Australian Government
Australian Maritime Safety Authority

Master <24m Near Coastal

Skills and Knowledge Required for NSCV Certificates of Competency

PART D CREW COMPETENCIES

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The tables in this document are taken directly from AMSA 730 Skills and Knowledge Required for NSCV Certificates of Competency Part D Crew Competencies. Only those tables specific to this certificate of competency are included in this document.

TABLE 2 – ELEMENTS OF SHIPBOARD SAFETY

Outcome	Content	Standards for evaluating competence
Elements of Shipboard Safety Safety and emergencies including survival craft	**Meet operational and emergency safety requirements** • Apply basic survival skills in the event of vessel abandonment • Follow procedures to minimise and fight fire on a vessel • Meet workplace OHS requirements • Survive at sea using survival craft	• Practice survival techniques • Operate lifesaving and survival equipment • Undertake and understand risk management processes including Safety Management System (SMS) operational practices • Follow safety procedures and take action • Understand and follow fire minimisation procedures • Respond to and fight fires with portable and other firefighting appliances including correct use of vessel closure and shutdown systems • Identify and respond to risks associated with confined spaces • Practice survival techniques using survival craft

TABLE 3 – FOLLOW SOUND ENVIRONMENTAL WORK PRACTICES

Outcome	Content	Standards for evaluating competence
Environment Follow environmental work practices	**Environmental Responsibilities** • Follow environmental workplace practices • Contribute to improved environmental work practices • Maintain environmental records • Precautions to prevent pollution • Sensitive sea and restricted sea areas • MARPOL • Oil spill equipment and its limitations	• Identify safe and environmentally acceptable practices for: - Refuelling - Cleaning up fuel or oil spills - Understanding garbage, sewage, noise, anchoring or marine life and other environmental type maritime responsibilities - Antipollution procedures and equipment

TABLE 8 – SHIP CONSTRUCTION

Outcome	Content	Standards for evaluating competence
Outcome 8.1 Understand principle structural components of a small vessel and their functions	**Design and Construction** • Principal parts of a vessel • Basic methods of design • Construction material (steel, aluminium, FRP and wood) • Regulations governing structure	• Identify structural components from ship's drawings and plans, locate on a vessel and ascertain the relevant regulation governing the structure • Understand the function of structural components and compliance with conventional maritime design • Identify samples of construction material
Outcome 8.2 Maintain the watertight integrity of a vessel	**Watertight Integrity** • Watertight and weathertight integrity • Design characteristics preserving watertight integrity • Maintenance to sustain watertight integrity • Regulations affecting watertight integrity	• Identify watertight features and structural components from ship's drawings and plans and be able to locate them on a vessel • Understand the function of watertight features and structural components in compliance with conventional maritime design • Identify deteriorated hull and fittings and demonstrate knowledge of the reason for the deterioration, in accordance with maritime engineering procedures • Examine a vessel and detail the maintenance procedures required to test and to ensure watertight integrity in compliance with maritime engineering and inspection procedures • Apply regulations affecting watertight integrity • Identify the dangers of working in confined spaces and list precautions and procedures for doing so in compliance with Australian Standards and WH&S
Outcome 8.3 Operate the fuel, fresh and ballast water, bilge and fire pumping systems installed in a vessel	**Pumping Arrangements** • Fuel, fresh and ballast water, bilge and fire pumping arrangements • Sounding and venting facilities • Safety features incorporated in systems • Maintenance requirements to ensure operational readiness • Regulated requirements • Refuelling	• Identify pumping systems on vessel drawings and identify and trace them onboard the vessel • Operate pumping equipment to comply with manufacturer's specification • Identify procedures to avoid contamination of fuel or drinking water • Ensure bilges are clean and dry • Provide fire fighting whilst maintaining stability of the vessel and without environmental contamination • Maintain and test pumping equipment according to manufacturers', vessel, or regulatory specifications • Safety precautions and pollution prevention measures during refuelling are applied according to legislative requirements, supplier's requirements and vessel operating procedures

Outcome	Content	Standards for evaluating competence
Outcome 8.4 Use and maintain deck machinery installed on a vessel	**Deck Machinery** • Mechanical deck equipment • Safety features incorporated in systems • Maintenance requirements to ensure operational readiness • Precautions to be observed when using deck machinery • Regulated requirements	• Operating procedures are in accordance with manufacturers' specification and/or vessel operating procedures • Regulatory requirements are applied • Maintenance procedures comply with manufacturer's requirements • Safety procedures and precautions followed are in accordance with OH&S and maritime safety regulations
Outcome 8.5 Operate steering gear arrangements	**Steering Systems** • Steering gear arrangements • Safety features incorporated in systems • Maintenance requirements to ensure operational readiness • Regulated requirements	• Operating procedures are in accordance with manufacturers' specification and/or vessel operating procedures • Regulatory requirements are applied • Maintenance procedures comply with manufacturer's requirements • Faults are identified promptly and emergency procedures are implemented according to operating procedures • Safety procedures and precautions followed are in accordance with OH&S and maritime safety regulations
Outcome 8.6 Manage hull deterioration	**Vessel Maintenance** • Characteristics and causes of deterioration • Methods to minimise and remedy deterioration • Maintenance management	• Deteriorated hull and fittings are identified in accordance with maritime engineering examination procedures • Regulatory requirements are applied • Maintenance procedures and safety precautions comply with manufacturer's recommendations and warnings • Maintenance schedule is (as minimum) as per manufacturer's requirements
Outcome 8.7 Demonstrate knowledge of various methods of slipping a vessel	**Slipping** • Procedures for slipping a vessel. • Undertake an industry visit to witness a vessel being slipped • Safety precautions (ship and personnel) onboard a vessel whilst out of the water • Maintenance to ensure operational readiness • Working in confined spaces • Regulated requirements	• Demonstrate knowledge of slipping procedures as per vessel and engineering practices • Deteriorated underwater fittings are identified • Workplace Health and Safety procedures are observed • Regulatory requirements are interpreted correctly • Maintenance procedures comply with manufacturer's requirements • Safety precautions and procedures comply with vessel operating procedures • The precautions for putting a vessel back in the water conform to marine safety regulations and engineering principles

TABLE 8A – STABILITY

Outcome	Content	Standards for evaluating competence
Outcome 8.8 a Use simplified stability information to maintain the stability of a vessel	**Stability** • Principles of stability • Terms and definitions • Basic physics of stability • Equilibrium • Impact of design and hull shape on stability *Note: Stability knowledge to include basic calculation* **Operating Conditions** • Adding and removing weights • Water on deck • Slack tanks • Roll period • Stiff and tender vessel • Additions and alterations to vessels	• Information obtained from a vessel's simplified stability data book is applied to maintain the stability of a vessel • Demonstrate knowledge of stability, including interpretation of diagrams, principles and content of a vessels simplified stability book • Demonstrate how to improve stability for heavy weather considerations

TABLE 3 – 8B - COASTAL NAVIGATION

Outcome	Content	Standards for evaluating competence
Outcome 8.9b Plan and conduct a safe passage and determine position	**Chart and Features** • Construction of a navigational chart • Latitude and longitude • Relationship between latitude and longitude • Variation and deviation • Chart scales • Information displayed on a chart or plan • Notices to Mariners	• The information obtained from navigational charts is relevant and applied • The chart symbols and features are identified or selected • That chart corrections are made using Notices to Mariners, are correctly inserted, and deleted as necessary
	Coastal Navigation Techniques • Relationships between true, magnetic, compass, gyro and relative • Variation and deviation • Deviation card • Compass error • Laying off a safe course • Position determined by visual, estimated and radar means • Position estimation by dead reckoning • Coastal features • Publications for safe navigation • Use of electronic aids to navigation • Reporting systems • Navigation Log	• Apply relevant information obtained from current navigational charts and publications • Navigational hazards are identified including ice • Estimated positions are calculated accurately from known data • Vessel position is accurately fixed using visual, radar and a combination of visual and radar information • Plot a GPS derived position • Positions obtained are within acceptable accuracy levels • Fixing interval is appropriate to the proximity of danger • Calculations and measurements from the chart are accurate • Charts selected are appropriate to the area of operation • Use of electronic aids could include but not limited to: GPS, chart plotters, AIS, RADAR, depth sounders, communication systems • Use radar range and bearing to plot the vessels position on a chart. Check the GPS position against the plot • Use parallel indexing to maintain a required distance off a point of land • Maintaining situational awareness • Ship routing information and Traffic Separation Schemes

Outcome	Content	Standards for evaluating competence
Outcome 8.9b continued Plan and conduct a safe passage and determine position	**Instrumentation and Navigation Aids** Basic principles, errors and limitations of: • Compasses • Echo sounders • GPS • Automatic steering systems • Alarm systems • Plotters and electronic charts • Alarms • Interaction of navigation aid and equipment • Basic understanding of ECDIS, ARPA, AIS	• Performance checks and tests on navigational equipment and systems are carried out adhering to manufacturer's recommendations and accepted navigational practices • Operating procedures are in accordance with manufacturer's recommendations • Performance limitations of equipment are considered • Use of electronic aids include but are not limited to: GPS, chart plotters, AIS, RADAR, depth sounders, communication systems • Care and maintenance of navigation aids • Automatic Pilots including use, change over from manual and vice versa • Navigation equipment maintenance, logs and updates
	Tides • Basic tidal theory • Tidal prediction sources • Tide tables, Australian and local	• Relevant information is obtained from tide tables, navigational charts and publications, and applied • The times and heights of high and low water from Australian or local tide tables for any port are accurate • Chart datum and relevance to the height of tide is understood and practical examples applied • The publications used are current • Areas of extensive tidal effects

TABLE 8C – RADAR

Outcome	Content	Standards for evaluating competence
Outcome 8.10c Use radar to maintain safety of navigation and for collision avoidance	**Fundamental Principles** • Fundamental principles and effects on performance • Pulse transmission • Pulse length • Wave length and frequency • Range and bearing measurement • Major components and their siting	• Components are identified as per manufacturer's specification • Demonstrate knowledge of fundamental principles and characteristics on performance of the radar and compensation during use • Setting up and maintaining displays
	Characteristics and Performance • Factors affecting performance • Maximum and minimum range • Bearing and range accuracy • Vertical and horizontal beam width • Range and bearing measurement • Radar horizon	• Factors affecting performance are recognised during use
	Interpretation of Display • Effects of target aspects • Shore and topography targets • Atmospherics • Weather factors • Blind arcs and shadow areas • False echoes • Radar reflectors • Radar beacons and transponder beacons • Radar logs	• Limitation and operating parameters of the radar are identified • Information obtained from radar is interpreted and analysed to assist in navigation and collision avoidance • Interpretation and analysis to be confirmed by alternative means • Misrepresented information is detected • Limitations and accuracy of equipment and information derived in prevailing conditions are identified • Search and Rescue Radio Transponders (SART) and Racons • Identification of critical echoes
	Functions and Adjustment • Function of controls • Symbols for controls • Setting up and maintain display • Shutting down display • Maladjustments • Verification of range and bearing	• Procedures adopted to operate a radar set comply with manufacturer's recommendations • Controls are identified and adjusted to provide maximum performance

Outcome	Content	Standards for evaluating competence
Outcome 8.10c continued Use radar to maintain safety of navigation and for collision avoidance	**Plotting and Collision Avoidance** • Relative and true motion • Radar presentations • Radar plotting • Collision avoidance • International Regulations for the Prevention of Collision at Sea (as amended) • Reporting • Parallel indexing • Basic understanding of ARPA	• Action taken to avoid a close-quarters situation or collision with another vessel is in accordance with the International Regulations for the Prevention of Collision at Sea (as amended) • Radar plots to ascertain target's closest point of approach and time of closest point of approach are actioned to prevent "close quarter" situations developing • Course and speed of other ship • Detecting course changes of other ship • Effects of changes in own ships course and/or speed • Manoeuvring and restricted visibility signals are in accordance with the International Regulations for the Prevention of Collision at Sea (as amended) and used correctly • Course and speed alterations prevent close-quarter situations, comply with International Regulations for Prevention of Collision at Sea (as amended) and avoid navigational hazards

TABLE 8D – NAUTICAL KNOWLEDGE AND LEGISLATION

Outcome	Content	Standards for evaluating competence
Outcome 8.11d Use Commonwealth, local, State & Territory Acts, Legislation, Codes and other publications relevant to the safe operation of a vessel	**Marine Legislation** • Duties and responsibilities • Certificates onboard a small vessel • Procedures manuals onboard a small vessel • Operational areas and classification of vessels • NSCV Part E and C Section 7 • Contents of Marine Notices, Annual Notices to Mariners • Log Book or Vessel Record Book • Workplace Health and Safety Legislation • Marine Pollution • Local, State, Commonwealth & Territory Marine Legislation • Certificates to be carried onboard • Safety management systems or plans • Induction and shipboard training programs	• Apply current information obtained from Commonwealth, local, State and Territory Acts, Legislation, Codes and other publications relating to the safe navigation of a vessel • The duties and responsibilities of the Master are identified • Understand and apply safety management systems, safety management plans, standard and emergency operating procedures and the requirement for inductions for all crew • Determine and understand risk management techniques • Source information on the various State waterways management regulatory requirements, for example: areas of operation, bar crossings, port authority requirements
Outcome 8.12d Obtain and interpret meteorology information relevant to a voyage	**Meteorology** • Elements of meteorology • Terms and definitions • Weather systems • Pressure systems and circulation • Sources of weather forecasts and information • Synoptic charts • Instruments for onboard observations • Tropical revolving storms (TRS)	• Weather information obtained is applicable to the intended voyage • Information obtained from observations, reports and instruments is analysed and included in the voyage planning • Actions taken by a small vessel to avoid severe weather are identified
Outcome 8.13d Maintain a safe navigation watch	**Watchkeeping** • Content, application and intent of the International Regulations for the Prevention of Collision at Sea (as amended) • Watchkeeping standards and principles at sea, anchor and in port • Bridge communication • IALA buoyage system “A”	• International Regulations for the Prevention of Collision at Sea (as amended) are interpreted and applied • Watchkeeping practices comply with accepted standards and procedures • Defined wheelhouse communication and reporting procedures are adopted • The vessel log/record book is maintained in accordance with the NSCV • Situational awareness is maintained

Outcome	Content	Standards for evaluating competence
Outcome 8.14d Respond to emergency situations	**Emergency Procedures** • Collision, grounding, damage to the vessel • Protection and safety of all persons onboard • Abandoning the vessel • Rescuing persons in distress • Assisting a vessel or aircraft in distress • Assisting a vessel or aircraft in Search and Rescue (SAR) • Musters and Drills • Tropical revolving storms	• The emergency situations are identified expeditiously and responded to appropriately • Procedures are appropriate and comply with NSCV Part E and current practices
Outcome 8.15d • Demonstrate knowledge of the various features of a vessel, which relate to its handling characteristics • Manoeuvre a vessel	**Vessel Handling and Manoeuvring** • Effects of rudders and propellers • Berthing and unberthing in various conditions • Manoeuvres to approach an anchorage • Effects of narrow channels and shallow water on manoeuvring • Effects of interaction • Management of a vessel in heavy weather Crossing a bar • Manoeuvres to launch boats or liferafts • Manoeuvres and procedures for person overboard • Towing and being towed	• Demonstrate knowledge of handling characteristics of a vessel and the significance of the characteristic relative to manoeuvring related to engineering and design principles • Vessel is manoeuvred within its performance parameters • Launch and retrieve liferaft/boat according to vessel procedures • Vessel is manoeuvred to pick up simulated person overboard using internationally recognised practices • Turn a vessel across the tide across the wind • Williamson turn, turning short around • Berthing and leaving a berth in various wind and tide conditions • Berthing and unberthing; berthing in a pen • Coming to and leaving a mooring

Outcome	Content	Standards for evaluating competence
Outcome 8.16d Demonstrate seamanship skills and techniques	**Practical Seamanship** • Knots, hitches and bends using fibre and synthetic rope • Eye splice and short splice in fibre and synthetic rope • Precautions when using rope, wire and chains • Breaking strain and safe working loads of ropes • Maintenance and care of rope, wire and chain • Rigging gear, cranes and maximum loads • Winches and windlasses • Safe handling of moorings and hawsers • Stowing and securing anchors for sea • Securing for rough weather and maintenance of watertight integrity • Lashing and securing equipment • Towing and being towed	• Workplace health and safety procedures are observed • Identify rope types and common uses • Tie common knots such as reef knot, bowline, sheet bend, clove hitch, round turn and 2 half hitches and understand their use • Eye splice a fibre/synthetic rope end join two ends complying with the rope manufacturer's recommendations • Whip an end • Techniques and skills used to perform tasks are in accordance with manufacturers' specifications and industry standards • Maintenance procedures comply with authorised requirements