ANNEX 9

RESOLUTION MSC.417(97)
(adopted on 25 November 2016)

AMENDMENTS TO PART A OF THE SEAFARERS' TRAINING, CERTIFICATION AND WATCHKEEPING (STCW) CODE

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO Article XII and regulation I/1.2.3 of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 ("the Convention"), concerning the procedures for amending part A of the Seafarers' Training, Certification and Watchkeeping (STCW) Code,

NOTING that there will be a transitional period between the entry into force of the Polar Code and the amendments to the STCW Convention, and that section B-V/g of the STCW Code provides guidance regarding the training of masters and officers for ships operating in polar waters which should be applied by Administrations during the transitional period,

HAVING CONSIDERED, at its ninety-seventh session, amendments to part A of the STCW Code, proposed and circulated in accordance with Article XII(1)(a)(i) of the Convention,

1 ADOPTS, in accordance with Article XII(1)(a)(iv) of the Convention, amendments to the STCW Code, the text of which is set out in the annex to the present resolution;

2 DETERMINES, in accordance with Article XII(1)(a)(vii)(2) of the Convention, that the said amendments to the STCW Code shall be deemed to have been accepted on 1 January 2018, unless, prior to that date, more than one third of Parties or Parties the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant shipping of ships of 100 gross register tons or more, have notified the Secretary-General of the Organization that they object to the amendments;

3 INVITES Parties to note that, in accordance with Article XII(1)(a)(ix) of the Convention, the annexed amendments to the STCW Code shall enter into force on 1 July 2018 upon their acceptance in accordance with paragraph 2 above;

4 URGES Parties to implement the amendments to section A-I/11 and section A-V/4 at an early stage;

5 REQUESTS the Secretary-General, for the purposes of Article XII(1)(a)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to the Convention;

6 REQUESTS ALSO the Secretary-General to transmit copies of this resolution and its annex to Members of the Organization, which are not Parties to the Convention.

ANNEX

AMENDMENTS TO PART A OF THE SEAFARERS' TRAINING, CERTIFICATION AND WATCHKEEPING (STCW) CODE

CHAPTER I – General provisions

1 In section A-I/11, after the existing paragraph 3, a new paragraph 4 is added as follows:

"4 Continued professional competence for masters and officers on board ships operating in polar waters, as required under regulation I/11, shall be established by:

.1 approved seagoing service, performing functions appropriate to the certificate held, for a period of at least two months in total during the preceding five years; or

.2 having performed functions considered to be equivalent to the seagoing service required in paragraph 4.1; or

.3 passing an approved test; or

.4 successfully completing an approved training course or courses."

2 In section A-I/14, after existing paragraph 3, a new paragraph 4 is added as follows:

"4 Companies shall ensure that masters and officers on board their passenger ships shall have completed familiarization training to attain the abilities that are appropriate to the capacity to be filled and duties and responsibilities to be taken up, taking into account the guidance given in section B-I/14, paragraph 3 of this Code."

CHAPTER V – Standards regarding special training requirements for personnel on certain types of ships

3 In chapter V, the existing section A-V/2 is replaced by the following:

"**Section A-V/2**

Mandatory minimum requirements for the training and qualification of masters, officers, ratings and other personnel on passenger ships

Passenger ship emergency familiarization

1 Before being assigned to shipboard duties, all personnel serving on board passenger ships engaged on international voyages shall have attained the abilities that are appropriate to their duties and responsibilities as follows:

Contribute to the implementation of emergency plans, instructions and procedures

.1 Familiar with:

.1.1 general safety features aboard ship;

.1.2 location of essential safety and emergency equipment, including life-saving appliances;

.1.3 importance of personal conduct during an emergency; and

.1.4 restrictions on the use of elevators during emergencies.

Contribute to the effective communication with passengers during an emergency

.2 Ability to:

.2.1 communicate in the working language of the ship;

.2.2 non-verbally communicate safety information; and

.2.3 understand one of the languages in which emergency announcements may be broadcast on the ship during an emergency or drill.

Safety training for personnel providing direct service to passengers in passenger spaces

2 Before being assigned to shipboard duties, personnel providing direct service to passengers in passenger spaces shall receive the additional safety training required by regulation V/2, paragraph 6, that ensures at least the attainment of the abilities as follows:

Communication

.1 Ability to communicate with passengers during an emergency, taking into account:

.1.1 the language or languages appropriate to the principal nationalities of passengers carried on the particular route;

.1.2 the likelihood that an ability to use an elementary English vocabulary for basic instructions can provide a means of communicating with a passenger in need of assistance whether or not the passenger and crew member share a common language;

.1.3 the possible need to communicate during an emergency by some other means, such as by demonstration, or hand signals, or calling attention to the location of instructions, muster stations, life-saving devices or evacuation routes, when oral communication is impractical;

1.4 the extent to which complete safety instructions have been provided to passengers in their native language or languages; and

.1.5 the languages in which emergency announcements may be broadcast during an emergency or drill to convey critical guidance to passengers and to facilitate crew members in assisting passengers.

Life-saving appliances

.2 Ability to demonstrate to passengers the use of personal life-saving appliances.

Embarkation procedures

.3 Embarking and disembarking passengers, with special attention to disabled persons and persons needing assistance.

Passenger ship crowd management training

3 Before being assigned to shipboard duties, masters, officers, ratings qualified in accordance with chapters II, III and VII and personnel designated on the muster list to assist passengers in emergency situations shall:

.1 have successfully completed the crowd management training required by regulation V/2, paragraph 7, as set out in table A-V/2-1; and

.2 be required to provide evidence that the training has been completed in accordance with table A-V/2-1.

Crisis management and human behaviour training

4 Before being assigned to shipboard duties, masters, chief engineer officers, chief mates, second engineer officers and any person designated on the muster list as having responsibility for the safety of passengers in emergency situations shall:

.1 have successfully completed the approved crisis management and human behaviour training required by regulation V/2, paragraph 8, as set out in table A-V/2-2; and

.2 be required to provide evidence that the required standard of competence has been achieved in accordance with the methods and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-V/2-2.

Passenger safety, cargo safety and hull integrity training

5 Before being assigned to shipboard duties, masters, chief engineer officers, chief mates, second engineer officers and every person assigned immediate responsibility for embarking and disembarking passengers, for loading, discharging or securing cargo, or for closing hull openings on board ro-ro passenger ships shall receive the passenger safety, cargo safety and hull integrity training required by regulation V/2, paragraph 9, that ensures at least attainment of the abilities that are appropriate to their duties and responsibilities as follows:

Loading and embarkation procedures

.1 Ability to apply properly the procedures established for the ship regarding:

.1.1 loading and discharging vehicles, rail cars and other cargo transport units, including related communications;

.1.2 lowering and hoisting ramps;

.1.3 setting up and stowing retractable vehicle decks; and

.1.4 embarking and disembarking passengers, with special attention to disabled persons and persons needing assistance.

Carriage of dangerous goods

.2 Ability to apply any special safeguards, procedures and requirements regarding the carriage of dangerous goods on board ro-ro passenger ships.

Securing cargoes

.3 Ability to:

.3.1 apply correctly the provisions of the Code of Safe Practice for Cargo Stowage and Securing to the vehicles, rail cars and other cargo transport units carried; and

.3.2 use properly the cargo-securing equipment and materials provided, taking into account their limitations.

Stability, trim and stress calculations

.4 Ability to:

.4.1 make proper use of the stability and stress information provided;

.4.2 calculate stability and trim for different conditions of loading, using the stability calculators or computer programs provided;

.4.3 calculate load factors for decks; and

.4.4 calculate the impact of ballast and fuel transfers on stability, trim and stress.

Opening, closing and securing hull openings

.5 Ability to:

.5.1 apply properly the procedures established for the ship regarding the opening, closing and securing of bow, stern and side doors and ramps and to correctly operate the associated systems; and

.5.2 conduct surveys on proper sealing.

Ro-ro deck atmosphere

.6 Ability to:

.6.1 use equipment, where carried, to monitor atmosphere in ro-ro spaces; and

.6.2 apply properly the procedures established for the ship for ventilation of ro-ro spaces during loading and discharging of vehicles, while on voyage and in emergencies.

Table A-V/2-1
Specification of minimum standard of competence in passenger ship crowd management training

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to the implementation of shipboard emergency plans and procedures to muster and evacuate passengers	Knowledge of the shipboard emergency plans, instructions and procedures related to the management and evacuation of passengers Knowledge of applicable crowd management techniques and relevant equipment to be used to assist passengers in an emergency situation Knowledge of muster lists and emergency instructions	Assessment of evidence obtained from training and/or instruction	Actions taken in case of an emergency are appropriate and comply with established procedures
Assist passengers *en route* to muster and embarkation stations	Ability to give clear reassuring orders Ability to manage passengers in corridors, staircases and passageways Understanding the importance of and having the ability to maintain escape routes clear of obstructions Knowledge of methods available for evacuation of disabled persons and persons needing special assistance Knowledge of methods of searching passenger accommodation and public spaces Ability to disembark passengers, with special attention to disabled persons and persons needing assistance Importance of effective mustering procedures, including: .1 the importance of keeping order;	Assessment of evidence obtained from practical training and/or instruction	Actions taken conform with emergency plans, instructions and procedures Information given to individuals, emergency response teams and passengers is accurate, relevant and timely

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
	.2 the ability to use procedures for reducing and avoiding panic; .3 the ability to use, where appropriate, passenger lists for evacuation counts; .4 the importance of passengers being suitably clothed as far as possible when mustering; and .5 the ability to check that the passengers have donned their life jackets correctly.		

Table A-V/2-2
Specification of minimum standard of competence in passenger ship crisis management and human behaviour

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Organize shipboard emergency procedures	Knowledge of: .1 the general design and layout of the ship .2 safety regulations .3 emergency plans and procedures The importance of the principles for the development of ship-specific emergency procedures, including: .1 the need for pre-planning and drills of shipboard emergency procedures .2 the need for all personnel to be aware of and adhere to pre-planned emergency procedures as carefully as possible in the event of an emergency situation	Assessment of evidence obtained from approved training, exercises with one or more prepared emergency plans and practical demonstration	The shipboard emergency procedures ensure a state of readiness to respond to emergency situations
Optimize the use of resources	Ability to optimize the use of resources, taking into account: .1 the possibility that resources available in an emergency may be limited .2 the need to make full use of personnel and equipment immediately available and, if necessary, to improvise Ability to organize realistic drills to maintain a state of readiness, taking into account lessons learnt from previous accidents involving passenger ships; debriefing after drills	Assessment of evidence obtained from approved training, practical demonstration and shipboard training and drills of emergency procedures	Contingency plans optimize the use of available resources Allocation of tasks and responsibilities reflects the known competence of individuals Roles and responsibilities of teams and individuals are clearly defined

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Control response to emergencies	Ability to make an initial assessment and provide an effective response to emergency situations in accordance with established emergency procedures *Leadership skills* Ability to lead and direct others in emergency situations, including the need: .1 to set an example during emergency situations .2 to focus decision making, given the need to act quickly in an emergency .3 to motivate, encourage and reassure passengers and other personnel *Stress handling* Ability to identify the development of symptoms of excessive personal stress and those of other members of the ship's emergency team Understanding that stress generated by emergency situations can affect the performance of individuals and their ability to act on instructions and follow procedures	Assessment of evidence obtained from approved training, practical demonstration and shipboard training and drills of emergency procedures	Procedures and actions are in accordance with established principles and plans for crisis management on board Objectives and strategy are appropriate to the nature of the emergency, take account of contingencies and make optimum use of available resources Actions of crew members contribute to maintaining order and control
Control passengers and other personnel during emergency situations	*Human behaviour and responses* Ability to control passengers and other personnel in emergency situations, including: .1 awareness of the general reaction patterns of passengers and other personnel in emergency situations, including the possibility that:	Assessment of evidence obtained from approved training, practical demonstration and shipboard training and drills of emergency procedures	Actions of crew members contribute to maintaining order and control

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
	.1.1 generally it takes some time before people accept the fact that there is an emergency situation .1.2 some people may panic and not behave with a normal level of rationality, that their ability to comprehend may be impaired and they may not be as responsive to instructions as in non-emergency situations .2 awareness that passengers and other personnel may, inter alia: .2.1 start looking for relatives, friends and/or their belongings as a first reaction when something goes wrong .2.2 seek safety in their cabins or in other places on board where they think that they can escape danger .2.3 tend to move to the upper side when the ship is listing .3 appreciation of the possible problem of panic resulting from separating families		
Establish and maintain effective communications	Ability to establish and maintain effective communications, including: .1 the importance of clear and concise instructions and reports .2 the need to encourage an exchange of information with, and feedback from, passengers and other personnel	Assessment of evidence obtained from approved training, exercises and practical demonstration	Information from all available sources is obtained, evaluated and confirmed as quickly as possible and reviewed throughout the emergency Information given to individuals, emergency response teams and

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
	Ability to provide relevant information to passengers and other personnel during an emergency situation, to keep them apprised of the overall situation and to communicate any action required of them, taking into account: .1 the language or languages appropriate to the principal nationalities of passengers and other personnel carried on the particular route .2 the possible need to communicate during an emergency by some other means, such as by demonstration, or by hand signals or calling attention to the location of instructions, muster stations, life-saving devices or evacuation routes, when oral communication is impractical .3 the language in which emergency announcements may be broadcast during an emergency or drill to convey critical guidance to passengers and to facilitate crew members in assisting passengers		passengers is accurate, relevant and timely Information keeps passengers informed as to the nature of the emergency and the actions required of them

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4 A new section A-V/4 is added as follows:

"Section A-V/4

Mandatory minimum requirements for the training and qualifications of masters and deck officers on ships operating in polar waters

Standard of competence

1 Every candidate for certification in basic training for ships operating in polar waters shall be required to:

.1 demonstrate the competence to undertake the tasks, duties and responsibilities listed in column 1 of table A-V/4-1; and

.2 provide evidence of having achieved:

.1 the minimum knowledge, understanding and proficiency listed in column 2 of table A-V/4-1; and

.2 the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-V/4-1.

2 Every candidate for certification in advanced training for ships operating in polar waters shall be required to:

.1 demonstrate the competence to undertake the tasks, duties and responsibilities listed in column 1 of table A-V/4-2; and

.2 provide evidence of having achieved:

.1 the minimum knowledge, understanding and proficiency listed in column 2 of table A-V/4-2; and

.2 the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-V/4-2.

Table A-V/4-1

Specification of minimum standard of competence in basic training for ships operating in polar waters

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to safe operation of vessels operating in polar waters	*Basic knowledge of ice characteristics and areas where different types of ice can be expected in the area of operation:* .1 ice physics, terms, formation, growth, ageing and stage of melt .2 ice types and concentrations .3 ice pressure and distribution .4 friction from snow covered ice .5 implications of spray-icing; danger of icing up; precautions to avoid icing up and options during icing up .6 ice regimes in different regions; significant differences between the Arctic and the Antarctic, first year and multiyear ice, sea ice and land ice .7 use of ice imagery to recognize consequences of rapid change in ice and weather conditions .8 knowledge of ice blink and water sky .9 knowledge of differential movement of icebergs and pack ice .10 knowledge of tides and currents in ice	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training programme	Identification of ice properties and their characteristics of relevance for safe vessel operation Information obtained from ice information and publications is interpreted correctly and properly applied Use of visible and infrared satellite images Use of egg charts Coordination of meteorological and oceanographic data with ice data Measurements and observations of weather and ice conditions are accurate and appropriate for safe passage planning

Column 1 Competence	Column 2 Knowledge, understanding and proficiency	Column 3 Methods for demonstrating competence	Column 4 Criteria for evaluating competence
	.11 knowledge of effect of wind and current on ice		
	Basic knowledge of vessel performance in ice and low air temperature: .1 vessel characteristics .2 vessel types, hull designs .3 engineering requirements for operating in ice .4 Ice strengthening requirements .5 limitations of ice-classes .6 winterization and preparedness of vessel, including deck and engine .7 low-temperature system performance .8 equipment and machinery limitation in ice condition and low air temperature .9 monitoring of ice pressure on hull .10 sea suction, water intake, superstructure insulation and special systems	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training programme	Identification of vessel characteristics and limitations under different ice conditions and cold environmental impact Procedures are made for risk assessment before entering ice Awareness of fresh water ballast freezing in ballast tanks Actions are carried out in accordance with accepted principles and procedures to prepare the vessel and the crew for operations in ice and low air temperature Communications are clear, concise and effective at all times in a seamanlike manner
	Basic knowledge and ability to operate and manoeuvre a vessel in ice: .1 safe speed in the presence of ice and icebergs .2 ballast tank monitoring	Examination and assessment of evidence obtained from one or more of the following:	Use Polar Code and Polar Water Operations Manual to correctly determine the recommended procedures to load/unload cargo and/or embark/disembark passengers in low

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
	.3 cargo operations in polar waters .4 awareness of engine loads and cooling problems .5 safety procedures during ice transit	.1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training programme	temperatures, monitor ballast water for icing, monitor engine temperatures, anchor watch concerns in ice, and transit near ice Interpretation and analysis of information from radar is in accordance with lookout procedures with special caution regarding identification of dangerous ice features Information obtained from navigational charts, including electronic charts, and publications is relevant, assessed, interpreted correctly and properly applied The primary method of position fixing is frequent and the most appropriate for the prevailing conditions and routing through ice Performance checks and tests of navigation and communication systems comply with recommendations for high latitude and low air temperature operation

Column 1 **Competence**	Column 2 **Knowledge, understanding and proficiency**	Column 3 **Methods for demonstrating competence**	Column 4 **Criteria for evaluating competence**
Monitor and ensure compliance with legislative requirements	*Basic knowledge of regulatory considerations:* .1 Antarctic Treaty and the Polar Code .2 accident reports concerning vessels in polar waters .3 IMO standards for operation in remote areas	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training programme	Locate and apply relevant parts of the Polar Water Operations Manual Communication is in accordance with local/regional and international standard procedures Legislative requirements related to relevant regulations, codes and practices are identified
Apply safe working practices, respond to emergencies	*Basic knowledge of crew preparation, working conditions and safety:* .1 recognize limitations of search and rescue readiness and responsibility, including sea area A4 and its SAR communication facility limitation .2 awareness of contingency planning .3 how to establish and implement safe working procedures for crew specific to polar environments such as low temperatures, ice-covered surfaces, personal protective equipment, use of buddy system, and working time limitations .4 recognize dangers when crews are exposed to low temperatures	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training programme	Identification and initial actions on becoming aware of hazardous situations for vessel and individual crew members Actions are carried out in accordance with Polar Water Operations Manual, accepted principles and procedures to ensure safety of operations and to avoid pollution of the marine environment Safe working practices are observed and appropriate safety and protective equipment is correctly used at all times Response actions are in accordance with established plans and are appropriate to the situation and nature of the emergency

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
	.5 human factors including cold fatigue, medical-first aid aspects, crew welfare .6 survival requirements including the use of personal survival equipment and group survival equipment .7 awareness of the most common hull and equipment damages and how to avoid these .8 superstructure-deck icing, including effect on stability and trim .9 prevention and removal of ice including the factors of accretion .10 recognize fatigue problems due to noise and vibrations .11 identify need for extra resources, such as bunker, food and extra clothing		Correctly identifies and applies legislative requirements related to relevant regulations, codes and practices Appropriate safety and protective equipment is correctly used Defects and damages are detected and properly reported

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Ensure compliance with pollution-prevention requirements and prevent environmental hazards	*Basic knowledge of environmental factors and regulations:* .1 identify particularly sensitive sea areas regarding discharge .2 identify areas where shipping is prohibited or should be avoided .3 special areas defined in MARPOL .4 recognize limitations of oil-spill equipment .5 plan for coping with increased volumes of garbage, bilge water, sewage, etc. .6 lack of infrastructure .7 oil spill and pollution in ice, including consequences	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training programme	Legislative requirements related to relevant regulations, codes and practices are identified Correctly identify/select the limitations on vessel discharges contained in the Polar Code Correctly apply Polar Water Operations Manual/Waste Management Plan to determine limitations on vessel discharges and plans for storing waste Identify references that provide details of areas to be avoided, such as wildlife refuges, ecological heritage parks, migratory pathways, etc. (MARPOL, Antarctic Treaty, etc.) Identify factors that must be considered to manage waste stream during polar voyages

Table A-V/4-2
Specification of minimum standard of competence in advanced training for ships operating in polar waters

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and conduct a voyage in polar waters	*Knowledge of voyage planning and reporting:* .1 information sources .2 reporting regimes in polar waters .3 development of safe routeing and passage planning to avoid ice where possible .4 ability to recognize the limitations of hydrographic information and charts in polar regions and whether the information is suitable for safe navigation .5 passage planning deviation and modification for dynamic ice conditions *Knowledge of equipment limitations:* .1 understand and identify hazards associated with limited terrestrial navigational aids in polar regions .2 understand and recognize high latitude errors on compasses .3 understand and identify limitations in discrimination	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training programme	The equipment, charts and nautical publications required for the voyage are enumerated and appropriate to the safe conduct of the voyage The reasons for the planned route are supported by facts obtained from relevant sources and publications, statistical data and limitations of communication and navigational systems Voyage plan correctly identified relevant polar regulatory regimes and need for ice-pilotage and/or icebreaker assistance All potential navigational hazards are accurately identified Positions, courses, distances and time calculations are correct within accepted accuracy standards for navigational equipment

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
	of radar targets and ice features in ice-clutter .4 understand and recognize limitations of electronic positioning systems at high latitude .5 understand and recognize limitations in nautical charts and pilot descriptions .6 understand and recognize limitations in communication systems		
Manage the safe operation of vessels operating in polar waters	*Knowledge and ability to operate and manoeuvre a vessel in ice:* .1 preparation and risk assessment before approaching ice, including presence of icebergs, and taking into account wind, darkness, swell, fog and pressure ice .2 conduct communications with an icebreaker and other vessels in the area and with Rescue Coordination Centres .3 understand and describe the conditions for the safe entry and exit to and from ice or open water, such as leads or cracks, avoiding icebergs and dangerous ice conditions and	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training programme	All decisions concerning navigating in ice are based on a proper assessment of the ship's manoeuvring and engine characteristics and the forces to be expected while navigating within polar waters Demonstrate communication skills, request ice routeing, plot and commence voyage through ice All potential ice hazards are correctly identified All decisions concerning berthing anchoring, cargo and ballast operations are based on a proper

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
	maintaining safe distance to icebergs .4 understand and describe ice-ramming procedures including double and single ramming passage .5 recognize and determine the need for bridge watch team augmentation based upon environmental conditions, vessel equipment and vessel ice class .6 recognize the presentations of the various ice conditions as they appear on radar .7 understand icebreaker convoy terminology, and communications, and take icebreaker direction and move in convoy .8 understand methods to avoid besetment and to free beset vessel, and consequences of besetment .9 understand towing and rescue in ice, including risks associated with operation .10 handling ship in various ice concentration and		assessment of the ship's manoeuvring and engine characteristics and the forces to be expected and in accordance with the Polar Code guidelines and applicable international agreements Safely demonstrate progression of a vessel through ice, manoeuvring vessel through moderate ice concentration (range of 1/10 to 5/10) Safely demonstrate progression of a vessel through ice, manoeuvring vessel through dense ice concentration (range of 6/10 to 10/10) Operations are planned and carried out in accordance with established rules and procedures to ensure safety of operation and to avoid pollution of the marine environment Safety of navigation is maintained through navigation strategy and adjustment of ship's speed and heading through different types of ice

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
	coverage, including risks associated with navigation in ice, e.g. avoid turning and backing simultaneously .11 use of different type of propulsion and rudder systems, including limitations to avoid damage when operating in ice .12 use of heeling and trim systems, hazards in connection with ballast and trim in relation with ice .13 docking and undocking in ice-covered waters, including hazards associated with operation and the various techniques to safely dock and undock in ice-covered waters .14 anchoring in ice, including the dangers to anchoring system – ice accretion to hawse pipe and ground tackle .15 recognize conditions which impact polar visibility and may give indication of local ice and water conditions, including sea smoke, water sky, ice blink and refraction		Actions are understood to permit use of anchoring system in cold temperatures Actions are carried out in accordance with accepted principles and procedures to prepare for icebreaker towing, including notch towing

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain safety of the ship's crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems	*Knowledge of safety:* .1 understand the procedures and techniques for abandoning the ship and survival on ice and in ice-covered waters .2 recognize limitations of fire-fighting systems and life-saving appliances due to low air temperatures .3 understand unique concerns in conducting emergency drills in ice and low temperatures .4 understand unique concerns in conducting emergency response in ice and low air and water temperatures	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training programme	Response measures are in accordance with established plans and procedures, and are appropriate to the situation and nature of the emergency

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