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Service personnel for the maintenance, thorough examination, operational testing, overhaul and repair of lifeboats (including free-fall lifeboats) and rescue boats (including fast rescue boats), launching appliances and release gear — Part 1: General requirements for training providers

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 1, *Maritime safety.*

A list of all parts in the ISO/PAS 23678 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The industry recognises that a major objective is to prevent accidents and incidents from occurring. A global network of competent personnel employed by authorized service providers is vital for lifesaving appliances to remain fit for purpose, sustaining crew confidence and contributing to the prevention of incidents and accidents.

It has been recognized from the new requirements in IMO Resolution MSC.402 (96) for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats (including free-fall lifeboats) and rescue boats (including fast rescue boats), launching appliances, and release gear (henceforth referred to as the "IMO Requirements") adopted 19th May 2016 and entering into force 1st January 2020, that it is necessary to develop an International Standard. This necessity is based on the IMO Requirements, paragraph 7.1.1:

"*Employment and documentation of personnel certified in accordance with a recognized national, international or industry standards as applicable, or a manufacturer's established certification programme. In either case, the certification programme shall comply with section 8 for each make and type of equipment for which service is to be provided;*"

This document and the associated ISO/PAS 23678-2, ISO/PAS 23678-3 and ISO/PAS 23678-4 have been developed to achieve three key objectives.

1. The first objective was to develop training documents that would support the IMO Requirements, section 7, paragraph 7.1.1.

2. The second objective was to develop training documents that would provide a consistent, reliable, and standardised approach to training and provide a clear auditable trail for interested parties to grant authorisation supporting the IMO Requirements, section 3, to approved service providers.

3. The third objective was to develop training documents that would enable personnel certified by authorized service providers to develop and maintain competencies identified by industry experts to a level that enables them to competently work unsupervised on equipment covered by this document.

This document has been developed by identifying common design features in relation to survival craft, davits, winches and release gear makes and types for which service is to be provided. This has been achieved by conducting professional discussions with disciplined experts to obtain the appropriate information to develop a training programme that is fit for purpose. Successfully completing the service technician training in ISO/PAS 23678-2, ISO/PAS 23678-3 and ISO/PAS 23678-4 enables personnel certified by an authorized service provider to meet the IMO Requirements, section 7, paragraph 7.1.1., and section 8.

The ISO/PAS 23678-series on service technician training consist of:

— Part 1: Guidance to training providers; describes the competence route of the candidate and the resources that the training provider needs to deliver the training.

— Part 2: Initial training; describes the training programme for initial familiarisation and induction training, which is classroom education. The training programme focuses on introducing individuals to the complex terminology, rules and regulations, organisations, health, and safety that a service technician needs to understand in order to carry out their role.

— Part 3: Level 1 training; describes the controlled environment education and training delivered at a training school. The training programme focuses on the technical training for type specific lifesaving appliances.

— Part 4: Level 2 in-field competence; describes the requirements for initial infield and ongoing competence assessments.

NOTE ISO/PAS 23678-1, ISO/PAS 23678-2 and ISO/PAS 23678-3 are referencing typical in-house/training school training programmes. ISO/PAS 23678-4 is typical in-field performance of the personnel trained and recording of their competence.

Service personnel for the maintenance, thorough examination, operational testing, overhaul and repair of lifeboats (including free-fall lifeboats) and rescue boats (including fast rescue boats), launching appliances and release gear —

Part 1: General requirements for training providers

1 Scope

This document establishes a uniform, safe and consistent approach to training personnel to enable them to establish and maintain the required competencies in relation to maintenance, thorough examination, operational testing, overhaul and repair of lifeboats (including free-fall lifeboats) and rescue boats (including fast rescue boats), launching appliances and release gear.

It also provides the necessary information for interested parties to grant authorization and effectively evaluate and audit training, supporting the IMO Requirements, Section 3.

It describes the competence route, resources, facilities and certification requirements for personnel trained by a manufacturer or by an authorized service provider to carry out maintenance, thorough examination, operational testing, overhaul and repair of lifeboats (including free-fall lifeboats) and rescue boats (including fast rescue boats), launching appliances and release gear. This document also sets out the competence route of the candidate, and the resources that the training provider needs to deliver the training.

This document is intended to be used in conjunction with ISO/PAS 23678-2, ISO/PAS 23678-3 and ISO/PAS 23678-4.

2 Normative references

There are no normative references in this document.

3 Terms and definitions, and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
authorised service provider
entity authorized by the administration, meeting the *IMO Requirements* (3.14), section 3 and section 7

3.2
company
owner of the ship or any other organization or person such as the manager, or the bareboat charterer, who has assumed the responsibility for operation of the ship from the owner of the ship and who on assuming such responsibility has agreed to take over all the duties and responsibilities imposed by the International Safety Management Code

[SOURCE: SOLAS Regulation IX:2010, 1.2]

3.3
competent person
person having such knowledge and experience of as is necessary for that person to carry out maintenance, thorough examination, operational testing, *overhaul* (3.13) and *repair* (3.14) of a *complete system* (3.4), assess the condition of a complete system and make a judgement as to whether it can remain in service

3.4
complete system
survival craft (3.17) and associated *equipment* (3.6), release gear and *launching appliance* (3.9)

3.5
disciplined expert
expert that has proven competence in design, manufacturing, inspection, maintenance, training and certification of personnel for LSA *equipment* (3.6)

3.6
equipment
equipment to which the *IMO Requirements* (3.14) apply

3.7
intervention
activity that includes maintenance, thorough examination, operational testing, *overhaul* (3.13) and *repair* (3.14) of lifeboats (including free-fall lifeboats) and rescue boats (including fast rescue boats), *launching appliances* (3.9) and release gear

3.8
interested party
entity with the ability to grant authorisation, meeting the *IMO Requirements* (3.14)

3.9
launching appliance
means of transferring a *survival craft* (3.17) from its stowed position safely to the water

3.10
manufacturer
original *equipment* (3.6) manufacturer or any entity which has taken legal and legitimate responsibilities for equipment when the original equipment manufacturer no longer exists or supports the equipment

3.11
offload release mechanism
release mechanism that releases the *survival craft* (3.17)/rescue boat/fast rescue boat when it is waterborne or when there is no load on the hooks

3.12
on-load release mechanism
on-load release gear
release mechanism that releases the *survival craft* (3.17)/rescue boat/fast rescue boat with load on the hooks

3.13
overhaul
periodical activity defined by the *manufacturer* (3.10) that proves continued fitness for purpose for a defined period subject to correct maintenance

3.14
IMO Requirements
requirements related to Regulation III/20 of the International Convention of Safety of Life At Sea, 1974, given in the IMO Resolution MSC.402(96) for maintenance, thorough examination, operational testing, *overhaul* (3.13) and *repair* (3.14) of lifeboats (including free-fall lifeboats) and rescue boats (including fast rescue boats), *launching appliances* (3.9) and release gear

3.15
repair
activity requiring disassembly of *equipment* (3.6), or any other activity outside the scope of the instructions for on-board maintenance and for emergency *repair* (3.14) of lifesaving appliances meeting the requirements of SOLAS Regulations III/36.2 and III/35.3.18, respectively

3.16
service technician
person that is trained and certified by a *manufacturer* (3.10) or an *authorised service provider* (3.1) to carry out maintenance, thorough examination, operational testing, *overhaul* (3.13) and *repair* (3.14) of lifeboats (including free-fall lifeboats) and rescue boats (including fast rescue boats), *launching appliances* (3.9) and release gear

3.17
survival craft
craft capable of sustaining the lives of persons in distress from the time of abandoning the ship

[SOURCE: SOLAS Regulation III/23:2003]

3.18
type
category of LSA *equipment* (3.6) having common characteristics, including lifeboats (including free-fall lifeboats) and rescue boats (including fast rescue boats), launching appliances and release gear

Abbreviated terms

ALARP	As low as reasonably practicable
ASP	Authorised service provider
COSHH	Control of substances hazardous to health
FRB	Fast rescue boat
MAH	Major accident hazard
MSC	Maritime safety committee
MODU	Mobile offshore drilling unit
MSDS	Material safety data sheets
LSA	Lifesaving appliances
PPE	Personal protective equipment
RA	Risk assessment

RPE	Respiratory protective equipment
RO	Recognised organisation
SOLAS	International Convention for the Safety of Life at Sea, 1974, as amended
TEMPSC	Totally enclosed motor propelled survival craft
UCN	Unique certificate number

4 Service technician competence progression

4.1 General

The training of service technicians may not be limited to the training programme described in this document. Specific operations may require additional competencies of trained and certified personnel. These additional competencies are not addressed in this document as being part of the training for certified personnel.

Service technician training, competence assessment, and re-assessment is comprised of five key stages. The key stages given in 4.2 to 4.7 shall be followed (see Annex A).

4.2 Initial training — Introductory education and training

4.2.1 General — The initial training is comprised of three modules that are predominantly theory based to address in part the IMO Requirements, section 8, at a basic entry level. The modules introduce and familiarize the candidates with the organisations, legislative framework, rules, regulations, terminology, procedures, health and safety and equipment associated with manufacture/ASP operations.

4.2.2 Module 1, Service technician general industry knowledge, cover the IMO Requirements, section 8.2.1, paragraphs 8.2.1.1-8.2.1.6, as follows:

a) .1 theory; relevant rules and regulations, including international conventions;

b) .2 theory; design and construction of lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats, including on-load release gear and launching appliances;

c) .3 theory; causes of lifeboat and rescue boat accidents;

d) .4 theory; education in the procedures specified in the IMO Requirements, section 6, for which certification is sought;

e) .5 theory familiarisation; detailed procedures for thorough examination, operational testing, repair and overhaul of lifeboat (including free-fall lifeboats), rescue boats and fast rescue boats, launching appliances and on-load release gear, as applicable;

f) practical operation release gear;

NOTE This is outside the IMO Requirements, section 8.

g) .6 theory; procedures for issuing a report of service and statement of fitness for purpose based on the IMO Requirements, paragraph 5.3.

4.2.3 Module 2, Basic safety at work (IMO Requirements, 8.2.1:7): theory practical; work, health and safety issues while conducting activities on board.

4.2.4 Module 3, Risk management (IMO Requirements, 8.2.1:7): risk management while conducting activities on board.

4.2.5 Following successful assessment of learning objectives found in ISO/PAS 23678-2, candidates shall be awarded an Initial Service Technician certificate.

4.3 Initial refresher training

Developed to support the IMO requirements, section 8, paragraphs 8.2.1.1, 8.2.1.2, 8.2.1.3 and 8.2.1.7. The refresher training shall update personnel with any changes to legislation, rules and regulations associated with manufacturer/ASP operations. The training and assessment activities shall ensure personnel's underpinning knowledge is current and maintained at the required level to carry out their role in a safe effective manner. Following successful assessment of learning objectives found in ISO/PAS 23678-2, candidates shall be awarded an Initial Service Technician certificate.

4.4 Level 1 Stage 1 technician-controlled environment education and training

4.4.1 The Level 1 training shall be split into two stages. Stage 1 shall have five modules that should be comprised of classroom-based theory lessons followed by practical sessions. The five modules shall cover the equipment identified in 5.4.3 of this document and support the IMO Requirements, section 8, paragraphs 8.1, 8.2.1.4-8.2.1.6, 8.2.2, and 8.2.3. The classroom training shall identify and develop the required underpinning knowledge to examine, overhaul, maintain, test and repair the individual parts that make up a complete system. The practical sessions shall focus on developing the skills required to examine, overhaul, maintain test and repair the components that make up a complete system. The practical sessions shall contain repetitive exercises that incorporate and practically apply the underpinning knowledge gained during the Initial and Level 1 theory sessions. The practical exercises shall give the candidates the opportunity to practice and demonstrate competence in relation to the skills and knowledge required to carry out their role.

4.4.2 The assessment process shall be continuous, if successful candidates continue onto Level 1, Stage 2 "Controlled Environment Experience and Assessment."

The Level 1, Stage 1 modules are as follows:

a) module 1: work, health and safety issues while conducting activities on board;

b) module 2: types; survival craft;

c) module 3: types; release systems;

d) module 4: types; davits;

e) module 5: types; winches.

4.4.3 The modules are type-specific as identified in Table B.1, supporting the IMO requirements, section 8, paragraphs 8.2.1.4-8.2.1.6:

a) .4 theory/practical; education in the procedures specified in section 6 of IMO Resolution MSC.402 (96) for which certification is sought;

b) .5 theory/practical; detailed procedures for thorough examination, operational testing, repair and overhaul of lifeboat (including free-fall lifeboats), rescue boats and fast rescue boats, launching appliances and on-load release gear, as applicable;

c) .6 theory/practical procedures for issuing a report of service and statement of fitness for purpose based on paragraph 5.3 of IMO Resolution MSC.402 (96).

4.5 Level 1 Stage 2 Technician controlled environment experience and assessment:

4.5.1 The candidates shall undertake supervised scenario based practical exercises assessments covering the range of type specific complete systems as identified in Table B.1. The purpose of the exercises is to enable the candidates to carry out annual and 5-year inspections on a complete system.

4.5.2 The practical exercises shall incorporate and put into practice the relevant underpinning knowledge and practical experience gained during the Initial and Level 1, Stage 1 training.

4.5.3 Each exercise supports the procedures specified in sections 6.1 and 6.2 of the IMO Requirements, with only one exercise covering the procedures identified in section 6.3. The exercises also cover the requirements of sections 8.2.1.1-8.2.1.7 and 8.2.2.

4.5.4 The candidates should be supervised and mentored through the exercises to assist candidates to develop competencies; the overall objective is to create an environment that is conducive to continued professional development.

4.5.5 The practical exercise scenarios shall be designed to simulate a real working environment. Assessment activities shall include the procedures candidates would undertake to carry out a "real" intervention (see Annex C).

4.5.6 The assessment process shall be continuous throughout the exercises. The assessor shall use direct observation supplemented by oral questions (where necessary), to establish competence.

4.6 Level 2 Infield supervised workplace experience and competence assessment requirements

4.6.1 General

Training establishments shall provide supervised infield work place experience and assessment to produce an infield competent person.

4.6.2 Initial Level 2 Infield supervised workplace experience and competence assessment process

4.6.2.1 Level 2 infield competence assessments carried out on the equipment identified in Table B.1 shall be completed no longer than 12 months after the issuing date of the Level 1 certificate. If the candidate was unable to demonstrate competence within 12 months, the Level, Stage 2 assessments shall be completed again. The candidate shall only have to complete the Level 1, Stage 2 assessments on the equipment that the candidate was unable to demonstrate competence on.

4.6.2.2 The infield workplace experience and competence assessment meets the IMO Requirements in section 6 and section 8, paragraphs 8.2.2 and 8.2.3.

4.6.2.3 The workplace experience and competence assessment should be carried out over a minimum of three interventions for each specific system type as identified in Table B.1 the candidate will be certified for, e.g. three interventions carried out on a totally enclosed lifeboat with a sprinkler and air system.

4.6.2.4 The assessor shall complete the candidate's personnel training logbook to record the activities that take place during interventions.

4.6.2.5 The candidates shall be supervised and mentored during the first two interventions; the overall objective is to create an environment that is conducive to continued professional development, so candidates are able to reach their maximum potential. The assessor shall give constructive feedback,

