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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,

clearly identifying areas that went well or require improvement. The third intervention shall be conducted with the candidate taking the lead role; the assessor should only intervene or give advice if safety protocols are breached. If the candidate demonstrates competence, a Level 2 certificate shall be issued.

4.7 Level 2 competence re-assessment requirements

4.7.1 Over the three-year validation period of the Level 2 certificate, personnel shall record work activities during interventions in their personnel logbooks.

4.7.2 The interventions work activities for each year shall cover the systems identified in Table B.1, supporting the procedures identified in the IMO Requirements, section 6.2 and 6.3.

4.7.3 To be eligible for Level 2 competence re-assessment, there needs to be sufficient evidence documented within the personnel logbook over the 3 years that reflects personnel has carried out the procedures stated in the IMO Requirements, sections 6.2 and 6.3, on the range of equipment identified in Table B.1.

4.7.4 In lieu of evidence within the personnel logbook over a 3-year period, a competence assessment shall take place on the equipment for which interventions have not been recorded (e.g. no interventions carried out for a fixed outrigger davit with gravity-launched electric hoisting winch). If when re-assessed the candidate is deemed "Not yet competent" (NYC) for a specific system, only the criteria for which they are deemed NYC shall require retraining and re-assessment (e.g. retraining needs to take place for a fixed outrigger davit with gravity-launched electric hoisting winch).

4.7.5 Level 2 competence re-assessment can be carried out either infield or in a controlled environment.

4.7.6 Experienced service technicians can be certified by successfully completing a competence assessment providing they have supporting evidence of completing Service Technician Level 1 or a manufacturer's established certification programme accompanied by sufficient infield work experience. Supporting evidence may include training logs, previous reports, photographs, or videos covering the range of systems identified in Table B.1.

5 Resources for service technician training

5.1 General

For the training to be delivered successfully, it is essential that the correct personnel, facilities, and equipment be available to support the programme. Organisations shall ensure that candidates receive well-structured and effective training with a fair, standardised, and reliable assessment processes. The training shall be conducted in an appropriately equipped safe environment. The organisation delivering the training shall ensure that there are formally documented procedures reflecting this.

NOTE 1 The resource's required to deliver the training only need to reflect the equipment for which personnel are certified. For example, if a company only requires freefall lifeboat training, the equipment and training resources to deliver and assess candidates can be limited to reflect certification requirements on this equipment.

NOTE 2 Training providers need to continuously review and update the equipment when new technologies are introduced to the market. Training providers also needs to review any new relevant information, especially regarding accidents and incidents.

5.2   Staff resources

5.2.1   General

Organisations delivering the training shall ensure there are sufficient approved trainers and assessors to carry out the training and assessment activities described in the modules. All staff shall have the appropriate competencies and qualifications to conduct/assist with the element of training being undertaken.

5.2.2   Requirements for trainers and assessors

Trainers shall meet the requirements of the certification body. The selection and approval process shall ensure trainers

a)   are trained in instructional/lecture techniques and/or have proven instructing/teaching experience,

b)   are included in an ongoing training programme, which includes visits to vessels or offshore oil and gas installations, to enable them to maintain and update skills, and

c)   have the appropriate level of experience for the element of training they are delivering.

5.2.3   Assessors and internal verifiers

Organisations delivering the training shall ensure there are sufficient assessors and internal verifiers with the appropriate training, qualifications, and competencies to monitor and evaluate the complete assessment process of the candidate, along with the trainers and assessors themselves.

5.2.4   Trainer/assessor candidate ratio

It is recommended that the maximum number of candidates attending this programme be 8. The following ratios indicate the maximum number of candidates to be supervised by one instructor at any one time during each activity:

a)   theory, 1:8;

b)   demonstration and practical, 1:4.

5.3   Physical resources

5.3.1   General

The training establishment shall clearly demonstrate there are adequate resources and documented procedures to ensure that training and assessment can be consistently and safely delivered in accordance with this document.

5.3.2   Resources for training and assessment

The following training and reference materials are required to meet the stated content within Initial and Level 1 training programmes:

a)   timetabled programme that outlines the content of the training programme;

b)   detailed lesson and exercise plans that reflect the contents of the Initial and Level 1 documents which are clearly referenced against the learning outcomes and module elements of the training programme;

c)   candidate assessment plan for issue to each candidate;

d) illustrations of rigs, platform, ships, lifeboats, rescue boats, fast rescue boats, davit-launched liferafts and their associated launching appliances types, typically found in the maritime and offshore oil and gas industry;

e) illustrations of the various release mechanisms identified in the scope of this document;

f) electronic and/or hard copy examples of relevant legislation and guidance documentation as they are discussed in each module;

g) examples of risk assessments and a risk matrix;

h) example of work permits for different types of controlled work on ships, MODUs and fixed installations;

i) examples of material safety data sheets (MSDS) and COSHH assessment(s);

j) examples of company-specific lifesaving/golden rules;

k) manufacturer maintenance manuals and associated technical information for equipment used for training, as identified in Table B.1;

l) checklists 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;

m) 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.

Due to the variety of forms, records, plans, schedules, etc. used within the offshore and maritime industries, the examples used for training purposes can differ from those of said industries. Training examples should represent the range of documents available and should be as typical and current as possible.

5.3.3 Facilities

It is important that the full range of facilities be made available to ensure candidates get the most out of their training. The following features shall be in place:

a) Administration arrangements to support candidates through registration and assessment to certification;

b) designated room or area to deliver theory sessions that is not used simultaneously for any other activity, is equipped with suitable equipment for candidates to view training material such as visual aids, and is arranged in a manner that is conducive to a positive learning experience;

c) designated area with sufficient space and equipment for candidates to practise and demonstrate competence during the practical exercises;

d) all facilities shall be maintained and, where appropriate, inspected and tested in accordance with the relevant documents; legislation can be applicable;

e) risk assessments shall be in place to cover all learning and assessment activities that are fit for purpose and regularly reviewed.

5.4 Equipment

5.4.1 General

All equipment shall be maintained and, where appropriate, inspected and tested in accordance with the relevant documents, guidance and manufacturer's recommendations. Legislation can be applicable.

Risk assessments shall be conducted and documented for all training equipment. The equipment in 5.4.2 and 5.4.3 shall be available for training and assessment purposes.

5.4.2   Equipment required for initial training

The following equipment shall be available for Initial Service Technician training:

a)   minimum of two variants of on-load and offload release mechanism;

b)   example of a winch with examples of its main components;

c)   examples of a risk intervention card;

d)   physical examples of PPE to include coveralls, boots, hard hat and gloves;

e)   examples of respiratory protective equipment (RPE).

5.4.3   Equipment required for Level 1 Service Technical training

5.4.3.1   The following survival craft types shall be available for Level 1 Service Technician training:

a)   totally enclosed lifeboats with sprinkler and air systems;

b)   single fall rescue boat or fast rescue boat.

5.4.3.2   The following survival craft propulsion system types shall be available for Level 1 Service Technician training:

a)   inboard diesel engine;

b)   outboard engine;

c)   propeller drive;

d)   jet drive.

5.4.3.3   The following davit types shall be available for Level 1 Service Technician training:

a)   gravity single or twin fall outrigger;

b)   hydraulic pivoting/luffing;

c)   gravity roller track;

d)   gravity free fall primary and hydraulic secondary;

e)   single arm slewing (manual, electric).

5.4.3.4   The following winch types shall be available for Level 1 Service Technician training:

a)   twin drum;

b)   single drum;

c)   gravity-lowering/electric hoisting with the following braking systems:

    i.   holding/static brakes with mechanically operated multiple disks,

    ii.   holding/static brakes with friction pads,

    iii.   centrifugal brakes with friction pads,

    iv.   holding/static brakes multiple disks, hydraulically operated, and

    v.   hydraulic pump lowering brake;

d)   hydraulic lowering and hoisting.

5.4.3.5   The following release gear types shall be available for Level 1 Service Technician training:

a)   lifeboat on-load/offload (load not over centre) hook assembly locking devices with:

    i.   flat to flat cams,

    ii.   curve to curve cams,

    iii.   curve to flat cams,

    iv.   up and down pins,

    v.   amplification arms, intermediary hooks, arresting levers, and

    vi.   hydrostatic interlock with diaphragms and floats;

b)   lifeboats offload (load over centre);

c)   lifeboat on-load/offload release (load over centre);

d)   freefall hydraulic;

e)   rescue boats, including fast rescue boat offload;

f)   rescue boats, including fast rescue boat automatic;

g)   davit-launched liferaft automatic.

6 Administration and certification

6.1 Course administration

Each candidate attending the service technician training should be registered at course commencement. Each candidate shall receive a training programme, course notes appropriate to the training, and a candidate assessment plan.

6.2 Certification

6.2.1 General

The certification body may need to provide details and copies to the authorising body on request. Certification bodies shall make every effort to ensure training records are adequately protected from destruction from unforeseen situations and readily available on request.

The training establishment shall issue a certificate directly to the candidate completing the programme and retain a copy on file. Each certificate shall indicate that the candidate has been assessed against and met the required learning outcomes. The expiry date shall clearly be written on the certificate (if applicable). The certificate shall contain the following information:

a)   establishment name;

b)   full title stating the equipment and the procedures the candidate is certified for;

c)   photograph of candidate;

d) candidate's name;

e) course dates;

f) expiry date;

g) unique certificate number (UCN);

h) training establishment signatory.

6.2.2 Initial certificate

Candidates assessed as competent shall be issued a certificate that states the qualification and range of the procedures that the certificate covers. The interval between the initial training and the assessment and subsequent re-assessment/refresher training shall be 3 years (see example in Annex A).

6.2.3 Level 1 certificate

Candidates assessed as competent shall be issued a certificate that states the qualification, range of the equipment and procedures that the certificate covers. The Level 1 certificate shall not have an expiry date. The Level 2 training should be completed no longer than 12 months after the issuing date of the Level 1 certificate (see example in Annex A).

6.2.4 Level 2 certificate

A competency assessment shall be conducted to issue or renew certification. In cases where a refresher training is found necessary, a further assessment shall be carried out after its completion. The Level 2 certificate shall be valid for 3 years for each specific type of system that the personnel is certified for (see example in Annex D).

6.2.5 Criteria for changing the scope of the certificate

The scope of the certificate may be changed if:

a) there is not a requirement for the certified person to be deemed competent for specific types of the equipment identified within Table B.1;

b) the certified Level 2 person has been inactive or not exposed to specific types of equipment identified in Table B.1 due to operational requirements, and this is reflected in the certified person's personnel logbook; and/or

c) there is new equipment introduced to the market that is not identified in Table B.1 for which certification is required. In this case, the Level 1 and Level 2 certification processes need to encompass the new equipment to change the scope of the certificate.

6.2.6 Criteria for suspending the certificate

6.2.6.1 The validity of any certificate shall be suspended or withdrawn in the event of:

a) any shortfall in performance or inability to fulfil the competence requirements of the certification process;

b) a violation of the code of conduct.

6.2.6.2 The certified persons certificate shall only be revalidated in case:

a) a further competency assessment is carried out where the certified person is able to demonstrate competency; or

b)   an investigation is carried out that concludes that the certified person has been vindicated of a breach of the code of conduct.

7   Code of conduct

7.1.1 The certification body shall require its personnel to sign a document by which they commit themselves to comply with the rules defined by the certification body, including those relating to confidentiality, impartiality and conflict of interests. This requirement should be reflected in the certification body's quality management system.

7.1.2 The certification body shall ensure that the code of conduct shall not be violated by a certified service technician. Minimum requirements of the code of conduct are:

a)   service personnel shall not attempt to work on equipment they have not been certified for;

b)   service personnel should report incidents where they have been forced to carry out procedures on equipment they are not certified for; and

c)   non-compliance by service personnel carrying out maintenance, thorough examination, operational testing overhaul and repair as described in the IMO Requirements, paragraphs 4.2 and 4.3, certified by an authorized service provider meeting the requirements in section 8 in respect of health, safety and environment (HSE) instructions and procedures established by the company.

Annex A
(informative)
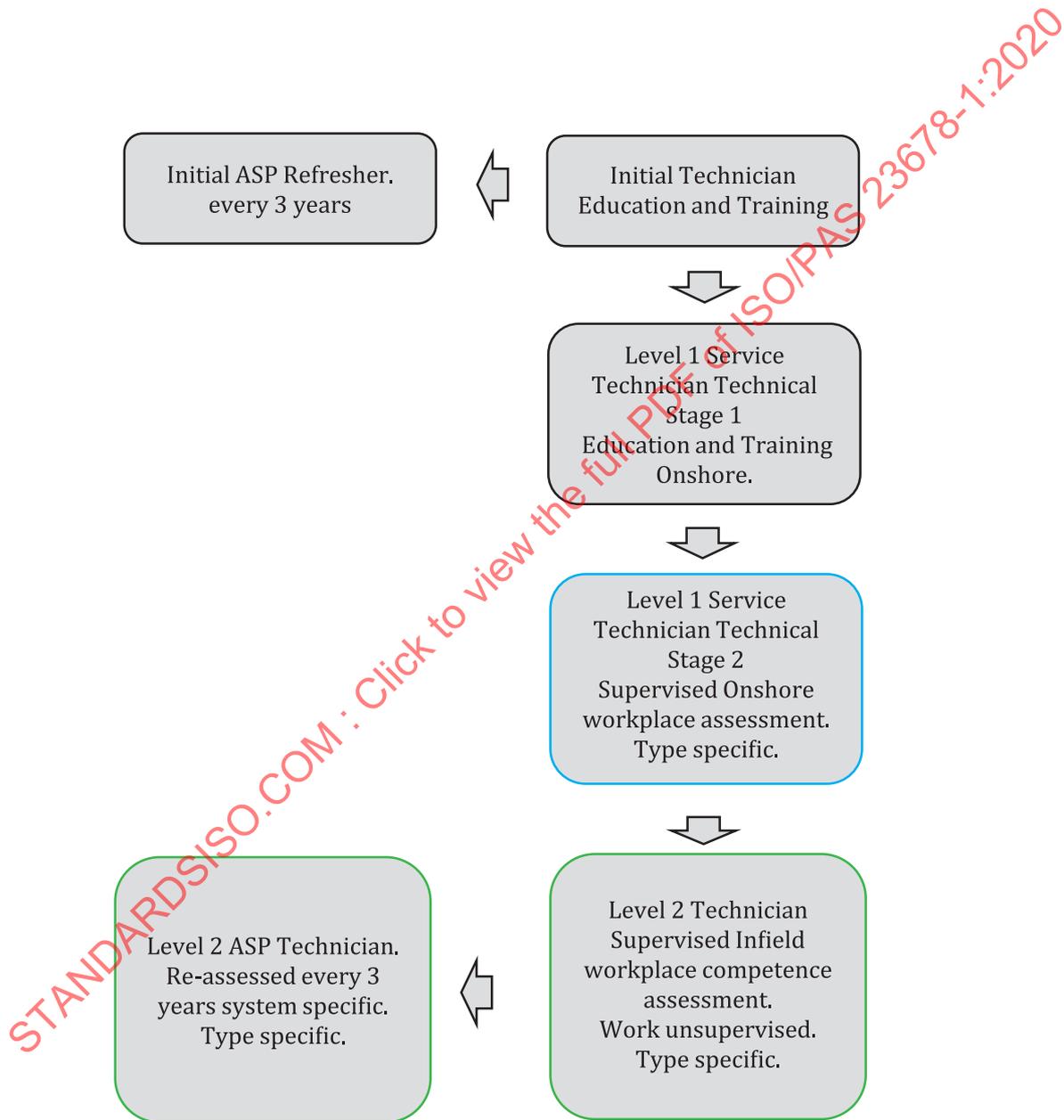
Service technician competence progression

Figure A.1 — Overview of service technician competence progression
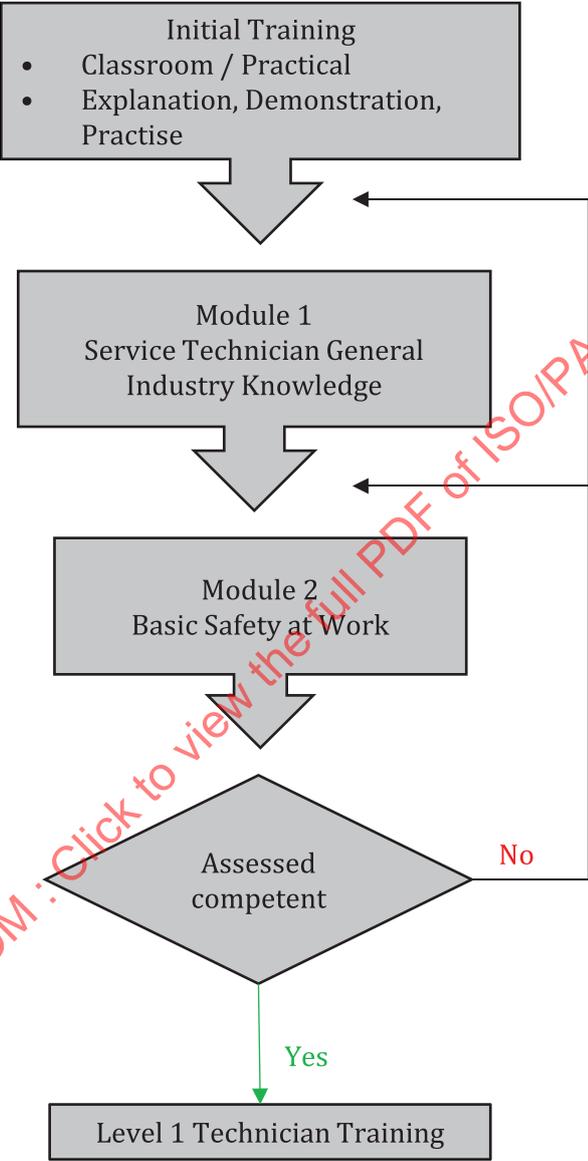
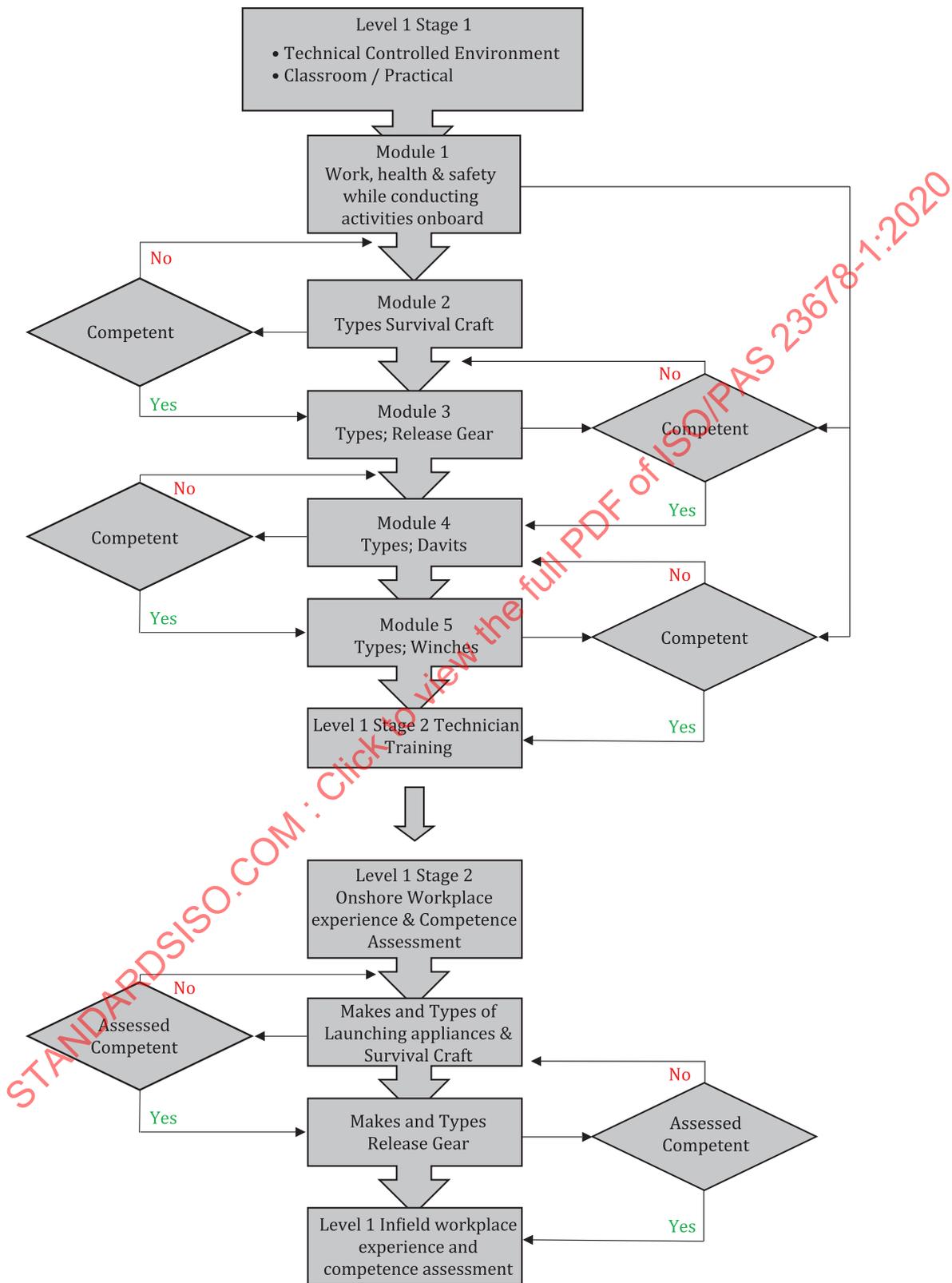**Figure A.2 — Initial technician's competence progression**

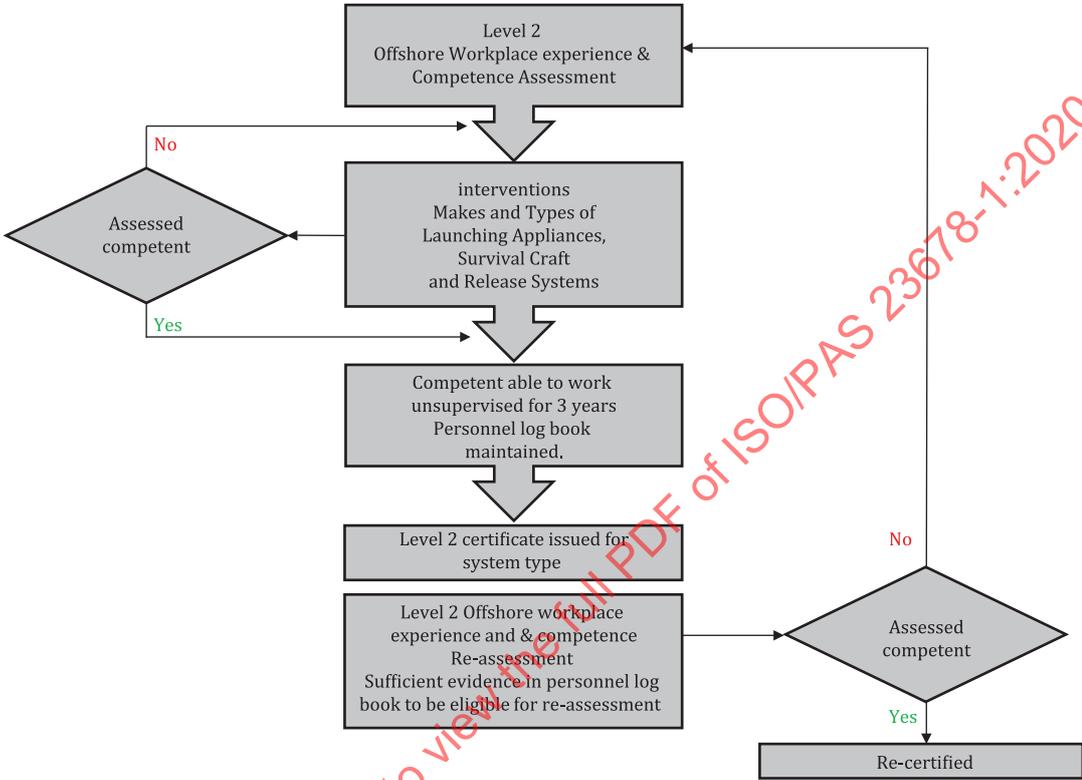**Figure A.3 — Service technician's technical Level 1 Stage 1 and Stage 2 competence progression**

Figure A.4 — Level 2 Infield service technician's competence progression

Annex B
(informative)

Equipment covered by the training

Table B.1 — Exercise assessment system-type breakdown

Survival craft types	Davit types	Winch types	Release gear types

Lifeboat
 	
a) with sprinkler and air system
 	
Lifeboat
 	
a) Single fall or
 	
b) Twin fall or
 	
c) Free fall
 	
Lifeboat
 	
a) Open or
 	
b) Partially enclosed
 	
Rescue boats
 	
a) Single fall rescue boat or;
 	
b) Fast rescue boat
	a) Fixed outrigger
	
	b) Free fall ramp
	
	c) Free fall A-frame
	
	d) Roller track gravity
	
	e) Hydraulic/luffing gravity-lowering
	
	f) Single arm slewing
		Twin drum
		
		a. Gravity-lowering/ electric hoisting
		
		  i. Holding/static brakes with friction pads
		
		  ii. Holding/static brakes with mechanically operated multiple disks.
		
		  iii. Holding/static brakes, multiple disks, hydraulically operated
		
		  iv. Hydraulic pump lowering brake
		
		  v. Centrifugal brakes with friction pads
		
		b. Gravity-lowering hydraulic hoisting
		
		Single drum
		
		a. Gravity-lowering/ Electric hoisting
		
		  i. Holding/Static brakes with friction pads
		
		  ii. Centrifugal brakes with friction pads
		
		b. Hydraulic lowering and hoisting
			Hook assemblies
			
			a) Off load/On load – lift not over centre release gear
			
			  i) Flat to flat rotating cams
			
			  ii) Forward or reverse curve to curve rotating cams
			
			  iii) Curve to flat rotating cams
			
			  iv) Up and down pins
			
			b) On load/Off load – lift over centre release gear
			
			c) Free fall hydraulic
			
			d) Automatic – lift over centre
			
			e) Off load – lift over centre
			
			Devices for activating release
			
			a) Central release units.
			
			b) Hydrostatic interlock with diaphragm
			
			c) Hydrostatic interlock with float
			
			d) Electronic sensors

Annex C
(informative)

Level 1 technician Stage 2 controlled environment experience and assessment exercise criteria

Exercise scenarios include:

a) intervention pre-brief, including:

  i.   scope of the intervention,

  ii.   tooling requirements,

  iii. manufacturer's technical documentation and bulletins;

b) work, health and safety issues while conducting activities on board, including:

  i.   completion of work permits,

  ii.   identifying and following the relevant risk assessments,

  iii. identifying and following the relevant method statements,

  iv.   a tool box talk,

  v.   selecting on donning appropriate PPE,

  vi.   applying company specific lifesaving rules,

  vii. carry out relevant safety checks prior to commencing work;

c) practical application of relevant rules and regulations, including international conventions;

d) practical application of the 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 on the equipment identified in Table B.1, including the following:

  i.   the required documents as listed in the IMO Requirements, section 6.1,

  ii.   annual thorough examination and operational test supporting the IMO Requirements, section 6.2,

  iii. one exercise including the requirements of the five-year thorough examination, overhaul and overload operational tests, supporting the IMO Requirements, section 6.3;

e) identification and replacement of expired, worn or defective parts, as identified in the manufacture's manuals.

All reports and checklists are completed and signed by the person who carries out the inspection and maintenance work and countersigned by the company's representative or the ship's master (simulated).

When thorough examination, operational testing, overhaul and repair are completed, a statement is issued confirming that the lifeboat arrangements remain fit for purpose.

Annex D
(informative)

Examples of certificates

Candidate
Photograph

This is to certify that

«FirstName» «LastName»

Has successfully completed

Initial Service Technician Training

The candidate was assessed component in relation to the
training outcomes of ISO 23678
Approved by ....

Held at
Training establishment name

«CertificateNumber»

Course Date:

Training establishment   Training establishment

signatory...............................   Stamp

Expiry Date:..........................

a) Front of certificate