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CHAPTER 13 - WATCHKEEPING MATE, SHIP, AND RESTRICTED WATCHKEEPING MATE, SHIP

PART I - GENERAL REQUIREMENTS OF APPLICANTS

- 13.1 (1) Every applicant for a certificate as Watchkeeping Mate, Ship, or Restricted Watchkeeping Mate, Ship, shall:
- (a) **either**
- (i) obtain:
- (A) a certificate of completion for the course set out in TP 5562 from a school listed in TP 10655; and
- (B) a minimum of twelve months sea service as a cadet performing deck duties on a ship of not less than 25 tons gross tonnage engaged on voyages extending beyond the limits of partially smooth waters;
- or**
- (ii) complete 24 months service for a Watchkeeping Mate, Ship, Certificate, as follows:
- (A) subject to paragraph (B), as a rating performing deck duties on a ship of not less than 25 tons gross tonnage engaged on voyages extending beyond the limits of partially smooth waters; and
- (B) service as a rating performing deck duties on a ship of not less than 25 tons gross tonnage engaged on voyages on smooth or partially smooth waters performed before February 1, 2002 may be accepted until February 1, 2005 up to a maximum of six months. After this date, all time served, even if it is before February 1, 2002, must be beyond the limits of smooth or partially smooth waters.
- and**
- (iii) complete 24 months service for a restricted Watchkeeping Mate, Ship, Certificate as a rating performing deck duties on a ship of not less than five tons gross tonnage engaged on voyages beyond smooth or partially smooth waters;
- (b) obtain a medical certificate prescribed by the Crewing Regulations;
- (c) obtain a Restricted Operator Certificate with Maritime Commercial Qualifications (ROC-MC) issued by Industry Canada;
- (d) obtain a certificate of completion for each of the following courses from a school or organization listed in TP 10655:
- (i) Marine Emergency Duties Courses, as set out in TP 4957:
- (A) Survival Craft (B1);
- (B) Marine Fire Fighting (B2); and
- (C) for Officers (C);
- (ii) Simulated Electronic Navigation Level I Course, as set out in TP 4958; and
- (iii) Marine First Aid Advanced Course, as set out in TP 13008;

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- (e) pass an examination in each of the following subjects:
 - (i) Communications;
 - (ii) Chartwork and Pilotage;
 - (iii) General Ship Knowledge; and
 - (iv) Navigation Safety;
 - (f) pass a practical examination in Simulated Electronic Navigation Level I; and
 - (g) pass an oral examination.
- (2) An applicant for a certificate as Watchkeeping Mate, Ship, is not entitled to attempt the examination referred to in paragraph (1) (g) until the applicant has
- (a) completed the requirements of paragraphs (1) (a)(i) or (ii) and (b) to (f);
 - (b) obtained a certificate of completion in Care and Use of a Marine Sextant from a school listed in TP 10655 or demonstrate to the examiner capability in the use of a sextant; and
 - (c) pass an examination in Astro-Navigation;
- (3) An applicant for a certificate as Restricted Watchkeeping Mate, Ship, is not entitled to attempt the examination referred to in paragraph (1)(g) until the applicant has completed the requirements of paragraphs (1)(a)(iii) and (b) to (f).
- 13.2 (1) Except as provided in subsections (2) and (3), an applicant for oral examination 161 in General Seamanship for a Watchkeeping Mate, Ship, Certificate shall have completed at least two years sea service on voyages extending beyond partially smooth waters on vessels of not less than 25 tons gross tonnage.
- (2) Not in use.
- (3) Graduation from an approved co-operative cadet training scheme is acceptable (refer to section 3.19). The candidate must produce testimonials attesting to completion of 12 months sea service as part of the program and present a sea training manual acceptable to the examiner.
- 13.3 (1) Except as provided in subsection (2), an applicant for oral examination 161 in General Seamanship for the Restricted Watchkeeping Mate, Ship, Certificate shall have completed at least two years service on vessels of not less than five tons gross tonnage.
- (2) Graduation from an approved co-operative cadet training scheme is acceptable (refer to section 3.19). The candidate must produce testimonials attesting to completion of 12 months sea service as part of the program and present a sea training manual acceptable to the examiner.
- 13.4 Not used.

PART II - EXAMINATIONS

13.5 The following table lists the examinations for the Watchkeeping Mate, Ship, and Restricted Watchkeeping Mate, Ship, certificates, the qualifying sea service required before each may be attempted, and other requirements.

A. Required for both WKMS and WKMSR certificates:

Examination	Qualifying Service	Other Requirements
012 Communications	Nil	Nil
SIM I Navigating Instruments	18 months	Completion of the SEN I course is required before examination can be attempted.
041 Chartwork and Pilotage	18 months	Nil
151 General Ship Knowledge	18 months	Nil
061 Navigation Safety	18 months	Nil
161 General Seamanship	24 months	All above credits obtained before attempting this examination.

B. Additional for WKMS certificate

051 Astro-Navigation	18 months	Nil
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13.6 Credits for other certificates of competency held will be awarded according to the table in Appendix F.

PART III - VALIDITY OF CERTIFICATES

13.7 (1) The Watchkeeping Mate, Ship, Certificate has validity as:

- (a) third mate of a foreign going vessel;
- (b) second mate of an intermediate voyage vessel;
- (c) second mate of a local voyage or minor waters voyage vessel; and
- (d) first mate of a ship not exceeding 350 tons or a tug on intermediate, local, or minor waters voyages.

(2) The Restricted Watchkeeping Mate, Ship, Certificate has validity as:

- (a) second mate of a local or minor waters voyage vessel; and
- (b) first mate of a ship not exceeding 350 tons or a tug on local or minor waters voyages.

PART IV - SYLLABUSES OF EXAMINATIONS

13.8 Communications

Examination number 012

ITEM	COLUMN
1.	The recognition of single letters and numerals sent by Morse flashing light or sound; International Code flags, single-letter meanings under International Code, including icebreaker and assisted-vessel signals; coding and decoding of messages sent by flag, Morse and voice procedures using the International Code of Signals.
2.	The use of <i>Radio Aids to Marine Navigation</i> for ascertaining facilities and services; use of Standard Marine Communication Phrases.

Note: The examination consists of:

- (a) reading Morse flashing light at a speed of four words per minute or producing to the examiner a certificate of completion for an approved course;
- (b) satisfying the examiner of ability to send Morse by flashing light; and
- (c) a multiple-choice test on the remainder of the syllabus.

Duration of the examination is: for subsection (a) 1 hour; for subsection (b) 1 hour; for subsection (c) as necessary.

13.9 Navigation Instruments


Examination number SIM 1

Companion to Sections 15.21, 16.21 and 19.6

ITEM	COLUMN
1.	The syllabus for the examination is presented in TP 4958, Simulated Electronic Navigation Courses; and simulator exercises include testing on the following: collision avoidance by the application of Collision Regulations, including course and speed alteration; assessment of the rate and direction of current to effect parallel indexing, including wind and tide; ability to deal with emergencies and conduct radio communications effectively.

Note: The examination consists of a check list approved by the instructor after a practical and oral test at an approved school; a multiple-choice examination conducted by an approved school and subject to scrutiny and monitoring by Marine Safety; and an examination conducted by Marine Safety with simulated exercises.

Duration is three and a half hours.

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13.10 Chartwork and Pilotage

Examination number 041

Companion to Sections 16.18, 19.7 and 20.7

ITEM	COLUMN
1.	<p>Pilotage</p> <p>Thorough knowledge regarding preparations for pilotage; possessing and using latest available charts and publications, including large-scale charts of the pilotage area duly corrected to date, latest sailing directions, <i>Notices to Mariners</i>, Lists of Lights, Traffic Zone Regulations (as applicable), tide tables, copy of Charts and Publications Regulations, Code of Navigation Procedures and Practices, <i>Radio Aids to Marine Navigation</i> and chart catalogue .</p>
2.	<p>Steering</p> <p>Knowledge of common steering procedures, their purpose and how to put them into effect; the importance of establishing and adhering to internationally-accepted procedures in issuing helm and steering orders and having them acknowledged and complied with; the instruction of helmsmen in this matter.</p>
3.	<p>Symbols</p> <p>Familiarity with chart symbols and abbreviations as published in Canadian Hydrographic Service Chart No. 1.</p>
4.	<p>Sailing Directions</p> <p>Familiarity with the contents of preface to <i>Sailing Directions</i>, the important general navigational information contained in the preamble and opening chapter of these volumes.</p>
5.	<p>Lists of Lights</p> <p>Familiarity with light characteristics, colours and sound signals used as aids to navigation; use of Lists of Lights, Buoys and Fog Signals; the terms used to define the power of lights (e.g., geographical range, luminous range, charted range computed range, nominal range, computed visibility; use of a luminous range diagram); the effect of abnormal refraction fog signals of different types, anomalies of sound propagation in fog, notices regarding lights lighthouses and buoys etc. published in <i>Notices to Mariners</i>.</p>
6.	<p>Tidal Currents</p> <p>Ability to find the set and rate of tidal current that may be expected at a given point from information given in tide and current table or on the chart; ability to use tables and information on charts of the locality with awareness of the possibly significant effect of weather on the reliability of the information so obtained.</p>
7.	<p>Navigation in Confined Waters</p> <p>Ability to navigate in confined waters: altering course; transits; leading marks and bearings; recording the vessel's progress; making allowance for height of tide; preparatory details to be attended to in entering confined waters (e.g., a review of the relevant sections of the sailing directions, ready availability of large-scale charts of the area with proposed track drawn to indicate distances, courses and near dangers noted); navigational aids with their characteristics to be identified, clearing lines, marks and bearings to be used during the passage to be drawn in, pre-calculation of tidal heights where critical depths of water may be encountered; the maintenance of a record of the vessel's progress on both charts in logbook, including times of passing successive points, course's compass error, speed, weather; fixing the vessel's position by relative and true bearings, transits; dead reckoning position, estimated position and observed position.</p>

8.	<p>Navigation Aids</p> <p>Knowledge of the use of navigational aids in pilotage situations; the necessity of continuing the customary checks and counts of the vessel's safe progress by the Officer of the Watch (OOW) and ship's personnel with record of the details of duties performed, notwithstanding that the vessel was under the conduct of a pilot; the duty of the OOW to ensure that the pilot's advice is understood and effectively carried out; the extent to which reliance is placed on buoys.</p>
9.	<p>Buoyage</p> <p>Knowledge of the Canadian System of Buoyage in detail; differences between lateral and cardinal systems; use of <i>Sailing Directions</i> for determining other buoyage systems in use; understanding of the basic principles employed in the lateral and the cardinal buoyage systems; the importance of consulting the applicable volume of <i>Sailing Directions</i> for details of buoyage system in-force locally prior to entering unfamiliar waters of other countries; Aids to Navigation.</p>
10.	<p>Bridge Practices</p> <p>Familiarity with bridge practices and procedures in pilotage situations; charts, including various projections in common use; the requirement to continue the practice of good navigation procedures by the OOW and ship's personnel generally, and the realization that the presence of a pilot on the bridge does not absolve the ship's personnel from their continuing responsibility for the safe navigation of the ship; the principle employed in construction charts on the Mercator, polyconic, and gnomonic projections, the limitations associated with each of these projections and the purposes of each in practical navigation.</p>
11.	<p>Charts</p> <p>Knowledge of significant distortion, numbering and the presentation of information; the cause of chart distortion, need for nautical charts on board ship; the replacement of superseded editions; the mode of presentation of information on charts; metrication; chart catalogues and numbering.</p>
12.	<p>Chart Usage</p> <p>Ability to use charts produced by the major projections in common use by the Canadian Hydrographic Service, including gnomonic charts; the use of charts in the practice of coastal navigation and on ocean passages; the plotting of bearings, position lines clearing lines etc; the transfer of positions from a chart of one projection to another of a different projection; the use of a gnomonic projection chart, Mercator and polyconic charts.</p>
13.	<p>Fixing Position</p> <p>Ability to fix the ship's position by means at the disposal of the OOW, including electronic navigational aids; considerations to be taken into account, including errors and limitations of equipment; the correction and plotting of bearings taken visually, by radar or direction finder (DF) and the limitations of accuracy inherent in each of these methods; the ship's position established by bearings or ranges taken simultaneously or with an interval and run intervening.</p>
14.	<p>Estimating Position</p> <p>Knowledge of estimating the vessel's position, including allowing for effects of wind and/or tide; the reliability of the value in both direction and force of wind, current and tidal effect used in arriving at the ship's DR position and the resulting area of doubt.</p>
15.	<p>Courses</p> <p>Ability to lay off courses; allowing for effects of wind and tide; the problem of combining vectors of wind, current, tidal effect and course to steer to arrive at course made good; scrutiny of chart for off-lying dangers.</p>

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16.	<p>Conversion of Course</p> <p>Ability to convert true courses laid-off to magnetic courses, including determination of variation at any place; conversion of true courses to gyro, magnetic and compass courses and vice versa; determining the up-to-date value of variation and interpolating for variation at a given locality from isogonic lines or compass roses; use of transit lines, azimuth and amplitude to determine compass error.</p>
17.	<p>Distance Measurement</p> <p>Knowledge of distance measurement and the determination of speed made good and speed through the water; the measurement of distance on a Mercator or polyconic chart; the factors contributing to speed made good and speed through the water, how the difference between the two is expressed.</p>
18.	<p>Range of Visibility</p> <p>Knowledge of factors controlling the range of visibility; terms associated with visibility of lights on navigational aids.</p>
19.	<p>Reliability of Charts</p> <p>Reliability of charts; indications by which reliability may be judged (e.g., date of original survey and possibility of subsequent surveys, adequacy of recorded soundings, with corrections having been made to date); large-scale charts show a small area in greater detail than small-scale charts; care and upkeep of charts.</p>
20.	<p>Publications</p> <p>Use of publications at the disposal of the coastal navigator, including <i>Notices to Mariners</i>, for the correction of charts and publications; the various publications available to the navigator and the nature of their contents; the importance of chart corrections being kept up-to-date.</p>
21.	<p>Tidal Terms</p> <p>Knowledge of the meaning of tidal terms in common use in CHS and United States tide tables; general understanding of tidal phenomena necessary for the comprehension of tidal terms; tidal atlases.</p>
22.	<p>Calculation of Tides</p> <p>Ability to calculate tides and heights of high and low water at reference and secondary ports, and the calculation of depth of water at those times; use of the calculated depth of water at high and low water to determine the height of water at a given charted position.</p>
23.	<p>Set and Rate of Tides</p> <p>Ability to estimate set and rate of tidal currents by reference to tidal current tables and by actual observation; the tentative nature of tabulated tidal current values and the need for caution in using them; the care required in making tidal current observations and the associated details that must be recorded.</p>
24.	<p>Records</p> <p>Appreciation of the need for keeping an accurate record of the vessel's progress and the keeping of such a record; the duty of the OOW to maintain an accurate, detailed and continuous record of the vessel's progress from which a position may be readily determined at any time; the value of such a record being available as a measure of safe navigation and in the event of an emergency requiring immediate knowledge of the ship's position.</p>

Note: The examination consists of:

- (a) a practical chartwork paper, and
- (b) a multiple-choice examination.

Duration three hours.

13.11 Astro-Navigation

Examination number 051

Companion to Section 12.7

ITEM	COLUMN
1.	Basic Basic nautical astronomy, shape of the earth, poles, latitude, longitude; celestial sphere; solar system, including relative movement of bodies; hour angles; time; rising and setting of bodies and their true bearing at these times.
2.	Calculations Correction of sextant altitudes; geographical position of a body, including circle of position line.
3.	Charts Principles of construction of Mercator, polyconic and gnomonic charts, and their use.
4.	Time-Keeping
5.	Plane and Mercator Sailing
6.	Astro-Sights Latitude by meridian altitude of any body (sun, moon, planets and star, including Polaris); use of one or more observations of heavenly bodies, in or out of the meridian, simultaneous or otherwise; combination of celestial and terrestrial observations; finding the true bearing of any body.
7.	Tracks Determining great circle tracks on gnomonic charts and transferring to relevant Mercator charts, including composite great circle; determination of great circle distances; tidal phenomenon, varying effects of the influences of the sun and moon.

Note: The examination consists of a multiple-choice test on basic principles and practical navigation calculations:
Duration is three hours.

13.12 Navigation Safety

Examination number 061

Companion to Sections 16.19, 18.7, 19.8, 20.8 and 21.7

ITEM	COLUMN
1.	Navigation Safety Knowledge and application of the content of the Collision Regulations with Canadian Modifications 1983; STCW Code section A-VIII/2.

Note: The examination is a multiple-choice test, supplemented by oral questions as necessary.
Duration one and a half hours.

13.13 General Ship Knowledge
Examination number 151

ITEM	COLUMN
1.	Weather Observations Ability to observe weather conditions and code these observations for transmission to forecasting agencies using standard meteorological material.
2.	Forecasting Systems A knowledge of the weather and ice forecasting systems within the area of validity, availability of information regarding forecast areas and times of broadcasting.
3.	Tackle Knowledge of Tackle Regulations as they apply to the processes, marking of gear, fencing and gangways.
4.	Safe Working Practices Use and interpretation of the Safe Working Practices Regulations; the need for accident prevention and precautions to be taken in ship operation; measurement and strengths of synthetic and fibre ropes, wires and chains.
5.	Pollution Prevention Knowledge of the pollution-prevention practices as contained in Oil Pollution Prevention Regulations, Garbage Pollution Prevention Regulations, Arctic Shipping Pollution Prevention Regulations, Shipping Safety Control Zones Order.
6.	Ship Construction Elementary knowledge of ship construction, including knowledge of framing, shell plating, decks, water-tight bulkheads, hatchways, bilges, double-bottoms, sounding pipes and air pipes; names of the principal parts of the ship; general arrangement of the principal ship types, general trader, bulk carrier, oil tanker, oil-bulk-ore, package freighters, ro-ro vessels, self-unloaders, ferries and use of general arrangement plans.
7.	Loadlines Ability to read draft and find mean draft with and without list; effect of adding, removing and transferring weights on draft, list and trim and a simple appreciation of stiff and tender ships; practical appreciation of the dangers of slack tanks and icing; purpose and terminology of loadline markings.
8.	Cargo Knowledge of cargo handling arrangements in the following types of carriers: general cargo, bulk carriers, oil tankers, ro-ro (vehicle and rail cars), self-unloaders, package freighters; preparation for loading; rigging for loading or discharging with ship's gear; bulk loading and discharging at shore installations; bulk oil cargoes; responsibilities of deck duty officer and logbook entries; elementary knowledge of the use of cargo plans; basic principles of ventilation and avoidance of sweat damage.


Note: The examination consists of a multiple-choice test, open book resources for items 3,4 and 5 allowed in the examination room.
Duration three hours.

13.14 General Seamanship

Examination number 161

Companion to Section 16.20

ITEM	COLUMN
1.	<p>Rigging</p> <p>Practical knowledge of the rigging of ships, comprising the names, purpose, and construction of standing and running rigging; reeving of blocks and purchases; rigging of stages and chairs; rigging of booms for single boom and union-working boom; names, purposes and construction of the various parts of a boom; positioning and construction of guys and preventers; stresses on the various parts of a boom system during operation.</p>
2.	<p>Knots and Splicing</p> <p>Basic knotting, gripping and splicing with reference to current practice, seizings, rackings, frappings, and stoppers.</p>
3.	<p>Bridge Procedures</p> <p>Bridge discipline, organization and routine under all circumstances; steering orders and responses; maintenance of a proper lookout; fire drills, life boat drills and crew training.</p>
4.	<p>Duties at Sea</p> <p>Duties and responsibilities of the master, officer of the watch, pilot and other bridge personnel (jointly and separately); purpose, necessity and general content of standing orders, night orders, bridge or movement book, ship's logbook and similar material; anchor watch duties, responsibilities, and action to be taken when dragging anchor; ascertaining dragging anchor; arrangement and responsibilities of departments aboard ship; action and manoeuvres required of the officer of the watch in emergencies at sea, man overboard, Williamson and elliptical turns, running aground, collision, discovery of fire, sighting of derelicts, sighting or receiving distress signals; breakdown of aids or equipment, power failure, capsizes of tugs when under tow or manoeuvring.</p>
5.	<p>Duties in Port</p> <p>Duties and responsibilities of the officer of the watch in port; tending of lines and gangways; routine and exceptional fire patrols and inspections; action on discovery of fire aboard or ashore, fire alarms ashore; precautions when taking on or transferring fuel, water or stores; protection of crew members and stevedores; action to be taken in event of excessive ranging, parted moorings, burst oil lines, tank overflows, striking by another vessel, collapse of crew member in tank or other confined space, accidents to any person on board, ship taking bottom.</p>
6.	<p>Anchors</p> <p>Anchors and associated equipment, construction and names of the parts of stocked and stockless anchors; chain cable and shackles; chain cable markings and reporting; cable stowage; fittings between cable locker and hawse pipe; common terms used in anchor work; terms associated with lead of cable; anchoring in shallow or deep water; anchoring in an emergency; heaving up and securing cable; terms pertaining to vessel at anchor.</p>
7.	<p>Mooring</p> <p>Mooring and mooring lines comprising the names of various mooring lines, their purpose and terms used in handling and working them.</p>
8.	<p>Joining Ship</p> <p>Responsibilities on joining a ship.</p>

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9.	<p>Ship Handling</p> <p>General manoeuvring characteristics of merchant vessels of all types; the terms turning circle, advance, transfer, drift angle and tactical diameter; effect of propellers on steering; effect of trim, draft, list and squat on manoeuvrability; effect of current, wind, shallows, bank suction and bank cushion reactions in restricted waters; propeller and rudder effects on steering, including wake current, transverse thrust and screw race when going ahead and astern; behaviour of the ship when engines are put astern, the pivoting point.</p>
10.	<p>Signals</p> <p>Recognition and knowledge of the lifesaving signals contained in the International Code of Signals.</p>
11.	<p>Reports</p> <p>Simple oral ship damage reports.</p>
12.	<p>Meteorological Reports</p> <p>Read and record the instruments supplied by the Meteorological Service, aneroid barometer graduated in inches or millibars, barograph, thermometer graduated in degrees Celsius or Fahrenheit, psychrometer (Stevenson screen); obtain relative humidity and dew point temperature from psychrometer.</p>
13.	<p>Rules</p> <p>Collision Regulations with Canadian Modifications 1983; recommended Code of Nautical Procedures and Practices; ship's documentation, inspection certificates, loadline certificates, manning certificates, tackle book, oil book, station bill, crew list, ship's log; rights and privileges of the various certificates of competency issued by Transport Canada.</p>
14.	<p>Sextant (Watchkeeping Mate, Ship, only)</p> <p>Principles of position fixing by means of a sextant using vertical and horizontal angles.</p>

Note: The examination consists of an oral and practical test.
Items 1 and 2 and questions relating to lifesaving, firefighting and rescue may be omitted if applicant holds an Able Seaman's Certificate or MED B1 and B2 certificates.
Duration as necessary.