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AD HOC INTERSESSIONAL MEETING OF
THE STW WORKING GROUP RELATING
TO THE COMPREHENSIVE REVIEW OF
THE STCW CONVENTION AND CODE
1st session
Agenda item 4

STW/ISWG 1/4/11
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REVIEW OF CHAPTER III OF THE STCW CONVENTION AND CODE

Training requirements for engine-room resource management, leadership and managerial skills, situational awareness, and decision-making

**Submitted by Australia, India, New Zealand, the United States and the
Institute of Marine Engineering, Science and Technology (IMarEST)**

SUMMARY

<i>Executive summary:</i>	This document proposes amendments to chapter III of the STCW Code to address training requirements for effective engine-room resource management, leadership and managerial skills, situational awareness, and decision-making as identified by STW 39
<i>Strategic direction:</i>	5
<i>High-level action:</i>	5.2
<i>Planned output:</i>	5.2.2.1
<i>Action to be taken:</i>	Paragraph 7
<i>Related documents:</i>	STW 39/7/3, STW 39/7/7, STW 39/7/46 and STW 39/WP.4

Introduction

1 The Maritime Safety Committee (MSC), at its eighty-fourth session, approved the Sub-Committee on Standards of Training and Watchkeeping (STW) recommendation to convene an *ad hoc* intersessional working group in September 2008 to continue to make progress on the comprehensive review.

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2 The Sub-Committee on Standards of Training and Watchkeeping, at its thirty-ninth session (3 to 7 March 2008) established a working group on the comprehensive review of chapters I, II, III, VI and VIII. The working group considered the proposals contained in documents STW 39/7/7 (Singapore) and STW 39/7/3 (Australia *et al.*) and agreed that competence requirements relating to [Engine-Room] Resource Management, Leadership and Management skills, Situational Awareness and Decision-making, needed to be placed in table A-III/2 for the management level. The working group agreed to forward the submitted proposals to the *ad hoc* Intersessional Working Group and invited Governments to submit new proposals.

3 Furthermore, the working group also recognized the possibility of including the competence requirements for Engine-Room Resource Management (ERM), Leadership and Management skills, Situational Awareness and Decision-making, in table A-III/1 for the operational level.

4 The proponents of this document believe that ERM should be a requirement at the operational level, since the officer in charge of the engineering watch is responsible for assessing how the engine-room resources are being allocated and used during his/her watch. In addition, we believe that basic situational awareness principles should be included at the operational level, as part of the ERM training.

5 Regarding the chief engineer officer, he/she is ultimately responsible for engine-room watch resources, but more importantly, he/she is responsible for allocation of resources for all engine-room operations and for supporting other vessel operations. We believe that this particular issue can be addressed under the competence Leadership and Managerial skills. In addition, we believe that management level personnel should also receive situational awareness and decision-making training.

6 In light of the foregoing, we propose additional competences to be added to tables A-III/1 and A-III/2 of the STCW Code, as set out in the annex.

Action requested of the Group

7 The Group is invited to consider the proposals contained in the annex when reviewing tables A-III/1 and A-III/2 of the STCW Code.

ANNEX

**PROPOSED AMENDMENTS TO THE SEAFARERS' TRAINING,
CERTIFICATION AND WATCHKEEPING (STCW) CODE**

**Part A
Chapter III**

Section A-III/1**Table A-III/1**

Specification of minimum standard of competence for officers in charge of an engineering watch in a manned engine-room or designated duty engineers in a periodically unmanned engine-room

1 Insert the following competences into table A-III/1 under the function "Marine engineering at the operational level".

Function: Marine engineering at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for Demonstrating competence	Criteria for evaluating competence
Apply Engine-room Resource Management Principles	Knowledge of Engine-room Resource Management principles, including: <ol style="list-style-type: none"> .1 allocation of resources .2 assigning of duties .3 allocation of tasks to be performed in a clear order of priority .4 collation, processing and interpretation of essential information from equipment and team in making operational decisions 	Assessment of evidence obtained from one or more of the following: <ol style="list-style-type: none"> .1 approved training .2 approved simulator training 	Communications amongst the personnel are effective and comply with established procedures Decisions and actions maximize engineering safety

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for Demonstrating competence	Criteria for evaluating competence
Situational awareness	<p>Knowledge of the specific/critical information required for maintaining a safe engineering watch or in a periodically unmanned engine-room</p> <p>Ability to collect information about the environment critical to the engineering watch or in a periodically unmanned engine-room</p> <p>Ability to monitor and report changes and/or critical information throughout watch or in a periodically unmanned engine-room</p> <p>Ability to identify possible future threats to the watch or to the unmanned engine-room</p>	<p>Assessment of evidence obtained from one or more of the following:</p> <p>.1 approved training</p> <p>.2 approved simulator training</p>	<p>Collection and interpretation of information is carried out in a timely manner</p> <p>Decisions and actions ensure the safety of navigation, protection of the marine environment and safety of the ship and persons on board</p>

Section A-III/2

Table A-III/2

Specification of minimum standard of competence for chief engineer officers and second engineer officers on ships powered by main propulsion machinery of 3,000 kW propulsion power or more

1 In table A-III/2, under the function “Controlling the operation of the ship and care for persons on board”, delete the competence “Organize and manage the crew”.

2 Insert the following competences into table A-III/2 under the function “Controlling the operation of the ship and care for persons on board.”

Function: Controlling the operation of the ship and care for persons on board

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for Demonstrating competence	Criteria for evaluating competence
Apply Leadership and management skills	<p><i>Authority and assertiveness</i></p> <p>Ability to take command as the situation warrants</p> <p>Ability to provide clear instructions and direction</p> <p><i>Ability to provide and maintain standards, goals and operating procedures</i></p> <p>Organization, planning and coordination</p> <p><i>Ability to encourage crew participation in planning and task development</i></p> <p><i>Development and maintenance of a clear Plan, including:</i></p> <p>.1 goals and parameters for successful task completion</p> <p>.2 <i>the need for and process for modifications</i></p> <p>.3 <i>the need for feedback to suggestions and questions</i></p>	<p>Assessment of evidence obtained from one or more of the following:</p> <p>.1 approved training</p> <p>.2 approved simulator training</p>	<p>Communications are clear, understood and consistently successful</p> <p>Standards and operating procedures are established and maintained in compliance with international regulations and guidelines</p> <p>The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned</p> <p>The order of task priority, the work performance and task completion times are relevant to the nature of the tasks</p>

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for Demonstrating competence	Criteria for evaluating competence
	<p><i>Workload management</i></p> <p>Ability to prioritize tasks among crew according to qualification and ability</p> <p>Ability to properly assign duties and responsibilities as resources permit</p> <p>Knowledge of stress and fatigue symptoms¹</p>		
Situational Awareness	<p>Systems awareness</p> <p>Handling of systems' changes, including:</p> <ol style="list-style-type: none"> 1. Monitoring and reporting changes in systems' states 2. Acknowledging entries and changes to systems <p><i>Environment awareness</i></p> <p>Handling of environment changes, including:</p> <ol style="list-style-type: none"> 1. Collection of information about environment 2. Sharing information about the environment with others <p>Use of outside resources when needed to maintain situation awareness</p> <p><i>Anticipation of future events</i></p> <p>Ability to:</p> <ol style="list-style-type: none"> 1. Discuss time constraints with crew 2. Discuss contingency strategies 3. Identify possible future problems 	<p>Assessment of evidence obtained from one or more of the following:</p> <ol style="list-style-type: none"> .1 approved training .2 approved simulator training 	<p>Information obtained is correctly interpreted and analysed taking into consideration the circumstances and conditions</p> <p>Decisions to make changes and adjustments are carried out in a timely manner</p>

¹ The IMO "Guidelines on Fatigue" may be of assistance in the preparation of courses.

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for Demonstrating competence	Criteria for evaluating competence
Use of appropriate Decision-making principles	Knowledge and ability to apply decision-making [techniques] [principles]: <ol style="list-style-type: none"> 1. Problem identification 2. Gathering of information 3. Identify alternative course of actions 4. Risk assessment of the alternatives, including consequences, pros and cons 5. Selecting and implementing a course of action 6. Evaluating the outcome of the decision 	Assessment of evidence obtained from one or more of the following: <ol style="list-style-type: none"> .1 approved training .2 approved simulator training 	Actions are identified and carried out in accordance with established principles The problem causes are identified and actions are designed and carried out to ensure overall safety and security of the ship, and avoid pollution of the marine environment