

# Navigational Officer

## ROLE OVERVIEW

**You are the deck officer in charge of the bridge team, who supports you in the navigation process. You are the third in command on board a vessel behind the captain and chief mate.**

While performing your watchkeeping duties you are the representative of the ship's master and have total responsibility for a safe and smooth navigation of the ship.

Your primary duties are the navigation and watch keeping of the vessel. You are required to be knowledge and able to apply a variety of navigational techniques, utilizing different tools and technologies in addition to celestial navigation. You will determine the speed, maneuver the vessel to avoid hazards, and provide constant monitoring of the vessel's position.

Furthermore, you will maintain logs and other records tracking the ship's movements, while ensuring that the proper procedures and safety practices are followed, check that equipment is in good working order, and oversee the loading and discharging of cargo or passengers.

## STRATA LEVEL: 2 – Technician

### Also Known as:

- Keeper of the Watch
- Watchkeeping Mate
- Deck Officer, Navigation
- Navigation Officer

### Education and Experience:

- High School Diploma.
- Completion of deck officer cadet program from an approved nautical institute.
- A deck officer certificate of competency, issued by Transport Canada, is required (Watchkeeping Mate, Watchkeeping Mate, Near Coastal).

### Associated NOC(s):

- **2273** – Deck Officers, Water Transport



## TECHNICAL



### Chartwork and Pilotage

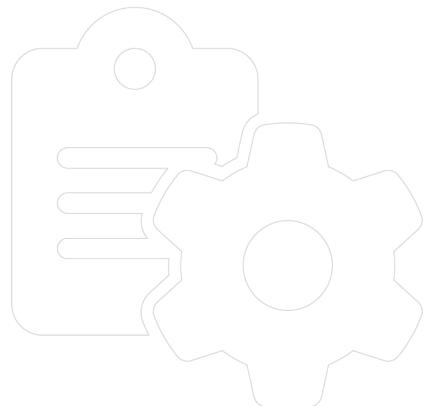
**Uses charts, nautical publications, and instruments to pilot a vessel in and out of harbors or anchorages, along coastlines, and through channels.**

- Uses nautical charts to identify navigable areas, shorelines, and non-navigable areas to safely navigate vessel.
- Maintains an up-to-date collection of Canadian nautical publications to use as navigation aids to ensure vessel safety.
- Determines a vessel positioning by using landmarks, navigation aids, and dead reckoning to chart a true course between observed positions.
- Maintains an up-to-date log book and a record of compass errors to ensure accurate reporting on the progress of the vessel.
- Interprets the effects of wind, current, and tides to calculate the speed between two positions.
- Uses navigable aids and pre-calculations of tidal heights to alter courses when navigating vessel through confined waters.
- Creates a passage plan to determine an efficient route, alternate routes, and possible ports of refuge in case of emergency, anticipated weather conditions, the abilities of the crew, the condition of the boat and its equipment, and necessary charts to ensure safe passage of a vessel.

### Meteorological and Hydrological Forecasting

**Monitor meteorological and hydrological data to determine and forecast conditions to make informed decisions based on the interpretation of data.**

- Uses instruments and secondary data sources to obtain meteorological information prior to taking watch to make informed decisions.
- Uses instruments and secondary data sources to obtain hydrological information prior to taking watch to make informed decisions.
- Maintain a dynamic situational awareness of conditions to determine appropriate course of actions.
- Recognize significant changes to environmental conditions to assess the potential impacts of changes to adjust plans accordingly.



- Immediately alert necessary parties of changes to environmental conditions and plans of action to ensure all parties know active duties.

## Celestial Navigation

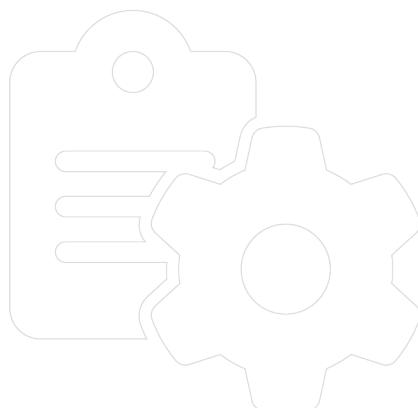
**Applies basic knowledge of nautical astronomy to plan, position, and conduct a passage route for the safe navigation of a vessel.**

- Uses a sextant to measure the angle between an astronomical object and the horizon to determine a ship's position.
- Observes major stellar constellations and navigational stars to determine the ship's position in relation to Polaris.
- Able to fix the position of a ship in open waters using celestial bodies and a sextant.
- Calculates course and distance between two positions using Parallel, Plane, and Mercator sailing to determine the position of the ship.
- Calculates initial course and distance of great circle track to determine ship's positioning using Great Circle Sailing techniques.

## Radar Navigation

**Interprets and analyzes information obtained from radar system to direct and maintain safe navigation of a ship.**

- Uses navigation equipment to determine a craft's position fix, course, and speed to safely navigate through an area.
- Accounts for environmental, meteorological, and hydrological conditions to set a craft's course and speed to ensure safe navigation.
- Adjusts controls and inputs variables into radar system to navigate the safe voyage of the vessel.
- Identifies critical echoes from radar navigation to chart ship through various traffic situations.
- Uses radar systems to detect course and speed changes of other ships to adjust craft's positioning accordingly.
- Applies appropriate plotting techniques to determine the course, speed, closest point of approach, time of closest point of approach and aspect of targets to plan avoiding action in conflict scenarios.
- Plans and prepares a vessel passage plan by selecting chart and lay off courses accordingly to exercise passage instructions.



## Navigational Watch

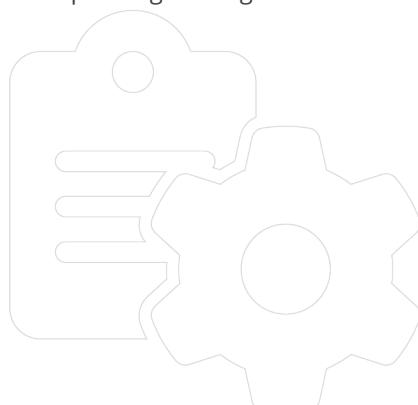
**Maintains a complete watch of the bridge while directing the steering, positioning, and speed of a vessel to ensure the ship follows the planned course and arrives safely at the expected destination.**

- Assesses open water and coastal traffic situations appropriately to navigate, manoeuvre, and avoid collisions in compliance with the collision regulations.
- Maintain a proper record of the vessels movements and activities to ensure accurate navigation of the ship.
- Adheres to all principles and procedures of the watch while on duty to ensure the safety of the vessel, crew, and passengers on board.
- Uses recognized radio procedures and maritime vocabulary to communicate with vessel traffic services and other vessels as necessary.
- Debriefs with vessel personnel to justify all actions taken during exercises in accordance with collision regulations and the practice of seamen.
- Monitors the speed, current position, direction, and weather conditions while carrying out watch duties to assess vessel status.

## Marine Communications

**Identifies the needs of relevant actors, working in partnerships with all necessary partners, to achieve a well-balanced solution to the desired project, process, or program.**

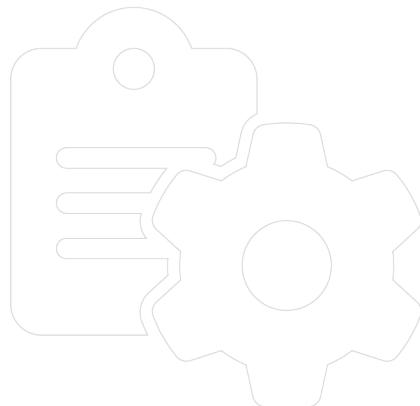
- Applies the international code of signals to interpret messages to ensure appropriate action can be taken in accordance with incoming messages.
- Transmits and receives information by visual signals, such as Morse, to communicate between ships over long distances where other telecommunications are not available or not appropriate.
- Implores the use of standard marine navigational vocabulary to assist in the greater safety of navigation and conduct of ships.
- Contacts Vessel Traffic Services to obtain clearance prior to departure or passing through sovereign waters.



## Ship Stability

**Takes appropriate measures to stabilize the vessel to ensure the safety of the crew and equipment onboard.**

- Applies knowledge of transverse and longitudinal stability principles to assess the stability of the vessel to reduce the risk of capsizing.
- Adjusts the positions of weight onboard to correct unstable and neutral equilibrium to maintain vessel stability.
- Uses pre-calculated operating conditions to ascertain adequate stability to adapt ships stability under conditions of duress.
- Uses displacement and TPI/TPC scales to determine displacement from draft and vice versa.
- Maintains integrity of the hull and superstructures to prevent flooding and capsizing.
- Monitors the loading, stowage, securing, care, and unloading of cargo(s) to maintain the stability of the ship.



## PERSONAL AND PROFESSIONAL



### Attention to Detail

**Delivers a concentrated concern, including monitoring and checking information, organizing tasks and resources efficiently, or all areas involved towards the completion of an objective.**

- Provides information on a timely basis and delivered in an audience appropriate language to communicate effectively.
- Routinely expresses concern that procedures and standards are followed thoroughly in the completion of a task[s].
- Stays calm under pressure and distress to ensure operation are maintained under situations of duress.
- Applies a concentrated concern to interpreting navigational information to ensure vessel maintains true course.

### Leadership

**Promotes and leads cooperation among supervised personal to achieve a collective outcome.**

- Allocates duties and informs crew of expected standards of work and behaviour to meet a standard result.
- Shares relevant and useful knowledge, experience, or expertise to aid crew accomplish their objective more efficiently or effectively.
- Encourages other team members to assist one another by expressing others contribute their knowledge, expertise, or efforts to achieve objectives.
- Provides junior members of crew with training and developmental objectives to improve operational capabilities and current levels of competence.



## Adaptability

**Able to learn the appropriate skills, behaviours, and processes in response to changing circumstances to achieve a goal.**

- Responds to emergencies in a calm manner to ensure efficiency and operations are maintained.
- Effectively prioritizes actions and tasks to respond to diverse challenges and demands.
- Adapts to change in a reasonable timeframe without deliberate resistance.



## LEGAL, REGULATORY, AND POLICY



### Navigation Safety

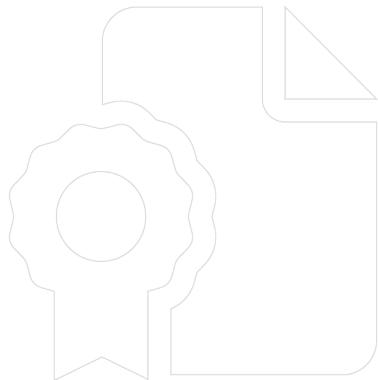
**Adheres to the International Regulations for Preventing Collisions at Sea with Canadian Modifications to ensure the safety of vessels and crews while at sea.**

- Demonstrates knowledge of navigational safety, including distress, fog, and manoeuvring signals to ensure safe navigation.
- Considers all relevant factors, as described in the STCW code, to maintain a safe navigational watch.
- Adheres to all principles and procedures regarding the conduct, handover, and relief of the watch to ensure proper look-out is always maintained.
- Compares compasses and synchronizes repeaters with the ship's captain to determine standard compass error.

### Regulatory Compliance

**Abides to specific regulations, codes, and legislation within a defined jurisdiction to ensure the health and safety of others.**

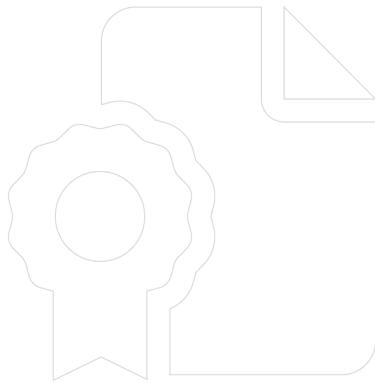
- Applies knowledge of safe handling, stowage, and securing of cargo including dangerous and hazardous cargos to mitigate their effect on the safety and life of a ship.
- Inspects and reports defects and damage to cargo spaces, hatch covers, and ballast tanks to maintain vessel safety.
- Monitor commercial operations to ensure craft documentation is complete, accurate, and in compliance with organizational, legal, and commercial requirements.



## Marine Emergency Duties

**Assesses, prepares, and responds to onboard emergency situations to assist in their own or crew's survival and rescue.**

- Identifies and applies damages control techniques for various flooding scenarios to prevent capsizing.
- Plans regular safety exercises, drills, or scenarios to maximize safety in potentially dangerous scenarios.
- Develops and implements onboard safety programs in accordance with regulations, standards, and legislation to mitigate potentially dangerous scenarios.
- Applies onboard and practical firefighting training in the event of an emergency to work as a team to extinguish fires.
- Identify muster signals in the event of an emergency to take appropriate measures to ensure the safety of self and crew.
- Operates survival craft equipment in the event of an emergency to ensure the safety of self and crew.
- Administer CPR or first aid to provide help to a sick or injured person until they receive more complete medical treatment.



## ENVIRONMENTAL



### Marine Pollution Prevention

**Takes appropriate precautions and follows procedures to control pollution and byproducts caused by vessel operations to protect the marine environment.**

- Takes appropriate precautions to prevent pollution of the marine environment.
- Adheres to appropriate legislations and regulations in response to reporting pollution incidents to ensure pollution is addressed.

