeel clearance requirements
- guidance on marine mammals
- design vessel(s) speed profiles
- design vessel(s) reporting procedures
- a terminal description
- relevant charts and nautical publications
- requirements for immediate manoeuvring during critical points of transit
- requirements for fully managed engine rooms prior to pilot boarding and in compulsory pilotage areas
- checklist for preparing the vessel for ice navigation, if applicable

- berthing procedures for the design vessel's approach and departure from the terminal berth
    - this includes berth equipment and vessel-to-shore communications
- mooring assistance requirements, such as mooring boats, line handlers and how they and the design vessel(s) will communicate
- upper limits of berthing operations, in terms of:
    - lateral approach rate to the berth by the design vessel
    - wind velocity
    - wave heights
    - tidal stream velocity
    - ice conditions
    - visibility
    - means of measuring and indicating these factors
- load measurements and limits for mooring lines and dockside bollards used by large vessels
- vessel machinery and equipment repair facilities
- storing and bunkering facilities
- waste and oily residues reception facilities
- security and industrial health and safety matters
- policies, procedures and checklists
- designated anchorages
- emergency measures

Vessel personnel and the terminal's cargo transfer staff are mostly separate while preparing a scheduled cargo transfer operation. The Port Information Book should include a specific schedule of communications the master of the vessel must start.

Transmissions should be timely and give necessary information to:

- the marine terminal operator
- the vessel's agent
- the Harbourmaster
- the Pilotage Authority
- the Canadian Coast Guard
- Transport Canada's Marine Safety and Security Branch

Timing of scheduled messages should account for common delays in message handling and distribution, other than during direct vessel-to-terminal communications.

The Port Information Book should also identify all specific Canadian requirements that aren't currently part of International Conventions, codes or standards.

2.14 TERMINAL OPERATIONS MANUAL

The Terminal/Transshipment Site Operations Manual informs and guides vessel crews calling at the proponent's terminal or transshipment site (a designated location for transferring cargo between 2

vessels, including anchorage areas) about things which affect the safety of the vessel, the terminal or transshipment site itself, and the efficiency of the vessel's cargo transfer operations.

While a vessel may call at a particular terminal or transshipment site for many years, vessel's crews change often. The crew has the main role in keeping the vessel safe during transfer procedures. A Terminal/Transshipment Site Operations Manual must cover:

- design vessel's and terminal's communications and chain of authority
- terminal cargo transfer equipment, including information on inspections, testing and preventative maintenance
- pre-arrival and pre-departure checklists
- operational tests of the design vessel's machinery and equipment
- cargo transfer procedures, including pre-transfer inspections, checklists[2] and meetings
- vapour emission control systems
- emergency procedures, including emergencies on the vessel and berth, and terminal emergency response and contingency plans
- upper limit of all atmospheric factors that would require stopping cargo transfer operations and/or force the design vessels to depart the terminal
- procedures controlling access to the vessel during transfer operations
- security and occupational health and safety policies
- management of hazardous and non-hazardous waste[3] generated by design vessel(s), terminal or transshipment site activities, and cargo transfer operations, including receiving facilities for:
    - waste oil
    - wastewater
    - ballast and dirty ballast
    - slops
    - garbage and vessel's refuse
    - list of useful contacts

Transport Canada requires only a table of contents for the Impact assessment phase. **You must provide the Terminal Operations Manual to relevant agencies 6 months before terminal operations begin.**

2.15 CONTINGENCY PLANNING

The main goal of contingency planning is to be prepared for incidents. Personnel must regularly practice their roles and responsibilities for contingency planning to be effective. You must give a preliminary outline of the contingency plan to review for a vessel in transit and/or alongside the proposed marine terminal berth or transshipment site.

Reviewing the contingency plan allows it to be combined with the *Canadian Coast Guard and Marine Safety Emergency Operations Procedures.* This allows an integrated response when required. **You**

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[2] Refer to the International Safety Guide for Oil Tankers and Terminals (ISGOTT) and Society of International Gas Tanker and Terminal Operators (SIGTTO)'s Ship/Shore Safety Checklist.
[3] See International Waste Directive http://www.inspection.gc.ca/animals/terrestrial-animals/imports/policies/general/2002-17/eng/1321050654899/1323826743862

must provide the Contingency Plan to relevant agencies 6 months before terminal operations begin.

You should complete the Contingency Plan at least 6 months before operations begin. The contingency plan should cover:

- grounding
- collision
- cargo spillage or leak
- marine pollutant spillage or leak
- fire and explosion onboard design vessel(s) while:
  - underway
  - alongside
  - at anchor
  - at a mooring
  - at a Single Point Mooring
  - at the terminal or transshipment site area, including pipelines in the immediate vicinity of the berth and tank farm
- "abandon vessel" procedures
- assistance to a vessel in distress
- vessel to vessel transfer (in emergency situations)
- vessel-to-shore communications
- cargo handling precautions
- inspection, testing and preventative maintenance procedures
- rescue and treatment of casualties
- minimizing property damage and environmental impact
- design vessel and terminal security
- operations monitoring systems
- detection and alarm systems at the design vessel's berth
- leaks from loading arm due to tidal or current effects
- cargo tanks ruptures due to increased pressure
- removing electrical hazards
- risks and hazards of loss of power supplies
- risks and hazards of equipment failure
- risks and hazards of nitrogen loss
- releases causing structural damage and/or personnel injuries
- emergency response procedures for incidents involving:
  - discharge of marine pollutant from a design vessel
  - discharge of oil from an oil handling facility while loading or unloading a design vessel leading to pollutant entering the water
    - this includes spilling, leaking, pumping, pouring, emitting, emptying, dumping and throwing
- improper operating procedures during cargo transfer or fueling
- emergency shutdown of cargo transfer operations
- loading and/or discharging dangerous goods

- how to bring an incident under control
- rescue and treatment of casualties
- outline of proposed emergency equipment for personnel at terminal or transshipment site
- emergency procedures for personnel evacuation
- out of control emergency situations, such as natural disasters or bad weather, that require the design vessel to evacuate the berth
- quickly worsening weather requiring the design vessel to evacuate the berth
- changing ice conditions at the berth
- controlling shipping and other movements near the terminal or transshipment site
- maps of port reception facilities, location of hydrants, landing places and beaching sites
- role of local authorities

Note: This list doesn't include every possible topic. Your Contingency Plan may need to include other topics depending on your project.

Procedures for design vessel personnel during an active response incident should be:

- specific
- clear and to-the-point
- in the operational language of the vessel

Design vessel personnel should:

- know the terminal-vessel chain of command
- be familiar with emergency drill requirements and procedures
- be able to communicate with the terminal's personnel

Procedures for terminal personnel involved with transshipment operations should also be specific, clear and brief. Terminal personnel should communicate with the vessel in its operational language.

2.16 HAZARDOUS AND NOXIOUS LIQUID SUBSTANCES

You should follow the Hazardous and Noxious Substances Convention and national/regional Chemical Response Regimes, if they apply.

2.17 OIL SPILL PREPAREDNESS AND RESPONSE

Vessels under the *Environmental Response Arrangement Regulations* are "oil tankers of 150 gross tonnage or more and any vessel of 400 gross tonnage or more that **carries oil as cargo or as fuel.**" It also includes "groups of vessels that are towed or pushed, are of 150 gross tonnage or more in total and carry oil as cargo."

Vessels in Canadian waters south of 60° north latitude must have an arrangement with a certified response organization. They must have a declaration on board that:

- names the vessel's insurer
- confirms an arrangement with a certified response organization
- names every individual that can invoke the arrangement.

Vessels must have a shipboard oil pollution emergency plan on board.

For this study, you must describe how you will follow the *Canada Shipping Act 2001*, Part 8, sections 167 and 168 (if applicable) and all related regulations, standards and guidelines for:

- preventing pollution
- preparing for, and responding to, emergencies
- responding to pollution spills

Consider including the following in the oil pollution prevention and emergency plans:

- **a list of environmental issues** that could come from an oil spill
- **a risk assessment of environmental impact** of oil-handling facility activities and related transport and shipping
- **at least one scenario for each category of product** loaded or unloaded to and from the design vessel (class or type of vessel you expect to use at the proposed site) that considers factors like:
    - the type of product being transferred or transshipped
    - design vessel(s) types
    - tides, currents, usual weather conditions in the area
    - environmentally sensitive areas
    - OHF geographic location
    - preventative measures
    - how quickly an effective emergency response can be carried out
- **Up-to-date documents** with all relevant regulations, standards, procedures and policies for areas like:
    - response measures
    - operation
    - maintenance and inspections
    - site plans
    - record keeping
    - permits and certifications
    - violations
    - compliance
- **Hazard identification procedures** should identify the oil-handling facility's activities that could cause a discharge. These procedures should cover:
    - hazards related to the vessel
    - berthing
    - oil transfer operations
    - staffing of key positions
    - equipment failures
- **Responsibilities for managing all types of pollution incidents**, including alerts to quickly report spills to authorities
- **Up-to-date, comprehensive (scientific) understanding of all products** the proponent wants to ship, where they will end up, and their behaviour(s), including:
    - the specific gravity of all products to be shipped
    - the weathering and biodegradation of those products in any water environments that may be affected by the discharge of a pollutant at the oil-handling facility
- **Training schedules, simulated spill incident scenarios and exercises** for response personnel

- **Reporting procedures and deployment of spill control equipment** that covers:
  - geographic and environmental risks
  - how to apply the pollution prevention and emergency response plan to those risks
- how to provide specialized oil spill response equipment (for example, containment booms, recovery devices, oil recovery or dispersant application)
- **A system for measuring and monitoring actual performance** against the oil-handling facility's environmental prevention and response goals and targets

All operators must be prepared to respond to an oil pollution incident that triggers a Transport Canada-certified response organization. How prepared you must be is based on:

- oil spill response scenarios for the oil-handling facility
- the quantity of oil scheduled to be transferred and/or transshipped, to a maximum of 10,000 metric tonnes.

In plans for oil-handling facilities in waters **south** of the 60th parallel of north latitude, you must:

- outline in detail the people and organizations who would respond to oil pollution incidents at their facility
- describe your formal arrangement with a Transport Canada-certified response organization

In plans for oil-handling facilities in waters **north** of the 60th parallel of north latitude, consider showing that your facility is prepared for oil pollution incidents:

- that involve the quantity of oil scheduled to be transshipped, to a maximum of 10,000 tons
- which do not involve entering into an arrangement with a Transport Canada-certified response organization

The emergency plan should detail the roles and responsibilities of people and organizations who would respond to an oil pollution incident at the proponent prescribed oil handling facility. Make sure to cover all essential activities of emergency response. Include people who will be working at the prescribed oil handling facility in an oil pollution incident.

Oil-handling facility personnel must be fully trained in preventing pollution and responding to emergencies. Their training should include:

- safe operational requirements
- using and maintaining equipment safely
- shut down and restart procedures
- situational and operational risks that may threaten safe operations

SECTION 3

3.1 Proposed Reporting

The following proposed reporting approach may be refined based on the IAAC requirements for the IA. Preparing project-specific Tailored Impact Statement Guidelines is an important part of impact assessment.

If information in this document is different from the Tailored Impact Statement Guidelines of a project, follow the guidelines.

3.1.1 You:

- submit all the information from Section 2 of this document and in a project's Tailored Impact Statement Guidelines in accessible formats for the advisory group's review
- update the Advisory Group on all of their progress during the planning and impact assessment phases
- use mitigation measures identified by the advisory group, Indigenous groups, and other stakeholders with navigation safety concerns in impact assessment documents
- follow the recommendations in Advisory Group's Navigation Safety Assessment Review Report when captured within the Impact Assessment Agency's final report

3.1.2 The Advisory Group:

- keep session minutes and update the progress/timeline
- assess your submission and document it in their interdepartmental workplan
- prepare comments and participate in navigation safety meetings as part of impact assessment
- make navigation safety recommendations, including possible mitigation measures for potential accidents and malfunctions
- update and respond to the agency on all parts of the navigation safety assessment review during impact assessment
- respond to the agency's requests for input into the Impact Assessment Agency's Registry
- Help Transport Canada's regional Marine Safety and Security team develop a Navigation Safety Assessment Review Report

3.1.3 Transport Canada:

- lead the interdepartmental workplan and Navigation Safety Assessment as a federal authority
- coordinate updates and responses to the agency on all aspects of the navigation safety assessment review during impact assessment
- coordinate agency requests for input into the Impact Assessment Agency's Registry
- finalize the Navigation Safety Assessment Review Report

Annex 1 – Example outline of Interdepartmental Workplan

1.	Name and Location of Project	Type of Project	Project and Company Name and Contact	Marine Safety and Programs Group OPIs identified. Other potential marine safety organizations/agencies identified	*Impact Assessment Phase	**Meetings/Subject/Outcome	Date(s)
2.	Navigation Safety Assessment Requirements (surveys and studies requested)	Notice to proponent	Types of surveys and studies received	Commencement of Navigation Safety Assessment Advisory Group review	Impact Assessment Phase	Meetings/Subject/Outcome	Date(s)
3.	Request for further information including simulations	Notice to proponent	Further information received	Subsequent review	Impact Assessment Phase	Meetings/Subject/Outcome	Date(s)
4.	Components of Analysis	Breakdown of assessment	Issues Addressed	Final review with recommendations	Impact Assessment Phase	Meetings/Subject/Outcome	Date(s)
5	Workplan interdepartmental report completed	Navigation Safety Assessment Review Report prepared	Report approved by Transport Canada and other participating departments	Final Report shared with Agency	Impact Assessment Phase	Meetings/Subject/Outcome	Date(s)

Planning, Impact Statement, Impact Assessment, Decision, Post Decision
****i.e., Advisory group, proponent, Agency, Issues Identified, input to Agency request for information***

Annex 2 –Navigation Safety Assessment Review Report

Transport Canada will prepare the *Navigation Safety Assessment Review Report* with help from the Navigation Safety Assessment Advisory Group. It will be shared with you for your input and agreement before being finalized and submitted to the agency.

The report should provide an overview of the project and the project submission information including:

- giving the reader context and overall understanding of the project's setting within Canada's marine safety and security regime.
- Providing the main goal of the navigation safety review
- Recommendations for how proponents can improve the safety of marine transport and cargo transfer beyond regulatory requirements.

Guidelines

This report should be structured as follows:

1. Title page: Transport Canada, Marine Safety and Security, Report of the Navigation Safety Assessment Review for (name the project), and the date
2. Table of contents
3. Introduction (project information and *Impact Assessment Act* (IAA) requirements for Navigation Safety Assessment)
4. List of departments and agencies in the Navigation Safety Assessment Advisory Group
5. Navigation Safety Assessment Process (including parts of the review and other information like indigenous engagement activities and outcomes)
6. Recommendations for how you can improve the safety of marine transport and cargo transfer beyond regulatory requirements
    a. The recommendations will be submitted at an appropriate time within the impact assessment process so that they may be considered by the Impact Assessment Agency in the development of enforceable project conditions
7. Potential actions from federal, provincial, and marine authorities to improve the overall safety of the project

Annex 3 – References

Transport Canada, https://tc.canada.ca/en
Canadian Coast Guard, https://www.ccg-gcc.gc.ca/index-eng.html
Canada Port Authorities, https://tc.canada.ca/en/corporate-services/policies/canadian-port-authorities
Canadian Pilotage Association, https://tc.canada.ca/en/corporate-services/transparency/briefing-documents-transport-canada/20191120/20191120/pilotage-authorities
Canada Shipping Act, 2001, https://laws-lois.justice.gc.ca/eng/acts/c-10.15/
Canada Marine Act, https://laws-lois.justice.gc.ca/eng/acts/c-6.7/
Canadian Navigation Protection Act, https://laws-lois.justice.gc.ca/eng/acts/n-22/
Marine Transportation Security Act, https://laws-lois.justice.gc.ca/eng/acts/m-0.8/
Impact Assessment Act, https://laws.justice.gc.ca/eng/acts/i-2.75/index.html
Impact Assessment Agency of Canada, https://www.canada.ca/en/impact-assessment-agency.html

Annex 4: Definitions

For the purposes of this document, the following definitions apply: Berth	A wharf, a pier, an anchorage or a mooring buoy. A location where ships are moored for the purposes of loading and unloading cargo.
Design vessel(s)	Class or the prototype of vessel(s) the proponent expects to use at the proposed marine terminal or transshipment site.
Hazardous and Noxious Substances (HNS)	The International Maritime Organization (IMO) defines HNS as “any substance other than oil which, if introduced into the marine environment, is likely to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.” IMO classifies LNG and LPG as hazardous and noxious substances.
Liquefied Natural Gas (LNG)	LNG is natural gas (mainly methane, with some ethane) that has been cooled down to liquid form for ease and safety of non-pressurized storage or transport.
Liquefied Petroleum Gas (LPG)	LPG are flammable hydrocarbons, such as propane and butane, obtained as a by-product from the refining of petroleum or from natural gas.
Marine Terminal System	The vessel’s berth, its approaches from seaward, its cargo-handling equipment and related port or terminal infrastructures.
Marine Traffic Network	A network of marine traffic is made up of various types of vessels engaged in different operations, using waterways that give access to and from marine terminals or transshipment sites located in waters under Canadian jurisdiction.
Project	A marine terminal or transshipment site a proponent proposes to build, modify or recommission.
Proponent	Person, company or group that proposes to build, modify or recommission a marine terminal or transshipment site.

Transshipment Site	A designated location for the transfer of cargo between two vessels in transit from one destination to another. This includes anchorage areas.
Waters Under Canadian Jurisdiction	Canadian waters and the waters in the exclusive economic zone of Canada, as set out in the *Oceans Act* and the *Arctic Waters Pollution Prevention Act*.

Annex 5: Acronyms and abbreviations

CCG	Canadian Coast Guard
CEAA	*Canadian Environmental Assessment Act*
DFO	Department of Fisheries and Oceans
DPD	Detailed Project Description
FAAR	Federal Authority Advice Record
HNS	Hazardous and noxious substances
IAAC	Impact Assessment Agency of Canada
IGC	International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IMO publication)
IMO	International Maritime Organization
ISGOTT	International Safety Guide for Oil Tankers and Terminals
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
NPA	*Navigation Protection Act (Canadian Navigable Waters Act)*
NSAAG	Navigation Safety Assessment Advisory Group
NSAP	Navigation Safety Assessment Process
OCIMF	Oil Companies International Marine Forum
OHF	Oil handling facility
PIANC	Permanent International Association of Navigation Congresses
PIB	Port information book
RD	Regional Director

SIGTTO	Society of International Gas Tanker and Terminal Operators
SOI	Statement of Issues
SPM	Single point mooring
TCMSS	Transport Canada Marine Safety and Security
TISG	Tailored Impact Statement Guidelines
TOM	Terminal or transshipment site operations manual

Annex 6 – Overview of the Navigation Safety Assessment Process

Phase	Steps in the Impact Assessment Agency's process	Steps in the Navigation Safety Assessment Process
Planning phase	• You submit your initial project description to the agency for consideration • The agency sends out the Federal Authority Advice Record (FAAR) to participating departments including Transport Canada • After the FAAR is complete and the agency prepares a statement of issues (SOI), and you respond with a detailed project description (DPD) • The agency may request Transport Canada's expertise in relation to navigation safety considerations of the detailed project description and the requirements of the navigation safety assessment process • The Agency develops Tailored Impact Statement Guidelines for the project	• You submit an initial project description to the Impact Assessment Agency for consideration • Transport Canada is notified and inputs into the Federal Authority Advice Record (FAAR) • Transport Canada engages other marine experts in the planning phase and depending on the scope of assessment, collectively these marine expert organizations may form the Navigation Safety Assessment Advisory Group (NSAAG)The advisory group's work informs the Responsible Authority's (i.e. the Impact Assessment Agency of Canada in most cases) decision on the requirements in the Tailored Impact Statement Guidelines including the navigation safety assessment surveys/studies and considers public and Indigenous navigation safety concerns in developing this advice.
Impact statement	• You prepare a workplan(s) to submit your impact statement • You submit your impact statement (including navigation safety assessment process surveys and studies) for	• If not established in the Planning Phase, the Navigation Safety Assessment Advisory Group is formed • The advisory group engages you and the agency on surveys and studies as required

	sufficiency review by the Impact Assessment Agency • Impact Assessment Agency completes sufficiency review. If the impact statement is sufficient (in other words, it largely meets Tailored Impact Statement Guidelines requirements) the assessment process moves to the Impact Assessment phase. • You submit the navigation safety assessment process surveys and studies	• The advisory group work plan begins to further facilitate the integration of NSAAG activities within the IA process • When the Impact Assessment Agency shares your impact statement, the advisory group will make sure that all navigation safety assessment process studies and surveys are included in the Guidelines and determine whether they have the necessary information to conduct the analysis.
Impact assessment	• The agency starts the impact assessment • The agency may seek feedback on the draft Impact Assessment Report and draft potential project conditions • The agency will launch a public comment period as required • The agency prepares their Impact Assessment Report, or in the case of a Review Panel, the panel holds hearings and prepares their Panel Report.	• The Navigation Safety Assessment Advisory Group starts the navigation safety assessment process review, considers input from Indigenous communities and others who participate in the impact assessment • In coordination with TC Impact Assessment Coordinators, the advisory group participates in public comment period by submitting comments and reviewing the feedback from the public as they develop their recommendations and findings • The advisory group supports agency-led Indigenous consultations and acts as a technical expert in meetings with Indigenous communities • Draft internal report is completed • Recommendations and findings are included in a draft report and submitted to the agency for the purposes engagement with Indigenous communities and participants in the IA process • The report, once final and having taken into consideration any feedback collected through the IA process, will help the agency develop conditions and follow-up initiatives for the project.

Decision	• The agency provides the Impact Assessment Report, Consultation Report and recommended potential conditions to the Minister of Environment and Climate Change or Cabinet to make the public interest decision • Once a decision is made, the Minister will issue you a Decision Statement and explain the decision and any conditions it includes. This statement is also posted to the public registry.	• Guided by the principle of the Honor of the Crown, and to further the objective of reconciliation with Indigenous peoples, the *Impact Assessment Act* requires that impact assessments address impacts on Indigenous peoples, Aboriginal and treaty rights, traditional use of lands and resources, and any considerations related to Indigenous culture. Impacts on Indigenous peoples and rights must be explicitly addressed at key decision points, including within the IA Decision Phase and the final public interest determination. Transport Canada may be implicated in meeting these Crown obligations, which may include supporting the development of measures to mitigate or accommodate impacts, which may draw upon Marine Safety and Security mandate expertise, and by extension the NSAAG.
Post-decision	• The agency makes verifications to make sure you comply with conditions. • If needed, the agency may also create monitoring committees.	• The Navigation Safety Assessment Advisory Group continues to provide advice on project-related navigation safety as required in relation to Conditions contained in a Decision Statement.

You must integrate all information from the navigation safety assessment process into the Impact Statement and submit to the assessment working group members, including Indigenous communities, for their review.