DIRECTORATE GENERAL OF SHIPPING, GOVT. OF INDIA, MUMBAI		
	TRAINING BRANCH	IS / ISO Clause No. 7.1
Ref : QMS 7.0	Subject-**Guidelines for Basic Training for Ships Operating in Polar water Course**	File No. TR/CIR/ 6(2)/2018
	Circular No. : STCW 2010 Training Circular No.23 of 2018	Dated 17.09.2018

1. The International Code for ships operating in Polar waters. (The Polar Code) entered into force through the new Chapter XIV of SOLAS (i.e. *Safety Measures for ships operating in Polar Waters*).

2. The amendment to the STCW Convention was carried out vide MSC Resolution 416 (97) dated 25.11.2016 and the STCW Code was amended vide MSC Resolution 417(97) dated 25.11.2016. The amendments to the STCW Convention and code introduced new training and certifications requirements for Masters, Chief Mates and Officers in charge of navigational watch on ships operating in Polar waters. The new training requirements introduced as follows:

2.1 Basic training for ships operating in polar waters

2.2 Advanced training for ships operating in polar waters.

3. The *'Manning and Training'* Chapter of Polar Code [Chapter 12, Part I-A] at Para 12.2 requires Masters, Chief Mates and Officers in charge of a navigational watch to have completed training to attain the required abilities that are appropriate to the capacities to be filled and duties and responsibilities to be taken considering the amended provisions of the STCW Convention and the STCW Code.

4. The DGS issued Circular NT/EXAM 02 of 2018 on Transitional provisions for Certification of Masters and deck officers on ships operating in polar waters. The said circular at para 7 specified the requirements for assessment for sea service performed onboard ship operating in polar waters or other equivalent waters towards issuance of certificate of basic training for continuing seagoing service onboard ships operating in polar waters.

5. To specify the requirement of Basic training for ships operating in polar waters, the Directorate General of Shipping has formulated the following guidelines for the conduct of the "Basic Training for Ships Operating in Polar Waters" course as annexed to this circular.

6. The ID No. assigned for the "*Basic training for ships operating in Polar waters*" Course is 309. The duration of this course is 34 hours (5 days) and the frequency of the course shall not exceed 48 in a calendar year.

7. DGS training institute, eligible to conduct this course and complying with the details specified in the annex will be eligible to apply for the conduct of this course along with a prescribed processing fee of Rs. 25,000/-.

8. This issue with the approval of Director General of Shipping & Secretary to the Govt. of India.

17 Sept.18

(Deependra Singh Bisen)
Asstt. Director General of Shipping

To,

1. All Maritime Training Institutes. 2. Principal Officers, MMD, Mumbai/Chennai/ Kolkata/ Kochi/ Kandla 3. Shipping Masters, Mumbai/ Kolkata/ Chennai 4. INDOS Cell, DGS, GOI, Nau Bhavan Building, Mumbai- 400 038. 5. Nautical Branch, DGS, GOI 6.Engineering Branch, DGS, GOI 7. Training Branch 8. Hindi Cell (To translate in Hindi and put up in website 9. INSA/ FoSMA/ MASSA/ ICSSA/ MUU IMEI/ CMMI/ NUSI. 10. Computer Cell, DGS, GOI with a request to upload. 11. E-Governance Cell, DGS, GoI. 12. Guard File. 13. Sr. PS to DG(S) for information. 14. Sr. PS to Addl. DG(S) for information.

ANNEX

GUIDELINES FOR THE CONDUCT OF BASIC TRAINING COURSE FOR SHIPS OPERATING IN POLAR WATERS

1. **AIMS** – This course is intended to provide training to navigating officers to meet the mandatory minimum requirements for training and qualification of masters and deck officers on ships operating in polar waters, as specified in Section A-V/4 of the STCW Convention and Table A-V/4-1 of the STCW Code. This course is also designed to meet the requirements of IMO Model course 7.11.

2. **OBJECTIVES** – A trainee successfully completing this course will gain:

2.1 ability to contribute to safe operation of vessels operating in polar waters;

2.1.1 *understanding of ice characteristics and areas where different types of ice can be expected in the area of operation.*

2.1.2 *understanding of vessel performance in ice and low air temperature.*

2.1.3 *understanding of safe operations and ship manoeuvrability in ice.*

2.2 awareness to monitor and ensure compliance with legislative requirements;

2.3 understanding to apply safe working practices, respond to emergencies;

2.3.1 *understanding and awareness of correct crew preparation, working conditions and safety,*

2.3.2 *understanding the need to ensure compliance with pollution- prevention requirements and prevent environmental hazards; and*

2.3.3 *understanding* skills to perform manoeuvres in order to safely operate ships in polar waters.

3. **INFRASTRUCTURE AND EQUIPMENT REQUIREMENT** –

3.1 **CLASS ROOM** – The lectures shall take place in a classroom of minimum 20 sq. m. with adequate desk and chair seating space for all trainees. Standard classroom facilities must be available such as appropriate projection system for power point presentation, whiteboard/chalkboard, video, ice charts etc.

3.2 **Full Mission Simulator** –

3.2.1 A 'Full Mission Ship Handling Simulator' [FMSHS] complying with the specifications given in DGS training branch Circular No. 06 of 2005 and additional ice specification given in **Appendix - 4** of this guideline. The simulator shall also comply with the performance standards specified in section A-1/12 of the STCW Code and be Type approved from any IACS Member or DG Shipping.

3.2.2 Briefing / Debriefing space shall be provided in instructor's station of the FMSHS. The Instructor station shall be equipped with seating capacity of one instructor and 4 trainees at any given time and with white / black board, overhead / LCD projector and a capability of projecting recording of ship

tracks and actions taken during the exercise for the purpose of debriefing. The Specifications of the Briefing / Debriefing room are given in **Appendix - 4**.

3.2.3 The full mission simulator shall replicate ice operations from a navigation bridge perspective and be able to create situations that provide an opportunity to acquire the required ice navigation skills and also be able to evaluate the trainee's grasp of the learning objectives and concepts of polar ice navigation.

4. **ELIGIBILITY FOR MARITIME TRAINING INSTITUTE** – Any DGS approved training institute may apply for obtaining approval for the course.

5. **ENTRY STANDARDS FOR CANDIDATES** –

5.1 Every candidate for a certificate in basic training for ships operating in polar waters shall hold a certificate as Master, chief mate or officer in charge of a navigation watch qualified in accordance with regulations II/1 or II/2 or II/3 respectively of the STCW Convention, issued or recognised by the Government of India.

OR

5.2 Deck trainees who have completed the minimum requisite sea service for appearing for the Certificate of Competency as Second Mate [FG] or NWKO (NCV) and have successfully completed followings courses approved by the Directorate.

5.2.1 Radar observers simulator course (ROSC).

5.2.2 Automatic radar plotting aids (ARPA).

5.2.3 Electronic Chart display and information system (ECDIS).

6. **COURSE INTAKE LIMITATIONS** –

6.1 The course intake is limited to a maximum of 8 trainees. [8 for classroom lectures with 4 for simulation exercises in FMSHS during exercises].

6.2 The maximum trainee to faculty ratio shall be 8 to 1 for classroom lectures and 4 to 1 for simulation sessions.

6.3 For simulation session, trainees shall be divided into two teams of maximum 4 trainees each. One team would be carrying out an exercise while the other is being lectured, debriefed or planning the next exercise.

7. **FACULTY REQUIREMENTS** – The following are the minimum qualifications recommended for course in charge and faculty delivering this course, based on the Knowledge, Understanding and Proficiency Table, set out in section A-V/4-1 of the STCW Code.

7.1 **The qualifications and experience of Course-in-charge & faculty :**

7.1.1 Certificate of Competency as Master (FG) issued or recognised by Government of India;

7.1.2 at least 5 years sea time as a certificated officer on merchant ships, of which at least 1 year as a management level officer;

7.1.3 has served on a ship in the capacity of a management level officer for a total period of at least 50 days in ice covered waters, of which 30 days should have been served in polar or equivalent waters.

OR

successfully completed a training course for ships operating in polar waters/ice navigation which includes practical onboard training during the course by institutes accepted by Directorate.

7.1.4 The course-in-charge or faculty should preferably have experience of being on a ship in ice conditions that require the ship to be assisted by an icebreaker or to make manoeuvres to avoid concentrations of ice that might have endangered the ship.

7.1.5 undergone and successfully completed an approved "Basic and Advanced training course for ships operating in Polar waters".

7.1.6 have a detailed knowledge of the requirements of preparation of a vessel for operating in low air temperatures.

7.1.7 have an up-to-date knowledge of the various Ice Class and equipment requirements to navigate in ice.

7.1.8 have an up to date knowledge of correct crew preparation, working conditions and safety in ice conditions and low air temperatures; and

7.1.9 be fully aware of need to ensure compliance with pollution- prevention requirements;

7.1.10 have successfully completed the DG approved Training for Trainers and Assessors course.

8. **FACULTY STRENGTH** – Not less than two Master Mariners. A minimum of 50% of the entire portion must be covered by full time faculty.

9. **REQUIRED ATTENDANCE** – 100% attendance is required for successful completion of the course.

10. **COURSE OUTLINE, TIME TABLE AND DETAILED LEARNING OBJECTIVE** –

10.1 Course duration: 37 hrs [minimum 5 days]
10.2 Course outline: As per Appendix - 1
10.3 Course Time Table: As per Appendix - 2
10.4 Detailed Learning Objectives - As per IMO model course 7.11.

11. **HOLIDAYS** – Sundays shall be holidays. Independence Day (15th August) and Republic Day (26th January) shall be compulsory holidays. Trainees shall normally enjoy the holidays observed by the Govt. of the State in which the institute is located.

12. **ASSESSMENT and FEEDBACK** – Assessment through Written Test and Simulator Assessment (as per Trainee's Assessment Checklist in **Appendix - 5**) shall be carried out. Also course feedback to be taken from each participant at the conclusion of the course.

13. **COURSE CERTIFICATE** – Course certificate, the format of which is appended at the **Appendix - 3** shall be issued by the DGS approved maritime training institute to all trainees who have successfully completed the DGS approved "Basic training for ships operating in Polar waters" Course.

14. **QUALITY STANDARDS** – As per DGS Order No. 5 of 2016

15. **INSPECTION** – As per DGS Order No. 5 of 2016

16. **FEES TO GOVERNMENT** – As per DGS Order No. 5 of 2016

17. **COST OF INSPECTIONS** – As per DGS Order No. 5 of 2016

18. **TEACHING AIDS** –

A1 Instructor's Manual
A2 Projector for power point presentations
A3 White board
A4 Videos
A5 Ice charts
A6 Full mission Ship Handling and Navigation Simulator which can simulate ice operations in polar waters (Specifications in Annexure I)
A7 Nautical Charts (ENCs)

Note: Other equivalent teaching aids may be used as deemed fit by the faculty.

19. **REFERENCE MATERIAL(MANDATORY)** –

Note: Textbooks T1 to T5, TR4 or TR5, R5 and R9 mentioned below are mandatory. Other textbooks may be used as deemed fit by the faculty.

T1 Ice Navigation in Canadian Waters, Icebreaking Program, Maritime Services, Canadian Coast Guard, Fisheries and Oceans Canada, Ottawa, Ontario (Revised August 2012)
T2 Winter Navigation on the River and Gulf of St. Lawrence *Practical Notebook for Marine Engineers and Deck Officers* November 2011 Edition (TP14335E)
T3 WMO Sea ice nomenclature
T4 "Polar ship operations", The Nautical Institute
T5 Handling Ships in Ice by Johan Buysse, The Nautical Institute publication

TR4 Guide to Navigating Through the NSR, No. 4151B, 1996
TR5 Ice Phenomenon Threatening Arctic Shipping, Alfred Tunik (Editor), Vladislav Benzeman, Sergey Klyachkin, Yevgeny Mironov, Yury Gorbunov, NikolayAdamovich, Backbone Publishing Company, 2012

R5 Polar Code, International Code for Ships Operating in polar waters
R9 IMO Guide to Cold Water Survival (2012)

20. **REFERENCE MATERIAL (NON-MANDATORY) -**

Note: Textbooks mentioned below are non mandatory and may be used as deemed fit by the faculty.

Antarctica

TA1 Secretariat of the Antarctic Treaty (http://www.ats.aq/index_e.htm) for documents pertaining to Antarctic regulations, annexes and Madrid protocol

Canada

TC1 Annual Notice to Mariner
TC2 Arctic Ice Regime Shipping Control System
TC3 Arctic Sailing Directions (ARC 400, ARC 401, ARC 402, ARC 403 &

ARC 404)
TC4 Arctic Waters Oil Transfer Guidelines
TC5 Equivalent Standards for the Construction of Arctic Class Ships
TC6 Guidelines for the Operation of Passenger Vessels in Canadian Arctic Waters - TP 13670
TC7 Manual of Standard Procedures for Observing and Reporting Ice Conditions (MANICE)
TC8 Ship Safety Bulletins (7 relevant to ice navigation)

Denmark/Greenland

TD1 PUB. 181 Sailing Directions (Enroute) Greenland and Iceland

Russia

TR1 NP23 Bering Sea and Strait Pilot,
TR2 NP43 South and East Coasts of Korea,
TR3 NP72 Southern Barents Sea and Belroy More Pilot.

United States

TUS1 NP23 Bering Sea and Strait Pilot
TUS2 Coast Pilot 9 (Pacific and Arctic Coasts: Alaska to Beaufort Sea)
TUS3 PUB 180 Sailing Directions (Planning Guide) Arctic Ocean

Miscellaneous IMO and REGULATORY REFERENCES (R) –

R1 SOLAS 1974, International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974) as amended
R2 International Convention on Standards of Training, Certification and Watch keeping for Seafarers, (STCW) 1978, as amended
R3 MARPOL, International Convention for the Prevention of Pollution from Ships,Consolidated Edition 2011
R4 MFAG, Medical First Aid Guide
R6 MSC.1/Circ.1519 on *Guidance on Methodologies for Assessing Operational Capabilities and Limitations in Ice*
R7 IAMSAR Guidelines for the Development of Shipboard Emergency Plans for Search and Rescue in ice infested waters.
R8 ISM Code, International Safety Management Code (ISM Code)
R10 IMO Intact Stability Code (2008)

ELECTRONIC MEDIA –

Note: Equivalent videos, CD-ROMs, Computer Based Training (CBT) may be used as deemed fit by the faculty.

E1 NAVIGATING IN ICE
E2 COLD AND HEAVY WEATHER FILE
E3 SAFE ESCORT (Canadian Coast Guard)
E4 NAVIGATING IN COLD ENVIRONMENTS
E5 PASSAGE PLANNING IN COLD ENVIRONMENTS
E6 ENGINEERING OPERATIONS IN COLD ENVIRONMENTS
E7 PERSONAL SAFETY IN COLD ENVIRONMENTS

APPENDIX - 1

COURSE OUTLINE (L-Lecture, E- Exercise, S – Simulation)

Subject Area with Learning Objectives	L	E	S	TOTAL Time Hours
1. Course Introduction, Ice Nomenclature, Characteristics and Detection 1.1 Course Introduction 1.2 Ice Physics Formation, Growth, Aging, and Stages of Melt 1.3 Snow Covered Ice 1.4 Ice Types, Concentrations and Features 1.5 Ice Reports, Ice Reporting, Coding and Terminology 1.6 Signs of Ice in the Vicinity 1.7 Ice Imagery 1.8 Effects of Weather Patterns, Current, Tides & Wind on Ice formation and Motion Overview 1.9 Ice Pressure & Distribution Example of Trainee Classroom EXERCISES • Exercise ✓ Identify Types of Ice – Thickness ✓ Estimate Ice Concentrations ✓ Estimate Floe size ✓ Iceberg classification • Reading of Ice chart and the EGG Code	**4**	**1**		**5.0**
2. Regulations and Standards 2.1 Regulations 2.2 Standards	**4**			**4.0**
3. Vessel Characteristics 3.1 Vessel Types 3.2 Hull Design 3.3 Enhanced Icebreaking Design Features 3.4 Propulsion 3.5 Subdivision and Stability for ice-strengthened vessels	**2**			**2.0**
4. Manoeuvring				
4. Manoeuvring **In open coastal waters** 4.1 Approaching & Entering harbour 4.2 Manoeuvring Astern 4.3 Transiting harbour waters without pilot 4.4 Vessel Damage 4.5 Vessel Manoeuvring Capabilities In coastal waters 4.6 Bridge Watch keeping **In ice and polar waters** 4.8 Approaching & Entering Ice 4.9 Manoeuvring Astern 4.10 Transiting Ice	 **1** **6**	 	 **2*** **4**	**13.0**

4.11 Vessel Damage 4.12 Vessel Manoeuvring Capabilities In Ice 4.13 Bridge Watch keeping Example of Trainee SIMULATOR Exercises • *Simulator Familiarisation • Navigating in Ice waters using leads available / thinner ice conditions by observance visually and by Radar • Navigating in ice-infested waters using available leads / thinner ice conditions while in close proximity to land				
5. Passage Planning and Reporting 5.1 Passage Planning 5.2 Communications 5.3 Provisioning and Vessel Services Example of Trainee Classroom EXERCISES • Plan a passage between point A to point B • Calculating Ice Numeral (IN) using AIRSS • Calculating Risk Index Outcome (RIO) using POLARIS	**1**	**1**		**2.0**
6. Icebreaker Assistance 6.1 Icebreaker Requirement 6.2 Safe Speeds and Distances Example of Trainee SIMULATOR Exercises • Navigating in Iceberg, growlers, bergy bits infested waters with minimal visibility (onset of twilight or onset of daylight) • Navigating in Ice field with Icebreaker assistance	**2**		**3**	**5.0**
7. Vessel Performance in polar waters/Low Air Temperature 7.1 Classification Society rules for Vessel Winterization 7.2 Ship's Preparations for Low Air Temperatures 7.3 Freezing of Equipment 7.4 Ship Equipment/Systems in a Cold Environment 7.5 Cargo Operations in polar waters 7.6 Passenger Embarkation and Disembarkation in polar waters 7.7 Vessel Superstructure or Deck Icing Due to Freezing Spray	**2**			**2.0**
8. Crew Preparation, Working Conditions & Safety 8.1 Safe Working Procedures for Crew, Specific to Polar Environments 8.2 Cold Weather Survival in polar waters 8.3 Search and Rescue in polar waters	**2**			**2.0**
9. Environment 9.1 Pollution Prevention in polar waters 9.2 Oil Spills and Pollution *9.3* Garbage and Vessel Waste	**1**			**1.0**
TOTAL	**25**	**2**	**9**	**36.0**
10. Evaluation				**1.0**
TOTAL				**37.0**

BASIC LEVEL COURSE DELIVERY SUMMARY

Subject Area	**Recommended Method of Delivery**			**Course Time (hours)**
	Lecture (Hours)	**Class Room Exercise (Hours)**	**Simulation (Hours)**	
1.0 Course Introduction, Ice Nomenclature,	5.0		--	**5.0**

Characteristics and Detection				
2.0 Regulations and Standards	4.0	--	--	**4.0**
3.0 Vessel Characteristics	2.0	--	--	**2.0**
4.0 Manoeuvring in open coastal waters & Ice	7.0	--	6.0*	**13.0**
5.0 Voyage Planning	2.0		--	**2.0**
6.0 Icebreaker Assistance	2.0	--	3.0	**5.0**
7.0 Vessel Performance in polar waters/Low Air Temperatures	2.0	--	--	**2.0**
8.0 Crew Preparation, Working Conditions & Safety	2.0	--	--	**2.0**
9.0 Environment	1.0	--	--	**1.0**
10. Evaluation	--	--	--	**1.0**
TOTAL	**27.0**		**9.0**	**37.0**

*NB: Simulation time includes simulator familiarization.

APPENDIX - 2

COURSE TIMETABLE

TIME	SUBJECT	TIME	SUBJECT
	Group A		**Group B**
DAY 1			
30 Min.	Course Entry formalities.	30 Min.	Course Entry formalities.
02 Hrs.	1.1 Course Introduction 1.2 Ice Physics Formation, Growth, Aging, and Stages of Melt 1.3 Snow Covered Ice 1.4 Ice Types, Concentrations and Features (Lecture) 1.5 Ice Reports, Ice Reporting, Coding and Terminology	02 Hrs.	1.1 Course Introduction 1.2 Ice Physics Formation, Growth, Aging, and Stages of Melt 1.3 Snow Covered Ice 1.4 Ice Types, Concentrations and Features (Lecture) 1.5 Ice Reports, Ice Reporting, Coding and Terminology
15 Min.	**Tea Break**	***15 Min***	**Tea Break**
01 Hrs.	1.6 Signs of Ice in the Vicinity 1.7 Ice Imagery 1.8 Effects of Weather Patterns, Current, Tides & Wind on Ice formation and Motion Overview (Lecture)	01 Hrs.	1.6 Signs of Ice in the Vicinity 1.7 Ice Imagery 1.8 Effects of Weather Patterns, Current, Tides & Wind on Ice formation and Motion Overview (Lecture)
01 Hrs.	Example of Trainee Classroom EXERCISES • Exercise ✓ Identify Types of Ice – Thickness ✓ Estimate Ice Concentrations ✓ Estimate Floe size ✓ Iceberg classification • Reading of Ice chart and the EGG Code	01 Hrs.	Example of Trainee Classroom EXERCISES • Exercise ✓ Identify Types of Ice – Thickness ✓ Estimate Ice Concentrations ✓ Estimate Floe size ✓ Iceberg classification • Reading of Ice chart and the EGG Code
01 Hrs.	***Lunch Break***	***01 Hrs.***	***Lunch Break***
01 Hrs.	1.9 Ice Pressure & Distribution(Lecture)	01 Hrs.	1.9 Ice Pressure & Distribution(Lecture)
01 Hrs.	2.1 Regulations 2.2 Standards (Lecture)	01 Hrs.	2.1 Regulations 2.2 Standards (Lecture)
15 Min.	***Tea Break***	***15 Min.***	***Tea Break***
30 Min.	Exercise 1 - Familiarisation(Simulator)	***30 Min.***	Exercise 1 - Familiarisation(Simulator)
		1.5 Hrs.	Exercise 2 - Navigating in Ice waters using leads available / thinner ice conditions by observance visually and by Radar(Simulator)

TIME	SUBJECT	TIME	SUBJECT
	Group A		**Group B**
		DAY 2	
1.5 Hrs.	Exercise 2 - Navigating in Ice waters using leads available / thinner ice conditions by observance visually and by Radar (Simulator)		
15 Min.	***Tea Break***	***15 Min.***	***Tea Break***
3 Hrs.	2.1 Regulations 2.2 Standards (Lecture)	3 Hrs.	2.1 Regulations 2.2 Standards (Lecture)
1 Hrs.	***Lunch Break***	1 Hrs.	***Lunch Break***
2 Hrs.	3.1 Vessel Types 3.2 Hull Design 3.3 Enhanced Icebreaking Design Features 3.4 Propulsion 3.5 Subdivision and Stability for ice-strengthened vessels (Lecture)	2 Hrs.	3.1 Vessel Types 3.2 Hull Design 3.3 Enhanced Icebreaking Design Features 3.4 Propulsion 3.5 Subdivision and Stability for ice-strengthened vessels (Lecture)
15 Min.	***Tea Break***	***15 Min.***	***Tea Break***
		4 Hrs.	Exercise 3 - Navigating in open coastal waters and ice-infested waters using available leads / thinner ice conditions while in close proximity to land(Simulator)
		DAY 3	
4 Hrs.	Exercise 3 - Navigating in open coastal waters and ice-infested waters using available leads / thinner ice conditions while in close proximity to land(Simulator)		
15 Min.	***Tea Break***	***15 Min.***	***Tea Break***
3.0 Hrs.	4.1/4.8 Approaching & Entering Ice 4.2/4.9 Manoeuvring Astern (Lecture)	3.0 Hrs.	4.1/4.8 Approaching & Entering Ice 4.2/4.9 Manoeuvring Astern (Lecture)
1 Hrs.	***Lunch Break***	***1 Hrs.***	***Lunch Break***
2 Hrs.	4.3 Transiting Ice 4.4 Vessel Damage (Lecture)	2 Hrs.	4.3 Transiting Ice 4.4 Vessel Damage (Lecture)
15 Min.	***Tea Break***	***15 Min.***	***Tea Break***
		1.5 Hrs.	Exercise 4 - Navigating in Iceberg, growlers, bergy bits infested waters with minimal visibility (onset of twilight or onset of daylight) (Simulator)

TIME	SUBJECT	TIME	SUBJECT
	Group A		**Group B**
		DAY 4	
1.5 Hrs.	Exercise 4 - Navigating in Iceberg, growlers, bergy bits infested waters with minimal visibility (onset of twilight or onset of daylight) (Simulator)		
15 Min.	***Tea Break***	***15 Min.***	***Tea Break***
1.5 Min	4.5 Vessel Manoeuvring Capabilities In Ice 4.6 Bridge Watch keeping (Lecture)	1.5 Hrs.	4.5 Vessel Manoeuvring Capabilities In Ice 4.6 Bridge Watch keeping (Lecture)
1 Hrs.	5.1 Passage Planning 5.2 Communications 5.3 Provisioning and Vessel Services (Lecture)	1 Hrs.	5.1 Passage Planning 5.2 Communications 5.3 Provisioning and Vessel Services (Lecture)
1 Hrs.	***Lunch Break***	1 Hrs.	***Lunch Break***
1 Hrs.	<u>Example of Trainee Classroom EXERCISES</u> • Plan a Passage from Point A to Point B • Calculating Ice Numeral (IN) using AIRSS / Calculating Risk Index Outcome (RIO) using POLARIS	1 Hrs.	<u>Example of Trainee Classroom EXERCISES</u> • Plan a Passage from Point A to Point B • Calculating Ice Numeral (IN) using AIRSS / Calculating Risk Index Outcome (RIO) using POLARIS
1 Hrs.	6.1 Icebreaker Requirement (Lecture)	1 Hrs.	6.1 Icebreaker Requirement (Lecture)
15 Min.	***Tea Break***	***15 Min.***	***Tea Break***
1 Hrs.	6.2 Safe Speeds and Distances (Lecture)	1 Hrs.	6.2 Safe Speeds and Distances (Lecture)
		1.5 Hrs.	Exercise 5 - Navigating in Ice field with Icebreaker assistance (Simulator)
		DAY 5	
1.5 Hrs.	Exercise 5 - Navigating in Ice field with Icebreaker assistance (Simulator)		
15 Min.	***Tea Break***	***15 Min.***	***Tea Break***
2 Hrs.	7.1 Classification Society rules for Vessel Winterization 7.2 Ship's Preparations for Low Air Temperatures 7.3 Freezing of Equipment 7.4 Ship Equipment/Systems in a Cold Environment 7.5 Cargo Operations in polar waters 7.6 Passenger Embarkation and	2 Hrs.	7.1 Classification Society rules for Vessel Winterization 7.2 Ship's Preparations for Low Air Temperatures 7.3 Freezing of Equipment 7.4 Ship Equipment/Systems in a Cold Environment 7.5 Cargo Operations in polar waters 7.6 Passenger Embarkation and

TIME	SUBJECT	TIME	SUBJECT
	Group A		**Group B**
	Disembarkation in polar waters 7.7 Vessel Superstructure or Deck Icing Due to Freezing Spray (Lecture)		Disembarkation in polar waters 7.7 Vessel Superstructure or Deck Icing Due to Freezing Spray (Lecture)
1 Hrs.	8.1 Safe Working Procedures for Crew, Specific to Polar Environments (Lecture)	1 Hrs.	8.1 Safe Working Procedures for Crew, Specific to Polar Environments (Lecture)
1 Hrs.	***Lunch Break***	1 Hrs.	***Lunch Break***
1 Hrs.	8.2 Cold Weather Survival in polar waters 8.3 Search and Rescue in polar waters (Lecture)	1 Hrs.	8.2 Cold Weather Survival in polar waters 8.3 Search and Rescue in polar waters (Lecture)
30 Min.	9.1 Pollution Prevention in polar waters 9.2 Oil Spills and Pollution (Lecture)	30 Min.	9.1 Pollution Prevention in polar waters 9.2 Oil Spills and Pollution (Lecture)
15 Min.	***Tea Break***	***15 Min.***	***Tea Break***
30 Min.	*9.3* Garbage and Vessel Waste (Lecture)	30 Min.	*9.3* Garbage and Vessel Waste (Lecture)
1 Hrs.	Assessment	1 Hrs.	Assessment
15 Min.	Feedback & Certificates	15 Min.	Feedback & Certificates

NOTE:

1. If two simulator stations are available, then the simulator exercise for the two groups can be conducted simultaneously with two separate faculties.
2. Relevant videos may be shown to the trainees as applicable.

APPENDIX - 3

CERTIFICATE (SAMPLE)

Institute's LOGO

NAME and ADDRESS of the D. G. Approved Training Institution

MTI No: **Tel:** **Fax:** **E-mail:**

Certificate No: _____

THIS IS TO CERTIFY THAT *[full name of candidate]*

Indian National Database of Seafarers (INDoS No.) .....

Date of Birth .... (dd/mm/yyyy)

Holder of C.D.C. No. .....

Certificate of Competency / Proficiency, (if any) Grade: ..... No. .....

Has successfully completed

BASIC TRAINING FOR SHIPS OPERATING IN POLAR WATERS

held from .....to ..... .

The course is approved by the Directorate General of Shipping and meets the minimum mandatory STCW requirements for the training and qualifications of Masters and deck officers on ships operating in Polar Waters, STCW Chapter V/4, Section A-V/4-1 and Table A-V/4-1 "Specification of minimum standard of competence in basic training for ships operating in Polar Waters". The candidate has also met the additional criteria specified in the STCW Convention, applicable to the issue of the certificate. This certificate is issued under the authority of the Directorate General of Shipping Ministry of Shipping, Government of India.

_____
Signature of Candidate

Date of Issue: _____

_____
Name, Indos No. and Signature of Course In-charge

Date of Expiry : UNLIMITED

Colour Photograph (35 mm x 35 mm)

Official Seal

_____
Name and Signature of Dean / Principal

Note :

1. This is not a Certificate of Proficiency in Basic Training for Ships operating in Polar waters. This Course Certificate and other requisite documents must be submitted to the Administration to obtain the Certificate of Proficiency.
2. All enquiries regarding this certificate should be addressed to the issuing authority at the address given above.

APPENDIX - 4

SPECIFICATIONS FOR THE FULL MISSION NAVIGATION SIMULATOR

The Full mission Navigation simulator shall conform to the requirements of STCW as amended in 2010, Regulation I/12 (use of simulators), Section A - I/12 Part 1 and 2 "Performance Standards for the simulator and Simulator training Objectives" and section B - I/12, 68,69,70 (guidance regarding the use of simulators). It should also be capable of being used for training and demonstrating competence for Masters and Mates on ship of 500 GRT or more as per STCW Code A-V/4-1 and A-V/4-2.

The Radar, ARPA and ECDIS shall conform to the latest IMO Specifications, The performance standards for radar equipment are given in resolutions A. 222(VII), A. 278(VIII), A. 477(XII), A. 823(19), MSC.64 (67) and MSC.192 (79).The Performance Standards for ECDIS are :A 817 (19) , MSC 232(82) and Circular MSC.1/Circ.1503 as amended, with Edition 4.0 of the IHO ECDIS Presentation Library.

ENC charts shall be provided for the geographical areas mentioned in Section F. In case ENC charts are not available for that area, then paper chart may be used, in lieu thereof.

The Simulator Specifications shall be as given in Training Circular No. 06 of 2005, Annexure 1 - **SPECIFICATIONS FOR SHIP MANOEUVRING SIMULATOR**

In Addition the simulator shall also have the capability to depict Ice Navigation features. These are detailed below:

DETAILED SPECIFICATIONS

A. Visualization

The visual screen size for each channel for projected display shall not be less than 6' x 4'. The visual system shall present all navigational marks as displayed on ECDIS and paper charts for that area.

Or flat screen displays (instead of projected image), could be used, where each panel shall be a minimum of 65" on the diagonal.

Ice Visualisation:

The simulator shall be able to provide:

- Visual presentation of different ice zones: Ice field, broken ice, Brash ice, Pancake ice, Small floe, Nilas ice as a object.
- Visual presentation of brash ice around the ship's hull while it is moving through the ice zone;
- Concentration of the broken ice in the channel is visually represented by means of dynamic texture changing (including uneven obliteration);
- Visual presentation of different thickness of Ice field.
- Dynamic reproduction of ice breaking sounds and noises produced by the ice friction against the ship hull.

B. Simulator Capabilities

Ice Functionality:

Ship motion modelling:

- Forces and moments of the hull from the movement in broken ice of various solidarity and thickness taken into account;
- Mechanical interaction with the edge of the solid ice of various thickness, ice breaking;
- Effects related to the ship's interaction with ice: increased resistance to the ship's motion; limited manoeuvrability; dangerous impacts against ice;
- Ice Class Properties:
  - Safety of ice navigation provided by hull strength and propulsion / steering unit for the models is regulated by assigning of appropriate ice category (ice class).

Areas of application:

Simulation training in navigating in ice conditions:

- When proceeding in broken ice;
- When proceeding along the solid ice edge, bumping against the edge;
- When proceeding in open pack ice, and in patches of ice free water.
- When collision with single ice floes.

C. Faculty

The faculty should be able to set:

ICE FEATURE CONTROLS

Channel Formation:

- Concentration of the broken ice in the channel increases linearly from an initial value (specified in the properties) to the maximum 100%;
- Thickness of the broken ice in the channel is equal to the thickness of an initial ice field;

History:

- "Freezing" parameter specifies the time (in minutes) that takes broken ice to get maximum concentration (become solid) in the channel;
- "Compacting" parameter specifies the speed (cm/sec) of the ice channel closing from its edges.

Radar Echo:

- "Detection range" parameter specifies maximum distance of the ice field edge detection by the radar;

Additional features:

- Setting of exercise ice zones as polygon zones with planar boundaries: Ice field, Broken ice, Brash ice, Pancake ice, Small floe, Nilas ice;
- Setting of drifting ice fields following the route, drifting as per weather settings, moving with predefined speed and course;
- Setting of exercise ice zones thickness and concentration;
- Setting of exercise Ice field channel parameters;
- Setting of exercise Hummocks parameters;
- Possibility to increase ice repulsion in order to speed up vessels' stopping in the ice field;

Exercise objects:

- Ice zone object
- Ice breaker as a Target Vessel

F Recommended Geographical Areas:-

The geographical areas mentioned in Trg Circular 06 of 2005, Annexure 1 to be replaced by:

At least five international Polar waters (as defined by the Polar Code) geographical areas for exercises.

Recommended Polar waters geographical Areas:

1) Barents Sea
6) Davis Straits

2) Kara Sea
3) Bering Straits
4) Chukchi Sea
5) Beaufort Sea
7) Greenland Sea
8) Laptev Sea
9) Baffin Bay
10) East Siberian Sea

A briefing / debriefing room capable of seating 4 trainees + instructor as per 1.2 sq.m. per trainee size requirement, with a briefing table. The briefing room shall be equipped with a white / black board, overhead / LCD projector and a capability of projecting recording of ship tracks and actions taken during the exercise for the purpose of debriefing.

The briefing / debriefing room may be connected to the instructor room, whereby the recording of ship's tracks and the actions taken could be directly seen on the instructor monitors instead of separate projection on overhead LCD projector.

APPENDIX - 5

Basic Training for Ships Operating in Polar waters

TRAINEE'S PROFICIENCY CHECKLIST

These tasks are most effectively mastered by:

- Practicing them in navigational contexts (Simulator Exercises when underway)

	Simulator Exercises – Basic Tasks	**Day**	**SIM Exercise**	**Tick**
1	**Simulator Familiarisation**	D1	SIM EX-1	
2	**Navigating in Ice waters using leads available / thinner ice conditions by observance visually and by Radar**	D2	SIM EX-2	
a	Aware that TSS rules may not apply during winter season.			
b	Aware of vessel's Ice capability as per its Class notation			
c	Engines are ready for immediate manoeuvre			
d	Before deciding to enter the ice the following factors were considered: • Type of ice; • Vessel's ice class in relation to the type of ice expected; • Vessel maintained within Ice belt • Draught and depth of water over the propeller tips and the rudder;			
e	Frequent use of the rudder, especially in the hard-over position, has			

	Simulator Exercises – Basic Tasks	Day	SIM Exercise	Tick
	the effect of slowing down the vessel's passage through ice.			
f	Too much rudder, when pushing through ice, may bring the vessel to a complete stop			
g	Astern movements should be used with caution and always with the rudder amidships as these astern movements can draw chunks of heavy ice back into the propeller blades causing damage to the tips			
h	Turning Circle will increase in Ice			
i	Danger of the stern swinging into ice when passing through patches of open water or in leads with risk of damage to propeller or rudder			
j	Reliability of Navigational Buoy's position			
3	**Navigating in ice-infested waters using available leads / thinner ice conditions while in close proximity to land**	D3	SIM EX-3	
a	Consider above points Ex. 2a to 2j			
b	Watch for any changes in wind direction and in ice conditions as with a change of wind the vessel may become trapped in Ice with the risk of being driven ashore			
c	Ridging of ice towards leeward side was anticipated			
4	**Navigating in Iceberg, growlers, bergy bits infested waters with minimal visibility (onset of twilight or onset of daylight)**	D4	SIM EX-4	
a	Able to differentiate between a Growler, Bergy bit and an Iceberg			
b	Icebergs given as wide berth as is possible, and passed on the			

	Simulator Exercises – Basic Tasks	Day	SIM Exercise	Tick
	windward side.			
c	Radar X-band, Permanent trails switched "ON" to spot growlers in poor visibility / at night			
5	**Navigating in Ice field with Icebreaker assistance**	D5	SIM EX-5	
a	Consider above points Ex. 2a to 2j			
b	When approaching ice, speed immediately reduced or engine stopped.			
c	When entering ice, vessel was slowed down or barely moving.			
d	Entry into ice field made at right angle to the ice edge.			
e	When Beset – NUC lights / Shapes exhibited.			

Candidate Name: _____ Faculty Name: _____

Signature and Date: _____ Signature and Date:_____