INTERNATIONAL MARITIME ORGANIZATION

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Agenda item 3

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VALIDATION OF MODEL TRAINING COURSES

Revision of IMO model course 1.07 on Radar Navigation at Operational Level

Submitted by China

SUMMARY

Executive summary:	This document analyses the deviation of IMO model course 1.07 on Radar Navigation at Operational Level from the current performance standards for radar equipment laid down by IMO resolution MSC.192(79), and expounds the necessity to revise IMO model course 1.07 to be in line with the requirements of the SOLAS Convention, STCW Convention and resolution MSC.192(79)
Strategic direction:	5.2
High-level action:	5.2.2
Planned output:	5.2.2.3
Action to be taken:	Paragraph 11
Related documents:	IMO model course 1.07; resolutions A.477(XII); A.823(19); MSC.64(67); MSC.192(79); MSC.74(69); SN/Circ.243 and resolution MSC.246(83)

Background and analysis

1 Radar is the crucial equipment to maintain safe navigation. IMO developed model course 1.07 on Radar Navigation at Operational Level aiming to provide guidance on teaching and training cadets and officers in charge of a navigational watch, and evaluating their competence of using radar and ARPA to maintain safe navigation, as provided in table A-II/I of section A-II/I of the STCW Code.

2 The current edition of IMO model course 1.07 was revised in 1999 to accommodate requirements of the STCW Convention, as amended in 1995, and to incorporate requirements in the annex to resolution A.477(XII) on *Performance standards for radar equipment*, adopted in 1981, and in the annex to resolution A.823(19) on *Performance standards for automatic radar plotting aids (ARPAs)*, adopted in 1995.

3 Since 1995, performance standards for radar and ARPA equipment have been revised in 1996 and in 2004 respectively by *Recommendations on new and amended performance standards (a*nnex 4 to resolution MSC.64(67)) and *Revised recommendation on performance standards for radar equipment* (annex to resolution MSC.192(79)). Pursuant to the latest revision, radar systems should be capable of receiving the required input information from various sensors including radar sensor, THD sensor, SDME sensor, EPFS sensor and AIS sensor. Besides, radar systems may also be provided with optional sensors such as ECDIS, etc.

4 According to requirements for safety of navigation (SOLAS chapter V, regulation 18 and resolution MSC.192(79)), all radar equipment installed on or after 1 July 2008 shall be compliant with the requirements, or not inferior to performance standards set out therein.

5 As the case stands, various sensors such as radar, THD, SDME, EPFS and AIS have been integrated into radar systems, step by step, by equipment manufacturers. Integrated shipborne navigational radar systems supported by multi-sensors have prominent characteristics different from traditional ones in function, operation and application. However, training for officers in charge of a navigational watch still follows the guidance of model course 1.07 which is out of date with the latest revision in 1999. There might therefore be a likelihood that those officers won't have adequate knowledge and the expected competence to operate radar systems complying with the performance standards as per resolution MSC.192(79).

6 To attain the expected competence, officers in charge of a navigational watch should receive comprehensive training on relevant theory, operation and application through radar equipment and radar simulators before they can properly operate radar systems integrated with multi-sensors. However, the current model course 1.07 does not cover all the knowledge concerned. Therefore, a number of officers in charge of a navigational watch may not have adequate knowledge or awareness when operating radar equipment to handle information obtained from radar systems, which will eventually increase the navigation risk. Illustrative comparison and analysis can be found in the annex to this document.

7 In table A-II/1 of section A-II/1 of the STCW Code, one of the criteria for evaluating competence of officers in charge of navigational watch states that "the information obtained from radar and ARPA is correctly interpreted and analyzed, taking into account the limitations of the equipment and prevailing circumstances and conditions".

Conclusion

8 Based on the above discussion, it is quite obvious that model course 1.07 has already lagged behind the development of current radar performance standards, as well as the latest development of shipborne navigational radar systems, and is at odds with the requirements of the SOLAS Convention. It is highly probable that officers in charge of a navigational watch trained under the current model course 1.07 would not properly meet the requirements for operating radar systems as provided in the STCW Convention.

9 Additionally, model course 1.07 is one of the elementary courses referenced in model course 7.03 on Officer in Charge of a navigational watch. In consideration of the inadequacy as described above, model course 1.07 can no longer be considered as the substantial basis of model course 7.03.

Proposal

10 In light of the foregoing, China proposes that model course 1.07 should be revised, as early as possible, to adequately reflect the requirements of the SOLAS Convention, STCW Convention and resolution MSC.192(79).

Action requested of the Sub-Committee

11 The Sub-Committee is invited to consider the information provided and take action, as appropriate.

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ANNEX

Inadequate knowledge requirements in current model course 1.07 and the consequential risks to navigation safety

Inadequate knowledge of current model course 1.07	Improper operation and wrong application due to the knowledge gap	Consequential risks to navigation safety	Primary cause(s)
presentation modes	habitually use H-up	improper information processing by radar	H-up is not suitable for integrated information processing
SDME sensor	improperly use STW or SOG	error in navigation or wrong judgment to encounter situations	ambiguous concept of ship's speed reference
EPFS sensor	without integrity validation	the error of PNT reference	inadequate knowledge pertaining PNT information
target association	fail to operate or operate incorrectly for association	applying false data during collision avoidance	improper handling of the information shown on the multi-functional display.
setting of sensors	improper setting	navigation/collision avoidance error	inadequate knowledge of sensors