



**DEMOCRATIC SOCIALIST REPUBLIC  
OF SRI LANKA MERCHANT  
SHIPPING SECRETARIAT  
MINISTRY OF PORTS AND  
SHIPPING**

**1<sup>st</sup> Floor, Bristol Building, 43-89, York Street, Colombo 01, Sri Lanka.**

Telephone: +94(0)112435127, Fax: +94(0)112435160, E-mail: dmsmos@sltnet.lk

## **Simulator**

### **TEACHING FACILITIES AND EQUIPMENT FOR OPERATIONAL USE OF ECDIS**

ECDIS simulation equipment must meet all applicable performance standards set out in Regulation I/12 of the STCW Convention and also should meet the guidance in Section B-I/12, as amended.

#### **ECDIS CLASSROOM/LAB.**

The lecture portion of the course can take place in any suitable classroom with adequate desk/seating space for all trainees. Standard classroom facilities must be available such as whiteboard/chalkboard, appropriate projection system, etc.

The practical demonstration and assessment portion of the course must take place in a space equipped to provide a suitable ECDIS simulator workstation for each individual trainee. The necessity of mounting display monitors on the desk surfaces requires careful placement of all equipment and projection screens to maintain good visibility for all trainees.

In addition to the trainee work stations there must be an instructor station with dedicated projection system that will allow projection of the exercises and lecture materials. It is strongly recommended that there be display(s) networked to the instructor station, thereby allowing display(s) of ARPA and ECDIS information (or other training material) for the benefit of the trainees.

Note that the lecturing may take place in the same room as the simulation if the space is suitable. This would require adequate visibility around/over the workstations to the whiteboard/chalkboard and projection screens, and adequate workspace for taking notes and written examinations.



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### TEACHING AIDS

1. Instructor Manual (Part D of the course)
2. Audiovisual aids: Video/DVD player, visual presentation, document projector, etc.
3. Simulator providing ownship functionality in an underway navigational context
4. ECDIS workstation including ENC data, deriving inputs from simulation or live sensors
5. Electronic Navigational Chart (ENC) data, various, including permits, and update files
6. Raster Navigational Charts (RNC) including permits and updates

### ELECTRONIC MEDIA

ECDIS, Seagull CBT, CD #64

AIS, Seagull CBT, CD #109 v.A, 8/2003

ECDIS Training Course, Videotel CBT #871, 5/2008

### TEXTBOOKS

1. Norris, A. (2010) ECDIS and Positioning. London: The Nautical Institute
2. Weintrit, A. (2009) The Electronic Chart Display and Information System (ECDIS): An Operational Handbook. Gydnia: Gydnia Maritime University, Poland, Balkema Book, CRC Press, Taylor & Francis Group
3. Hecht, et al. (2011) The Electronic Chart, Fundamentals, Functions, Data and other Essentials A Textbook for ECDIS Use and Training (3rd Revised Edition) Lemmer, The Netherlands: Geomares Publishing
4. The ECDIS Manual, ECDIS Ltd, Witherby Seamanship International, Edition 2012



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**SHIP SIMULATOR AND BRIDGE TEAMWORK**

(For Ship handling, BRM, BTM)

**TEACHING FACILITIES AND EQUIPMENT**

This course requires a ship handling simulator with a fully equipped bridge, including instruments showing course, speed, rudder angle, rate of turn, engine RPM and propeller pitch and relative wind direction and speed.

Whenever possible, the model in use should be of similar size and manoeuvring characteristics to the ships in which trainees will serve. The models must generate realistic responses to the use of engine and rudder under various conditions. Special attention should be drawn to slow speed situations. The simulator must have a visual system capable of handling a number of ships in addition to land masses. The simulator must generate realistic radar signals and echo soundings and simulate or emulate navigation receivers providing at least one alternative means of fixing position.

Manoeuvring information, in the form set out in IMO Assembly resolution A.601 (15), should be provided for the model in use. The bridge should be equipped with a simulated VHF telephone, connected to the instructor station, for communicating with pilot stations, VTS, port services and other ships during exercises. The instructor will act as the other stations in answering or initiating calls. Similarly, an internal telephone to the engine-room should be connected to the instructor station.

Means of producing the sound signals required by COLREG 1972 must be provided for other ships in the vicinity as well as for own ship.

Adjacent to the simulator there should be a room where briefing and debriefing may be held. Preferably, there should be a wall projector showing the scenario as it is seen from the



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instructor station. The room should be suitable for displaying charts on the walls and have an overhead projector and a blackboard.

There should be a room where lecturing may be held. Preferably, each trainee should have a personal computer equipped with a Bridge Resource Management interactive CBT programme (or equivalent products).

## TEACHING AIDS

1. Instructor Manual

2. Bridge Resource Management (BRM) interactive Computer Based Training programme (developed by SAS Flight Academy, Sweden. Tel.: +46 8 797 2116, Fax +46 8 797 4241, E-mail:ericw@sasfa.com),

or

2. Bridge and Engine-room Resource Management programme (developed by Indian Maritime Training Centre, c/o Indian Ocean Ship Management Ptc. Ltd, India, Telephone 009 122 834 3210)

or

2. Bridge Team Management Training, RTM STARCenter, Dania, Florida, USA.

Each group will require the following:

3. Charts, tide tables, current charts, list of lights and sailing directions for the exercise areas.

4 Equipment manuals and tables of corrections for simulated navigational aids.



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5 International Chamber of Shipping, Bridge Procedures Guide, 2nd ed.(London, Witherby and Co., 1990).

6 A ship's log-book.

7 Manoeuvring information for the ship model in use.

**TEXTBOOKS**

1 Bridge resource Management, Student's Workbook (up-to-date edition)

**RADR PLOTTING,ARPA and RADAR ARPA SIMULATOR**

**TEACHING FACILITIES AND EQUIPMENT**

The course requires a marine radar simulator with an instructor station and sufficient own ship displays to accommodate the number of trainees.

The equipment must incorporate at least two own ship stations (STCW Code A-I/12 Part 1 paragraph 4.3). It must be capable of simulating the operational capabilities of navigational radar equipment which meets all applicable performance standards of IMO. The performance

standards for radar equipment are given in Assembly resolutions A.222(VII) A.278(VIII) A.477(XII) A.832(19) MSC.64(67) and MSC.192(79).

**TEACHING AIDS**



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1. A plotting table, plotting charts and instruments should be provided adjacent to each set.
2. A classroom equipped with a blackboard or flipchart and an overhead projector, slide projector, or viewgraph, as appropriate, is also needed for teaching the theoretical part of the course.
3. Instructor manual
4. Video player
5. Manufacturer's operational manual (Radar and ARPA)
6. Video-cassettes or DVDs about the use of radar and ARPA. For example, target tracking devices available from Videotel Productions, London.

**TEXT BOOKS**

1. Alan Bole, Alan Wall, Andy Norris, Radar and ARPA Manual, 3rd Edition, the Boulevard, Langford Lane, Kidlington, Oxford, OX5 1GB, UK, ISBN 978-0-08-097752-2, 2014.
2. Liu Tong and Zhang Bin, Shipborne Navigation Radar, Dalian Maritime University Press, ISBN 978-7-5632-2937-6, 2013.
3. W. Burger, Radar Observer's Handbook for Merchant Navy Officers, 9th Edition. Glasgow, Brown, Son and Ferguson LTD., ISBN 0-85174-666-7, 1998, Reprinted 2008.
4. David F. Burch, Radar for Mariners, Library of Congress Cataloging-in-Publication Data Burch, David, ISBN 0-07-139867-8, 2005.
5. A.N. Cockcroft and J.N.F. Lameijer, A Guide to the Collision Avoidance Rules, 5th Edition. Oxford, Heinemann Professional Publishing, ISBN 0-434-90274-8, 1996.
6. R. Lownsborough and D. Calcutt, Electronic Aids to Navigation: Radar and ARPA, London, Edward Arnold, ISBN 0-340-59258-3, 1993.
7. I. Smith and R. A. Mulroney, Parallel Indexing Techniques, Warsash Publishing, ISBN 0



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8. Swift, A.J. and Bailey, T. J. 2004. Bridge Team Management: A Practical Guide. 2nd ed. London: The Nautical Institute.

9. Anwar, N. 2015. Navigation Advanced for Mates and Masters. 2nd Ed. Livingston: Witherby Seamanship International Ltd.

10. Passage Planning Principles. 2006. London and Lanarkshire: Witherbys Publishing Ltd and Seamanship International Limited.

11. Passage Planning Practice. 2006. London and Lanarkshire: Witherbys Publishing Ltd and Seamanship International Limited.

12. Frost, A. 2016. Practical Navigation for Officers of the Watch. 2nd Ed. Glasgow: Brown, Son & Ferguson LTD.