

## Abstract

This document contains information on the marine pilot examination format, knowledge assessment topics, and evaluation criteria.

# Marine Pilot Exam Information

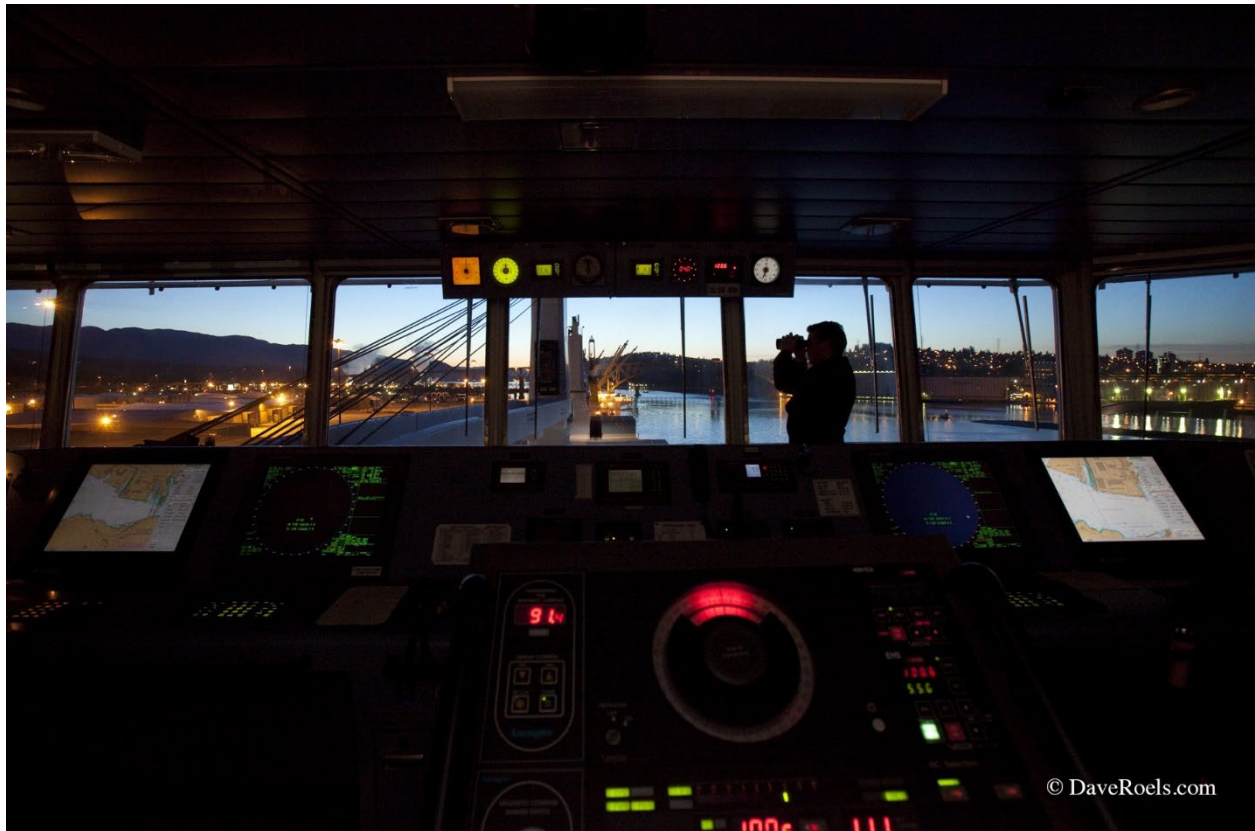
# Table of Contents

INTRODUCTION .....	1
PREREQUISITES .....	2
GENERAL INFORMATION ON EXAMINATIONS .....	3
WRITTEN PAPERS.....	4
ORAL EXAMINATIONS .....	8
CONCLUSION.....	12

## INTRODUCTION

The Pilot Training and Examination Committee (PTEC) of the Pacific Pilotage Authority (PPA) is responsible for setting and marking the coast and river pilots' exams. PTEC is also responsible for overseeing the Pilot Familiarization Program, and the apprentice-pilot and licensed-pilot training programs.

The PTEC is chaired by a Board Member of the PPA. Other committee members include two representatives from the respective pilot groups (coast or river), a management representative from the PPA and an external examiner who participates in the assessment & evaluation process for the oral exams.



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## PREREQUISITES

The acceptable certificates of competency, minimum sea time requirements, and Familiarization Program requirements are defined in [section 25.3](#) of the [General Pilotage Regulations](#).

Candidates shall produce proof of having attended the following courses and assessments:

- i. Electronic Chart Display & Information System (ECDIS)
- ii. GMDSS Radio Operators Certificate (ROC or GOC)
- iii. Bridge Resource Management
- iv. Simulated Electronic Navigation II
- v. Bio-psychosocial Assessment (PPA pays for this assessment)

Additionally, candidates must provide the following:

- i. Police clearance certificate
- ii. Passport copy
- iii. Recent driver's abstract\*
- iv. Recent reference letters\*
- v. Proof of MTSC clearance\*

*\*Required before taking the examinations*



## GENERAL INFORMATION ON EXAMINATIONS

- i. The examination consists of two parts, viz., a written examination section and an oral examination section.
- ii. The written examination section consists of two papers, one on General Knowledge and the other on Local Knowledge of the region. Each paper is three hours in duration.
- iii. The General Knowledge Paper is based on the syllabi for the ‘Watch-keeping Mate’ and ‘Master 500GT NC’ certificates of competency.
- iv. Candidates must obtain at least 70% in both written papers to advance to the oral examination.
- v. Candidates must obtain 70% in each section of the oral examination and must also obtain at least 70% overall to be successful in the examination. The total mark for the entire examination process is 1,000.
- vi. General Knowledge examination – 100 marks
- vii. Local Knowledge examination – 100 marks
- viii. Oral examination (Local Knowledge) – 300 marks
- ix. Oral examination (Port Information, Regulations, Buoyage) – 50 marks
- x. Suitability of candidates – 150 marks
- xi. Experience of candidates – 150 marks
- xii. Ability of candidates – 150 marks
- xiii. Oral examination (*Collision Regulations*) – Pass/Fail
- xiv. Successful candidates are placed on the pilot eligibility list.



# WRITTEN PAPERS

## General Knowledge Paper

### Chartwork and Pilotage

- i. familiarity with chart symbols and abbreviations.
- ii. familiarity with lights and buoys (standard colors, shapes, and characteristics) and the precautions when using them.
- iii. the ability to determine set, drift, and rate of current.
- iv. the ability to calculate tidal heights for a particular time, as well as the height of tide required, at both the reference and secondary ports.
- v. the ability to calculate air draft of a ship.
- vi. the ability to chart courses, allowing for the effect of wind and tide and the problem of combining vectors.
- vii. a knowledge of distance measurement and the determination of speed made good and speed through the water, as well as the calculation of ETA's and speed required to ensure arrival at a given time.
- viii. an understanding of variation/deviation, and correction of compass courses.

### General Seamanship

- i. knowledge of emergency procedures, such as engine failure and blackout.
- ii. knowledge of Bridge Procedures.
- iii. knowledge of anchors and anchoring large vessels, including anchoring with one or both bow anchors.
- iv. a thorough understanding of ship handling including
  - a. turning a vessel short round.

- b. effect of the propeller and rudder on steering, including the difference between fixed and controllable pitch propellers, as well as single and twin-screw vessels.
- c. the effect of trim, draft, list, and squat on maneuverability,
- d. effect of current, wind, shallow water effect, bank cushion and bank suction effect on maneuverability.
- e. transverse thrust effect.
- f. pivot point
- g. the behavior of the ship when the engines are put astern.
- h. the sail effect of a superstructure.
- i. ship squat.
- j. advance, transfer, and directional stability.

### Meteorology

- i. a general knowledge of the weather systems, frontal systems, wind patterns, and types of fog encountered in the coastal waters of BC.
- ii. an understanding of weather facsimiles and instruments.

### Ship Stability

- i. knowledge of the ship's load line and its purpose and definitions.
- ii. knowledge of ships' turning circles and their relevance to manoeuvring
- iii. an understanding of stiff and tender ships.
- iv. an understanding of the effect of water density on draft and displacement.
- v. an understanding of the ships' displacement and manoeuvrability.
- vi. an understanding of the effect of list and trim on ship manoeuvrability.

## Electronic Aids to Navigation

- i. radar plotting to calculate CPA, TCPA, courses of own and target vessels, speed of target vessels, and aspect
- ii. radar errors
- iii. use, limitations, and accuracy of electronic bridge equipment
- iv. parallel indexing techniques
- v. ECDIS
- vi. AIS

## Local Knowledge Paper

### Blank Charts

Candidates can expect up to six (6) blank charts with just outlines of the coast/river to indicate the area. Candidates may also be required to draw an area of the coast/river on a blank sheet of paper. Candidates must provide the following information on these charts:

- i. The location.
- ii. An indication of true north.
- iii. General topography and boundaries of the area.
- iv. Channel widths.
- v. Anchorages, anchorage limits and prohibited anchorage areas.
- vi. All lights, buoys and navigational aids.
- vii. All navigational hazards.
- viii. All underwater cables and pipelines.
- ix. Overhead cables, bridges, and clearances under them.
- x. An indication of the charted depths.



- xi. An indication of the chart scale
- xii. An indication of current direction and strength.
- xiii. Any docks, wharfs, or other marine structures.
- xiv. Any other information that candidates deem pertinent to the area.
- xv. Ferry routing.
- xvi. Traffic Separation Schemes.
- xvii. VTS Call-in points and VHF channels.

#### Specific Local Area Knowledge

- i. Light Characteristics in specific locations.
- ii. Racon codes for specific buoys or lights.
- iii. The bearings for specific range lights.
- iv. Vertical clearances for overhead cables and bridges.
- v. TCZ transit requirements.
- vi. Channel widths and boundaries.
- vii. Limiting/controlling depths for passages and terminal docks.
- viii. MCTS requirements in various areas.
- ix. Port and Harbour procedures.
- x. Port Limits.
- xi. Dock face bearing (orientation).

#### Passages (Runs)

This portion of the local knowledge paper deals with set passages, such as Brotchie pilot station to Crofton, or Sand Heads to Fraser Surrey #10. The candidates will be required to safely

navigate the ship from one point to another indicating the cardinal courses, prominent points steered on, clearing lines, distances off conspicuous points, alter course positions, as well as identifying all hazards along the way. In addition, all navigational aids that the vessel can expect to meet en route must be described.

## ORAL EXAMINATIONS

The oral exam is conducted in the Pacific Pilotage Authority's Boardroom and is designed partly to serve as an interview and partly as a further examination of candidates' knowledge. The oral exam duration is normally 3 to 3½ hours. The examination team consists of the Chair of PTEC, two serving pilots, an Authority representative, and an external examiner. The external examiner is usually an ex-Transport Canada examiner who conducts the *Collision Regulations* section of the oral examination. An observer may also be present at the oral examination.

The oral exam agenda is as follows:

- i. Introduction and welcome by the Chair.
- ii. Questions from the members on sea time, experience, and accidents/incidents.
- iii. A short-answer question from each examiner to break the ice and put the candidates at ease. Questions could be on any topic within the syllabus.
- iv. *Collision Regulations* (external examiner). A failure in this portion will terminate the exam.
- v. Three local knowledge runs (licenced pilots and the chairperson).
- vi. Regulations, port information, and buoyage – PPA.
- vii. Three local knowledge runs (licenced pilots and the chairperson).
- viii. Questions from the candidates.
- ix. Final words from the exam committee chairperson.

## Ship Handling Questions

- i. A knowledge of the properties, advantages, and disadvantages of the propulsion systems on board ships.
- ii. A knowledge of the properties, advantages, and disadvantages of aids to manoeuvring aboard ships.
- iii. A knowledge of the use and operation of manual, automatic and emergency steering apparatus, and engine maneuvering control systems.
- iv. Vessels stopping and turning distances and the factors involved. Methods of stopping and turning in narrow channels.
- v. The interaction of vessels meeting and overtaking in restricted and confined channels, the effect on ship maneuvers as underkeel clearance decreases, and bow and stern suction when vessels are in narrow channels or navigating close to a berth.
- vi. Squat, its nature, cause and effect.
- vii. A knowledge of the effect of the location of the center of gravity, the center of effort and the pivot point on the behaviour of the ship.
- viii. The effect of a right-handed, left-handed, and variable pitch propeller.
- ix. The consequence of heel or list on a vessel's draft and the calculation of the draft increase.

## *Collision Regulations: Rules of the Road*

This portion of the exam is conducted by the external examiner. The candidates are expected to have an in-depth knowledge and application understanding of the *Collision Regulations*, including the Canadian modifications. A failure in this section will terminate the oral exam.

## Regulations and Buoyage

This portion will be examined by the Pacific Pilotage Authority's representative with questions asked from the following subject matters:

- i. *Pilotage Act and General Pilotage Regulations*
- ii. Pilot transfer arrangements
- iii. Vessel traffic services
- iv. Charts and nautical publications
- v. Incident reporting requirements
- vi. *Marine Transportation Security Regulations*
- vii. Practices and Procedures for the BC Ports (Port Information Guides)
- viii. Buoyage

## Local Knowledge

This section is conducted by the licenced pilots and chairperson on the exam committee. Candidates are required to demonstrate their knowledge verbally for a run (voyage) from one location to another location within the region. There are typically six runs for the coast pilot candidates and two to three runs for the river pilot candidates, each run taking about 20 minutes.

The candidates will be provided with a pilot card showing the vessel's particulars, blank paper and tide tables. The candidates will have a few minutes to prepare before proceeding with each run. Candidates are expected to conduct the run from memory indicating courses steered, safe distances off conspicuous points, the various lights, local hazards and clearing marks en route. The exam committee members will stop the candidates from time to time for clarification or to ask pertinent questions about to the area being transited.

Candidates are required to bring the following items to the oral examination:

- i. Course Book(s)
- ii. Certificates of Competency (most recent)
- iii. Certificates of courses attended
- iv. Resume
- v. Reference letters
- vi. Calculator



Can you identify the location?

## CONCLUSION

This is quite possibly the most difficult exam process that you will ever go through; however, the reward for success is knowing that you will soon attain a marine pilot licence and become one of a select few chosen to look after the safety of navigation on the BC coast or the Fraser River.

The pinnacle of your maritime career! Piloting is a great responsibility that brings with it a great sense of achievement.

Good luck with your endeavours.



Can you identify the location?