

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4
COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
	<p>.5 human factors including cold fatigue, medical-first aid aspects, crew welfare</p> <p>.6 survival requirements including the use of personal survival equipment and group survival equipment</p> <p>.7 awareness of the most common hull and equipment damages and how to avoid these</p> <p>.8 superstructure-deck icing, including effect on stability and trim</p> <p>.9 prevention and removal of ice including the factors of accretion</p> <p>.10 recognize fatigue problems due to noise and vibrations</p> <p>.11 identify need for extra resources, such as bunker, food and extra clothing</p>		<p>Correctly identifies and applies legislative requirements related to relevant regulations, codes and practices</p> <p>Appropriate safety and protective equipment is correctly used</p> <p>Defects and damages are detected and properly reported</p>
Ensure compliance with pollution-prevention requirements and prevent environmental hazards	<p><i>Basic knowledge of environmental factors and regulations:</i></p> <p>.1 identify particularly sensitive sea areas regarding discharge</p> <p>.2 identify areas where shipping is prohibited or should be avoided</p> <p>.3 special areas defined in MARPOL</p> <p>.4 recognize limitations of oil-spill equipment</p> <p>.5 plan for coping with increased volumes of garbage, bilge water, sewage, etc.</p> <p>.6 lack of infrastructure</p> <p>.7 oil spill and pollution in ice, including consequences</p>	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <p>.1 approved in-service experience</p> <p>.2 approved training ship experience</p> <p>.3 approved simulator training, where appropriate</p> <p>.4 approved training programme</p>	<p>Legislative requirements related to relevant regulations, codes and practices are identified</p> <p>Correctly identify/select the limitations on vessel discharges contained in the Polar Code</p> <p>Correctly apply Polar Water Operations Manual/ Waste Management Plan to determine limitations on vessel discharges and plans for storing waste</p> <p>Identify references that provide details of areas to be avoided, such as wildlife refuges, ecological heritage parks, migratory pathways, etc. (MARPOL, Antarctic Treaty, etc.)</p> <p>Identify factors that must be considered to manage waste stream during polar voyages</p>

## Annex B (ii)

### STCW Code: Table A-V/4-2

#### Specification of minimum standard of competence in advanced training for ships operating in Polar Waters

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COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
Plan and conduct a voyage in polar waters	<p><i>Knowledge of voyage planning and reporting:</i></p> <ul style="list-style-type: none"> <li>.1 information sources</li> <li>.2 reporting regimes in polar waters</li> <li>.3 development of safe routing and passage planning to avoid ice where possible</li> <li>.4 ability to recognize the limitations of hydrographic information and charts in polar regions and whether the information is suitable for safe navigation</li> <li>.5 passage planning deviation and modification for dynamic ice conditions</li> </ul> <p><i>Knowledge of equipment limitations:</i></p> <ul style="list-style-type: none"> <li>.1 understand and identify hazards associated with limited terrestrial navigational aids in polar regions</li> <li>.2 understand and recognize high latitude errors on compasses</li> <li>.3 understand and identify limitations in discrimination of radar targets and ice features in ice-clutter</li> <li>.4 understand and recognize limitations of electronic positioning systems at high latitude</li> <li>.5 understand and recognize limitations in nautical charts and pilot descriptions</li> <li>.6 understand and recognize limitations in communication systems</li> </ul>	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <ul style="list-style-type: none"> <li>.1 approved in-service experience</li> <li>.2 approved training ship experience</li> <li>.3 approved simulator training, where appropriate</li> <li>.4 approved training programme</li> </ul>	<p>The equipment, charts and nautical publications required for the voyage are enumerated and appropriate to the safe conduct of the voyage</p> <p>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</p> <p>Voyage plan correctly identified relevant polar regulatory regimes and need for ice-pilotage and/or icebreaker assistance</p> <p>All potential navigational hazards are accurately identified</p> <p>Positions, courses, distances and time calculations are correct within accepted accuracy standards for navigational equipment</p>

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Manage the safe operation of vessels operating in polar waters	<p><i>Knowledge and ability to operate and manoeuvre a vessel in ice:</i></p> <ol style="list-style-type: none"> <li>.1 preparation and risk assessment before approaching ice, including presence of icebergs, and taking into account wind, darkness, swell, fog and pressure ice</li> <li>.2 conduct communications with an icebreaker and other vessels in the area and with Rescue Coordination Centres</li> <li>.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 maintaining safe distance to icebergs</li> <li>.4 understand and describe ice-ramming procedures including double and single ramming passage</li> <li>.5 recognize and determine the need for bridge watch team augmentation based upon environmental conditions, vessel equipment and vessel ice class</li> <li>.6 recognize the presentations of the various ice conditions as they appear on radar</li> <li>.7 understand icebreaker convoy terminology, and communications, and take icebreaker direction and move in convoy</li> </ol>	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <ol style="list-style-type: none"> <li>.1 approved in-service experience</li> <li>.2 approved training ship experience</li> <li>.3 approved simulator training, where appropriate</li> <li>.4 approved training programme</li> </ol>	<p>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</p> <p>Demonstrate communication skills, request ice routing, plot and commence voyage through ice</p> <p>All potential ice hazards are correctly identified</p> <p>All decisions concerning berthing anchoring, cargo and ballast operations are based on a proper 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</p> <p>Safely demonstrate progression of a vessel through ice, manoeuvring vessel through moderate ice concentration (range of 1/10 to 5/10)</p> <p>Safely demonstrate progression of a vessel through ice, manoeuvring vessel through dense ice concentration (range of 6/10 to 10/10)</p> <p>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</p>

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	<p>.8 understand methods to avoid besetment and to free beset vessel, and consequences of besetment</p> <p>.9 understand towing and rescue in ice, including risks associated with operation</p> <p>.10 handling ship in various ice concentration and coverage, including risks associated with navigation in ice, e.g. avoid turning and backing simultaneously</p> <p>.11 use of different type of propulsion and rudder systems, including limitations to avoid damage when operating in ice</p> <p>.12 use of heeling and trim systems, hazards in connection with ballast and trim in relation with ice</p> <p>.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</p> <p>.14 anchoring in ice, including the dangers to anchoring system – ice accretion to hawse pipe and ground tackle</p> <p>.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</p>		<p>Safety of navigation is maintained through navigation strategy and adjustment of ship's speed and heading through different types of ice</p> <p>Actions are understood to permit use of anchoring system in cold temperatures</p> <p>Actions are carried out in accordance with accepted principles and procedures to prepare for icebreaker towing, including notch towing</p>

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Maintain safety of the ship's crew and passengers and the operational condition of life-saving, fire- fighting and other safety systems	<p><i>Knowledge of safety:</i></p> <ul style="list-style-type: none"> <li>.1 understand the procedures and techniques for abandoning the ship and survival on ice and in ice-covered waters</li> <li>.2 recognize limitations of fire- fighting systems and life-saving appliances due to low air temperatures</li> <li>.3 understand unique concerns in conducting emergency drills in ice and low temperatures</li> <li>.4 understand unique concerns in conducting emergency response in ice and low air and water temperatures</li> </ul>	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <ul style="list-style-type: none"> <li>.1 approved in-service experience</li> <li>.2 approved training ship experience</li> <li>.3 approved simulator training, where appropriate</li> <li>.4 approved training programme</li> </ul>	<p>Response measures are in accordance with established plans and procedures, and are appropriate to the situation and nature of the emergency</p>

## Annex C – Instructor/Assessor Qualification and Experience Requirements

All training and instruction should be given, and assessments carried out, by suitably qualified and experienced personnel. This annex provides guidance regarding the suitability and acceptability of qualifications and experience for personnel designated to carry out training, instruction or assessment in training courses covering ships operating in polar waters at both basic and advanced levels. The list is not exhaustive, and suitable equivalent qualifications and experience will be considered.

### Contextual awareness

All trainers and assessors should:

- understand the specific objectives of the training
- be familiar with the specific operations of ships operating in polar waters at management level
- be familiar with the use and operation of simulators when used for training.\*

***\*NB:** simulation exercises must be delivered by trainers and assessors that are familiar with their use and/or under the supervision of a simulator operator that has suitable training in its use and operation.*

### Instructional qualifications and experience

All trainers and assessors should have:

- a. a certificate in Training for Vessels Operating in Polar Waters - Basic or Advanced relevant to the course being delivered, or experience of operating in polar waters relevant to the course being delivered.
- b. a knowledge of instructional techniques, training methods and training practice at least to the level of IMO Training for Instructors.
- c. an understanding of assessment methods and practice.
- d. practical instructional and assessment experience.

### Requirements for training centres

Training centres should have procedures in place to enable staff to update their knowledge of vessel operations in polar water, plus their knowledge of instruction and assessment techniques, in accordance with current CPD practice.