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**RECOMMENDATIONS ON TRAINING OF PERSONNEL
ON MOBILE OFFSHORE UNITS (MOUs)**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety and the prevention and control of marine pollution from ships,

CONSIDERING that personnel on mobile offshore units (MOUs) are often required to work under potentially hazardous conditions, and will be in a better position to protect themselves and others in the event of an emergency if adequately trained,

RECOGNIZING the need for maritime safety and emergency preparedness training for all personnel working on MOUs,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-ninth session,

1. ADOPTS the Recommendations on Training of Personnel on Mobile Offshore Units (MOUs), set out in the Annex to the present resolution;
2. URGES Governments concerned to implement the defined competencies in these recommendations as soon as practicable and to issue certificates and all other appropriate documents to personnel who are qualified and have successfully completed the training recommended in this resolution;
3. URGES ALSO Governments to consider acceptance of relevant certificates and documents based on this resolution;
4. AUTHORIZES the Maritime Safety Committee to keep the annexed recommendations under review and amend them as necessary;
5. REVOKES resolutions A.538(13), A.712(17) and A.828(19).

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ANNEX

**RECOMMENDATIONS ON TRAINING OF PERSONNEL
ON MOBILE OFFSHORE UNITS (MOUs)****1 SCOPE**

1.1 These recommendations provide an international standard for training for all personnel on mobile offshore units aimed at ensuring adequate levels of safety of life and property at sea and protection of the marine environment complimentary to that required by the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended and the Seafarers' Training, Certification and Watchkeeping (STCW) Code.

1.2 The provisions of these recommendations are without prejudice to any rights of coastal States under international law to impose their own additional requirements relating to training, qualifications and certification of personnel on board units engaged, or intending to engage, in the exploration for, or exploitation of, the natural resources of those parts of the sea-bed and subsoil over which those States are entitled to exercise sovereign rights.

2 TERMS AND DEFINITIONS

2.1 For the purpose of these recommendations the terms used have the meanings defined hereunder:

- .1 **Mobile offshore units (MOUs)** means vessels which can be readily relocated and which can perform an industrial function involving offshore operations other than those traditionally provided by vessels covered by chapter I of the 1974 SOLAS Convention. Such MOUs include at least the following:
 - .1 **column-stabilized unit** is a unit with the main deck connected to the underwater hull or footings by columns or caissons;
 - .2 **non-self-propelled unit** is a unit not certified to navigate independently;
 - .3 **self-elevating unit** is a unit with movable legs capable of raising its hull above the surface of the sea;
 - .4 **self-propelled unit** is a unit certified to navigate independently;
 - .5 **submersible unit** is a unit with a ship shape, barge-type or novel hull design (other than a self-elevating unit) intended for operation while bottom bearing; and
 - .6 **surface unit** is a unit with a ship- or barge-type displacement hull of single- or multiple-hull configuration intended for operation in the floating condition.
- .2 **Mobile offshore drilling unit** is a unit capable of engaging in drilling operations for the exploration for, or exploitation of, resources beneath the sea-bed such as liquid or gaseous hydrocarbons, sulphur or salt.
- .3 **Drillship** is a self-propelled ship-shape monohull surface mobile offshore drilling unit.

- .4 **Mobile offshore accommodation unit** is a unit the primary purpose of which is to accommodate personnel working offshore.
- .5 **Other mobile offshore unit** is a unit which may be involved in any single activity or combination of activities such as:
- construction;
 - maintenance (including the maintenance of wells);
 - lifting operations;
 - pipe-laying and related operations;
 - emergency / contingency preparedness, including fire-fighting;
 - offshore production systems; and
 - diving.

Mobile offshore units do not include vessels such as:

- supply vessels;
 - standby vessels;
 - anchor-handling vessels;
 - seismic vessels; and
 - ship-shape monohull diving support vessels.
- .6 **Maritime safety training** means training with respect to safety of life at sea, including personal and group survival.
- .7 **Emergency preparedness training** means training which prepares individuals to respond adequately and safely to anticipated emergency situations.
- .8 **Offshore installation manager (OIM)** means a competent person appointed in writing by the owner as the person in charge, who has complete and ultimate command of the unit and to whom all personnel on board are responsible.
- .9 **Barge supervisor** means a person who may provide support to the OIM in certain essential marine matters. The barge supervisor on some MOUs may be referred to as the stability section leader or barge master.
- .10 **Ballast control operator** means the person assigned responsibility for the normal day-to-day control of trim, draught and stability.
- .11 **Maintenance supervisor** means the person assigned responsibility for the inspection, operation and testing, as required, of all machinery and equipment as specified by the owner of the MOU. The maintenance supervisor on some MOUs may also be referred to as the chief engineer, technical section leader or rig mechanic.
- .12 **Special personnel** means all persons carried on board a mobile offshore unit in connection with the special purpose of the unit or with special work being carried out on the unit, and who are neither seafarers nor directly or indirectly paying passengers.
- .13 **Maritime crew** comprises the OIM, barge supervisor, ballast control operator and maintenance supervisor as well as other deck and engineer officers, radio operators and ratings as defined in regulation I/1 of the STCW Convention, as amended.

- .14 **Mode of operation** means the condition or manner in which a unit may operate or function while on location or in transit. The modes of operation of a unit include the following:
- .1 **Operating conditions:** conditions wherein a unit is on location for the purpose of conducting operations, including drilling and production activities, and wherein combined environmental and operational loadings are within the appropriate design limits established for such operations. The unit may be either afloat or supported on the sea-bed, as applicable.
 - .2 **Survival conditions:** conditions wherein a unit may be subjected to environmental loadings in excess of those established by the unit's operating manual. It is assumed that routine operations will have been discontinued due to the severity of the environmental loading. The unit may be either afloat or supported on the sea-bed, as applicable.
 - .3 **Transit conditions:** conditions wherein a unit is moving from one geographical location to another.
 - .4 **Combined operations:** operations in association with, or in close proximity to, another mobile offshore unit or offshore installation, where conditions on the other unit or installation may have an immediate impact on the safety of the unit; for example, a mobile offshore drilling unit attached to a fixed platform.
- .15 **Muster list** means the list prescribed by an international convention or recommendation which applies to the unit. If no convention or recommendation applies, it means a similar list which indicates essential information on actions to be taken in the event of an emergency, in particular the station to which each person should go and the duties which that person should perform including the designation of individual responsibilities for the safety of others.
- .16 **Administration** means the Government of the State whose flag the MOU is entitled to fly.
- .17 **Coastal State Administration** means the Government of the coastal State concerned in cases where a MOU is engaged in exploration for, or exploitation of, the sea-bed and subsoil thereof, adjacent to the coast over which the coastal State exercises sovereign rights for the purposes of exploration and exploitation of their natural resources.

3 RESPONSIBILITIES OF COMPANIES AND PERSONNEL

3.1 Every company employing personnel assigned to duty on mobile offshore units, offshore installation managers and offshore personnel has responsibility for ensuring that the standards set out in these recommendations are given full and complete effect. In addition, other measures as may be necessary should be taken to ensure that personnel can make knowledgeable and informed contributions to the safe operation of the unit.

3.2 The owner of the mobile offshore unit should provide written instructions to the offshore installation manager setting forth the procedures to be followed in order to:

- .1 provide appropriate documentation of training for all personnel working on MOUs which indicates that training in accordance with this standard and, as applicable, with the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978 as amended, has been accomplished; and
- .2 maintain training records on the unit.

3.3 The OIM should designate a knowledgeable individual who will be responsible for ensuring that an opportunity is provided to each newly-assigned individual to receive essential information in a language that he or she understands.

4 MARITIME CREW ON SELF-PROPELLED MOBILE OFFSHORE UNITS AND, WHERE REQUIRED, ON OTHER UNITS

4.1 All maritime crew members on self-propelled mobile offshore units and, where required, on other units should meet the requirements of the STCW Convention, as amended.

4.2 In addition to meeting the requirements referred to in paragraph 4.1 above, all maritime crew members should be given on-board training and instruction in types of emergencies which might occur on the particular type of mobile offshore unit on which they serve.

5 MINIMUM STANDARDS FOR FAMILIARIZATION AND BASIC SAFETY TRAINING INSTRUCTION AND COMPETENCES FOR ALL PERSONNEL

5.1 Categories of offshore personnel

Offshore personnel are, for practical reasons, divided into four categories:

Category A: Visitors and special personnel not regularly assigned who are on board for a limited period of time, in general not exceeding three days, and have no tasks in relation to normal operations of the unit.

Category B: Other special personnel without designated responsibility for the safety and survival of others.

Category C: Regularly assigned special personnel with designated responsibility for the safety and survival of others.

Category D: Maritime crew members.

5.2 Familiarization training (all personnel)

5.2.1 Before being assigned to duties related to the regular operations of the unit, all personnel (categories A, B, C and D) should receive offshore orientation, familiarization training or sufficient information and instruction in personal survival techniques and workplace safety. Such familiarization training, information or instruction should ensure that personnel are able to:

- .1 communicate with other persons on board on elementary safety matters and understand safety information symbols, signs and alarm signals, especially with regard to knowing what to do if:

- .1 a person falls overboard,

- .2 fire, smoke, or hydrogen sulphide is detected; or
- .3 the fire, abandon ship, toxic gas, or other general alarm is sounded;
- .2 locate and don lifejackets and, if provided, immersion suits;
- .3 identify muster and embarkation stations and emergency escape routes;
- .4 raise the alarm and have a basic knowledge of the use of portable fire-extinguishers;
- .5 take immediate action upon encountering an accident or other medical emergency on board;
- .6 close and open the fire, weathertight and watertight doors fitted on the unit, other than those for hull openings;
- .7 follow the unit's basic safe work practices and permit-to-work system; and
- .8 the unit's basic organizational structure and chain of command.

5.2.2 In the case of persons not staying on board overnight, the training, information or instruction provisions specified in paragraphs 5.2.1.4 to 5.2.1.8 above may be reduced in scope or omitted, provided such persons are accompanied by knowledgeable individuals while on the unit.

5.2.3 A generalized course of offshore safety training or instruction obtained onshore may satisfy this requirement provided it is supplemented with the training, information or instruction specified in 5.2.1.3 and 5.2.1.8 above.

5.2.4 Familiarization training should be provided at intervals not greater than five years.

5.2.5 Individuals should be required to provide evidence of having received familiarization training within the previous five years.

5.3 Training for all regularly assigned personnel and other special personnel

5.3.1 Before being assigned to duties related to the regular operations of the unit, all regularly assigned personnel and other special personnel without designated responsibility for the safety and survival of others (i.e. categories B, C and D) should receive training in personal survival, fire prevention and fire-fighting, elementary first aid, personal safety and social responsibilities as set out in tables 5.3.1 to 5.3.5. Every effort should be made to provide such training prior to proceeding offshore.

5.3.2 The following training should be provided either ashore and/or on the unit, as appropriate, by qualified and experienced persons:

- .1 Familiarization and orientation on general arrangements of the MOU, central processes, operating systems, equipment and procedures, organization, safety philosophy and contingency plans, as well as preventive safety systems such as permit-to-work procedures, company health and medical services, and other matters related to safety.
- .2 Practical familiarity with emergency duties.

- .3 Understanding the critical need to bring any abnormal situation to the attention of a responsible person.
- .4 Knowledge of available evacuation methods and procedures.
- .5 Knowledge of alarm procedures for emergency situations.
- .6 Knowledge of safety procedures.
- .7 Hydrogen sulphide (H₂S) training, where applicable.
- .8 Operations and emergencies involving divers, where applicable.

5.3.3 A regular programme of drills and exercises should be established in order to provide and/or supplement training and provide for evaluation and assessment. Guidance regarding drills and exercises is provided in the appendix.

5.3.4 Individuals should be required to provide evidence of having achieved the required standard of competence to undertake the tasks, duties and responsibilities listed in column 1 of tables 5.3.1 to 5.3.5 within the previous five years through demonstration of competence or examination or continuous assessment as part of an approved training programme. Guidance regarding the use of drills for assessment of competence is provided in the appendix.

5.4 Specialized training

5.4.1 Specialized training, as appropriate to the individual duties assigned on the muster list, should be provided to personnel in categories C and D.

5.4.2 Depending on their assigned duties, personnel should receive instruction and training in the following:

- .1 for those in charge of survival craft, proficiency in survival craft and rescue boats other than fast rescue boats as specified in table A-VI/2-1 of the STCW Code;
- .2 for those assigned to operate fast rescue boats, proficiency in fast rescue boats as specified in table A-VI/2-2 of the STCW Code;
- .3 for those in charge of the unit, and those designated to control fire-fighting operations, proficiency in advanced fire-fighting as specified in table A-VI/3 of the STCW Code;
- .4 for those designated to provide immediate first aid, proficiency in medical first aid as specified in table A-VI/4-1 of the STCW Code; and
- .5 for a person designated to take charge of medical care on board the unit, proficiency in taking charge of medical care as specified in table A-VI/4-2 of the STCW Code.

5.4.3 Since specialized training may not be provided on the unit, care should be taken to ensure that newly-assigned personnel with designated responsibility for the survival of others have sufficient experience, instruction, information or training on the equipment they are to use.

Table 5.3.1
Specification of minimum standard of proficiency in personal survival

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Emergency signals	<p>Personnel should receive an initial orientation on the types and identification of emergency signals</p> <p>Personnel should be acquainted with the posting of the muster list as a source for defining emergency signals</p> <p>In the case of combined operations personnel should receive supplemental information on additional alarms and procedures</p>	Examination or assessment of evidence obtained during satisfactory participation in drills and exercises	Actions taken during drills and in emergencies are appropriate to the emergency signal
Mustering of personnel	<p>During onboard orientation all personnel will be shown their primary safe muster areas</p> <p>Personnel should be acquainted with the posted muster list</p>	Examination or assessment of evidence obtained during satisfactory participation in drills and exercises	Actions taken during drills and in emergencies are appropriate to the emergency signal
Use of lifejacket	Personnel will receive instruction on location, types, inspection and donning lifejackets	Don lifejacket	Lifejacket is donned correctly
Use of immersion suits	Personnel will be given instruction on location, type, inspection and donning of immersion suits, if required	Don immersion suit	Immersion suits are donned correctly
Lifeboat procedures	Personnel will be instructed on proper entry into lifeboats and the use of seat belts	Board lifeboat during drills and strap in	Lifeboat is boarded correctly
Modes of evacuation	<p>Personnel will be instructed on the selection and use of available modes of evacuation. This may include:</p> <ul style="list-style-type: none"> -helicopter -catwalks or bridges -standby vessel -lifeboat -liferaft -ladders/escape devices -jumping from height (undesirable) 	Examination or assessment of evidence obtained during satisfactory participation in drills and exercises	Demonstration of correct actions during drills and exercises
Boarding liferafts or buoyant apparatus	Personnel will be instructed on boarding a liferaft or buoyant apparatus both at deck level and from the sea	Examination or assessment of evidence obtained during satisfactory participation in drills and exercises	Demonstration of correct actions during drills and exercises

Table 5.3.1 (continued)
Specification of minimum standard of proficiency in personal survival

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Water survival techniques	Personnel will be instructed on the following, as applicable: <ul style="list-style-type: none"> -- use of lights and whistles and other signalling devices -- proper body positions to conserve body heat and prevent hypothermia -- how to right an inverted liferaft -- boarding a rescue craft from the water 	Examination or assessment of evidence obtained during satisfactory participation in drills and exercises	Demonstration of correct actions during drills and exercises
Deployment of life rings and associated equipment	Personnel will be instructed in the procedures for deploying life rings and associated equipment Personnel will be instructed in the procedures for raising the alarm	Examination or assessment of evidence obtained during satisfactory participation in drills and exercises	Demonstration of correct actions during drills and exercises

Table 5.3.2
Specification of minimum standard of fire prevention and fire fighting

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
<p>Minimize the risk of fire and maintain a state of readiness to respond to emergency situations involving fire</p>	<p>Personnel should receive instruction that would include, but not be limited to, the following:</p> <ul style="list-style-type: none"> .1 elements of fire and explosion (the fire triangle) .2 types and sources of ignition .3 flammable materials, fire hazards and spread of fire .4 requirement for constant vigilance .5 classification of fire and applicable extinguishing agents <p>Personnel should receive an initial orientation and familiarization instruction that would include, but not be limited to, the following:</p> <ul style="list-style-type: none"> .1 onboard fire-fighting organization and muster list .2 location of fire-fighting equipment and emergency escape routes .3 onboard fire and smoke detection and automatic alarm systems .4 actions to be taken on discovery of smoke or fire .5 in the case of combined operations, supplemental instruction on additional alarms and procedures <p>Personnel should receive instruction on actions to be taken, given the individual's status onboard</p>	<p>Examination or assessment of evidence obtained during satisfactory participation in drills and exercises</p>	<p>Initial actions during drills or in response to emergencies conform to established procedures</p>
<p>Fight and extinguish fires</p>	<p>Personnel should receive familiarization instruction that includes the following:</p> <ul style="list-style-type: none"> .1 selection and use of fire-fighting equipment and its location on board .2 selection and use of personal protective equipment .3 fire-fighting and containment methods .4 fire-fighting agents 	<p>Examination or assessment of evidence obtained during satisfactory participation in drills and exercises</p>	<p>Actions during drills or in response to emergencies conform to established procedures</p>

Table 5.3.4
Specification of minimum standard of competence in personal safety

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Comply with emergency procedures	<p>Types of emergency which may occur, such as collision, fire, foundering</p> <p>General knowledge of contingency plans for response to emergencies and individual responsibility thereunder</p> <p>Emergency signals; muster list; muster stations; and correct use of personal safety equipment</p> <p>Action to take on discovering potential emergency including: fire, collision, foundering and ingress of water</p> <p>Action to take on hearing emergency alarm signals</p> <p>Knowledge of escape routes and internal communication and alarm systems</p>	Examination or assessment of evidence obtained during satisfactory participation in drills and exercises	Action during drills or in response to emergencies conform to established procedures
Prevention of pollution	Personnel will be instructed in potentially harmful effects of pollution and steps to identify and prevent pollution	Examination or assessment of evidence obtained during satisfactory participation in drills and exercises	Follows established pollution prevention procedures
Observe safe working practices	<p>Importance of adhering to safe working practices at all times</p> <p>Safety and protective devices available to protect against potential hazards</p> <p>Precautions to be taken prior to entering enclosed spaces</p>	Examination or assessment of evidence obtained during satisfactory participation in safety meetings	Safe working practices are observed and appropriate safety and protective equipment is correctly used at all times
Understand orders and instructions and be understood in relation to assigned duties	<p>Ability to understand orders and instructions and to communicate with others in relation to assigned duties</p> <p>Personnel will be instructed in the chain of command and in the importance of following the orders and instructions of those appointed over them</p>	Follows orders and instructions	Follows orders and instructions given

Table 5.3.5
Specification of minimum standard of competence in social responsibilities

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
<p>Contribute to effective human relationships on board MOU</p>	<p>Personnel should receive familiarization instruction that would include, but not be limited to, the following:</p> <ul style="list-style-type: none"> .1 importance of maintaining good human and working relationships .2 special emphasis should be given to the following: <ul style="list-style-type: none"> .1 social responsibilities, individual rights and responsibilities and practice of respect for co-workers: <ul style="list-style-type: none"> .1 no ethnic, racial, religious or sexual jokes or harassment .2 no horseplay or practical jokes .3 no profanity .4 control noise levels .5 dress appropriately .6 attend to personal hygiene .7 maintain neatness in living and working spaces .8 respect for privacy of others .9 respect for property of others .10 comply with company policies regarding prohibited items .2 dangers of drug and alcohol abuse: <ul style="list-style-type: none"> .1 company policy .2 operator policy (if different) .3 legal sanctions .3 factors affecting human relationships in the offshore environment: <ul style="list-style-type: none"> .1 harsh weather and working environments .2 physically demanding .3 long hours and isolation from shore .4 be prepared for unexpected extended stays .5 prohibited items 	<p>Documentation from orientations given to personnel should reflect this topic is adequately covered</p> <p>This can be demonstrated by video, computer-based training, training syllabus or personnel receiving this information verbally through lectures</p> <p>Examination and assessment of evidence obtained from one or more of the following:</p> <ul style="list-style-type: none"> .1 instruction or training given prior to going offshore, .2 instruction or training given on board the unit, or .3 direct observation of actions or conduct during training or instruction, while en route to or while onboard the unit 	<p>Demonstration of correct knowledge</p>

6 SPECIALIZED TRAINING AND QUALIFICATIONS OF KEY PERSONNEL

6.1 General

Every unit should have sufficient key persons on board possessing the knowledge, qualifications, skills and experience necessary to ensure the safe operation of the unit. It is recognized that the nature of MOUs and their operations necessitate the consideration of specialized training and qualifications. The Administration should determine the adequacy of the knowledge, qualifications, skills and experience of the personnel assigned the responsibility for essential safety and pollution prevention functions on the basis of the design, type, size, and operating parameters of each MOU. Administrations are invited to consider the essential functions listed below in determining the necessary knowledge, qualifications, skills and experience for key personnel.

6.2 Offshore installation manager

6.2.1 The essential safety and pollution prevention functions for which the OIM is responsible and the related knowledge, competencies and qualifications required will depend on the type of unit and its mode of operation.

- .1 The person in charge should be well acquainted with the characteristics, capabilities and limitations of the unit and should have a full knowledge of the organization and actions to take in an emergency and the need to conduct and keep records of emergency drills and training; and
- .2 Persons delegated by him should possess the capability to maintain and operate all fire-fighting equipment and life-saving appliances on board the unit and be able to train others in these activities.

6.2.2 Subject to the more precise indications given in Table 6.1, which relates to the training, knowledge, skill and competency requirements for particular types of MOUs, it is considered necessary for the proper discharge of the essential safety and pollution prevention functions assigned to the OIM for the OIM to have knowledge, experience and have demonstrated competence in each of the following matters:

- .1 stability and construction:
 - .1 the general principles of construction;
 - .2 the static and dynamic stability of floating MOUs; theory and factors affecting trim and stability; measures to preserve safe trim and stability, including sufficient knowledge of stability calculations and the use of stability booklets; also the relationship with the regulatory requirements in respect of the stability curves for operating and survival conditions, taking into account the effect of the environmental conditions prevailing;
 - .3 the effect on the trim and stability of a floating MOU in the event of damage to, and consequence flooding of, any compartment; counter-measures to be taken; knowledge of the principle and importance of maintaining the watertight integrity of the MOU; procedures for maintaining watertight integrity;
 - .4 loading supplies and ballasting in order to keep the unit's stresses within acceptable limits;

- .5 principal structural members and required periodical inspections. Basic knowledge of the effects of welding. Effects of corrosion on the structure;
 - .6 the effect of the mooring system on stability; and
 - .7 preloading and leg reaction stresses on self-elevating units;
- .2 station-keeping, mooring and dynamic positioning:
- .1 sea-bed composition and characteristics;
 - .2 behaviour of mooring systems and force distribution, including the effect of environmental conditions;
 - .3 consequences of failure of the mooring system;
 - .4 anchor placement and recovery, and working with anchor-handling vessels; and
 - .5 the principles of the dynamic positioning system, including capabilities and limitations of thrusters, power systems and maximum allowable position offsets;
- .3 transit operations:
- .1 the 1972 Collision Regulations, as amended;
 - .2 navigation and electronic navigational aids appropriate to the type of unit; and
 - .3 towing procedures, including recovery of tow;
- .4 emergency procedures and safety equipment:
- .1 life-saving and fire-fighting procedures, including drills;
 - .2 maintenance and inspection of life-saving and fire-fighting appliances in accordance with the regulatory requirements;
 - .3 communication procedures in emergencies;
 - .4 precautions to be taken before the onset of heavy weather; and
 - .5 evacuation procedures;
- .5 personnel transfers:
- .1 precautions to be taken during transfer of personnel;
 - .2 use of the personnel basket;
 - .3 helicopter transfers; and
 - .4 vessel transfers;

- .6 handling and stowage of supplies, including dangerous goods:
 - .1 safe handling, stowage and care of equipment, supplies and dangerous goods;
 - .2 cranes and lifting equipment and inspections; and
 - .3 procedures for loading and discharge of helicopters and supply vessels;
- .7 pollution prevention and control:
 - .1 pollution prevention systems and equipment; and
 - .2 pollution control procedures;
- .8 meteorology:
 - .1 the characteristics of various weather systems;
 - .2 ability to apply available meteorological information to ensure safety of the MOU and, upon request, supply other vessels or aircraft with information;
 - .3 sources of meteorological information; and
 - .4 the effects of weather on the environmental limits of the MOU;
- .9 safe working practices:
 - .1 occupational safety, health and hygiene;
 - .2 hazardous areas;
 - .3 permits to work;
 - .4 work over water;
 - .5 work in enclosed spaces;
 - .6 personnel training;
 - .7 understanding of organization and communication; and
 - .8 understanding and inspection of safety equipment;
- .10 regulatory and certification requirements, including an appreciation of international and national regulations and recommendations affecting operations; and
- .11 industrial operations as they relate to maritime safety, including appreciation of the interrelationship between marine operations and specific industrial activities, including, where appropriate, the following:
 - .1 drilling and maintenance, where appropriate, of wells;
 - .2 construction and offshore maintenance and repair;

- .3 production;
- .4 accommodation support;
- .5 lifting operations;
- .6 pipe-laying;
- .7 diving; and
- .8 fire-fighting support.

6.2.3 Methods for demonstrating competence and criteria for evaluating competence for OIMs are set forth in Table 6.2.

6.3 Barge supervisor

6.3.1 Knowledge, experience and competence in each of the following matters is considered necessary for the proper discharge of the essential safety and pollution prevention functions assigned to the barge supervisor:

- .1 stability and construction:
 - the stability concepts specified for the ballast control operator plus a period of service in that capacity;
- .2 construction:
 - principles of construction, structural members, watertight integrity and damage control;
- .3 emergency duties:
 - responsibilities set forth in the emergency plan or operating manual relating to the safety of the unit;
- .4 communications:
 - communication procedures for normal operations and in an emergency;
- .5 safe working practices:
 - .1 occupational safety, health and hygiene;
 - .2 hazardous areas;
 - .3 permits to work;
 - .4 work over water;
 - .5 work in enclosed spaces;
 - .6 personnel training; and

- .7 understanding and inspection of safety equipment;
- .6 regulatory requirements:
 - international and national regulations and recommendations affecting operations;
- .7 emergency first aid:
 - provision of first aid to a casualty pending transfer to a medical facility;
- .8 transit operations:
 - .1 the 1972 Collision Regulation, as amended;
 - .2 navigation and electronic navigational aids appropriate to the type of unit; and
 - .3 towing procedures, including recovery of tow;
- .9 seamanship
 - .1 heavy weather;
 - .2 store and bulk liquid transfer;
 - .3 manoeuvring and positioning;
 - .4 anchor handling; and
 - .5 dynamic positioning, if applicable.

6.3.2 Methods for demonstrating competence and criteria for evaluating competence for barge supervisors are set forth in table 6.3.

6.4 **Ballast control operator**

6.4.1 Knowledge, experience and competence in each of the following matters is considered necessary for the proper discharge of the essential safety and pollution prevention functions assigned to the ballast control operator on column-stabilized units:

- .1 basic stability:
 - .1 understanding of general terms, i.e. displacement, draught, trim, heel, freeboard, buoyancy, reserve buoyancy, etc.;
 - .2 understanding of centre of gravity, centre of buoyancy, position of metacentre, righting lever and its effect on transverse stability;
 - .3 stable, unstable and neutral equilibrium;
 - .4 theory of moments applied to stability including the effects of heavy lifts and movement of same;

- .5 effect of adding, removing and shifting weight. Calculation of vertical, transverse and longitudinal shift of centre of gravity;
- .6 understanding of the inclining experiment report and its use;
- .7 effect of free surface on stability and factors affecting same;
- .8 general understanding of change of trim, trimming moments, longitudinal metacentre and longitudinal stability;
- .9 use of hydrostatic curves, deadweight scale and hydrostatic tables;
- .10 use of cross curves to produce a curve of statical stability and information from curve;
- .11 dynamical stability; synchronous rolling and angle of loll; stability criteria for MOUs;
- .12 effect of mooring system on stability; and
- .13 daily loading calculations;
- .2 application of stability knowledge, where the following should include the relevant theory and calculations:
 - .1 deck loads and effect on stability; change in lightweight;
 - .2 examination of ballasting systems and procedures;
 - .3 response to systems failures including station-keeping systems, damage to structures and subsequent action;
 - .4 damage control procedure, watertight compartments counter-flooding, use of pumping systems and cross-connections;
 - .5 environmental conditions and their effect on stability;
 - .6 unit and environmental limitations and criteria for changing to survival condition;
 - .7 zones of reduced stability, precautions to take, unsymmetrical ballasting/de-ballasting and importance of sequence with regard to stress;
 - .8 theory of calculations carried out on daily loading sheet, variations in chain deployed and effect on vertical moment; and
 - .9 emergency procedures;

.3 supplementary training:

having successfully completed the formal training, as indicated above, no individual should work in a ballast control room without the supervision of a competent person for a period of time to enable him to become fully conversant with the ballasting systems of that unit. Before being left in sole charge and being required to react alone in the event of an emergency, the individual should receive experience of simulated emergency situations.

6.4.2 Methods for demonstrating competence and criteria for evaluating competence for ballast control operators are set forth in Table 6.4.

6.5 Maintenance supervisor

6.5.1 On self-propelled MOUs, the person assigned responsibility for the operation and maintenance of the main propulsion and auxiliary machinery should meet the appropriate knowledge requirements of chapter III of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended. (See section 4.1 on self-propelled MOUs).

6.5.2 On non-self-propelled MOUs, the person assigned responsibility for the operation and maintenance of the power plant and auxiliary machinery should have knowledge, experience and competence in each of the following:

- .1 operation and maintenance of engines.
- .2 operation and maintenance of auxiliary machinery including pumping and piping systems, associated control systems and, if appropriate, jacking systems;
- .3 detection of machinery malfunction, location of faults to prevent or minimize damage;
- .4 maintenance and repair problems;
- .5 operation and maintenance of systems for fire prevention, detection and extinction;
- .6 safe working practices;
- .7 maintenance of survival craft and launching appliances; and
- .8 pollution prevention procedures.

6.5.3 Methods for demonstrating competence and criteria for evaluating competence for maintenance supervisors on non-self-propelled MOUs are set forth in Table 6.5.

Table 6.1
Knowledge and training requirements for different types of MOU

Knowledge/ experience listed in 6.2.2	Type of MOU						
	Drillship	Self-propelled		Non-self-propelled		Bottom-bearing	
		Column-stabilized unit	Other	Column-stabilized unit	Other	Submersible	Self-elevated unit
.1.1	X	X	X	X	X	X	X
.1.2	X	X	X	X	3	2	2
.1.3	X	X	X	X	X	2	2
.1.4	X	X	X	X	X	X	X
.1.5	X	X	X	X	X	X	X
.1.6	X ¹	X ¹	X ¹		X	X	
.1.7							X
.2.1	X	X	X	X	X	X	X
.2.2	X ¹	X ¹	X ¹		X	X	
.2.3	X ¹	X ¹	X ¹		X	X	
.2.4	X	X	X	X	X	X	X
.2.5	X	X	X				
.3.1	X	X	X	X ³	3	2,3	2,3
.3.2	X	X	X	X ³	3	2,3	2,3
.3.3	X	X	X	X	X ³	2	2
.4 to .11	X	X	X	X	X	X	X

¹ Except for units in dynamic positioning mode.

² Bottom-bearing units whilst afloat.

³ Depends on unit type and circumstances of operation (to be determined by the Administration).

Table 6.2
Specification of minimum standard of competence for offshore installation manager

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Plan and ensure safe ballasting and deballasting operations and accounting of changes in deck loads	<p>Knowledge of, and ability to apply, relevant international and national standards concerning stability</p> <p>Use of loading stability information which may be contained in or derived from stability and trim diagrams, operation manual, and/or computer-based loading and stability programs</p>	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	<p>Ballasting and deballasting are planned and executed in accordance with established procedures</p> <p>Changes in deck loads are accounted for in accordance with established procedures</p>
Operational control of trim, stability and stress	<p>Understanding of fundamental principles of MOU construction, including principal structural members and required periodic inspections</p> <p>Basic knowledge of effects of welding, and effects of corrosion on the structure</p> <p>Understanding of fundamental principles and the theories and factors affecting trim and stability and measures necessary to preserve trim and stability (afloat mode)</p> <p>Stability criteria for MOUs (static and dynamic), environmental limits and criteria for survival conditions</p> <p>Understanding of inclining experiment, deadweight survey, and their use</p> <p>Use of daily loading calculations</p> <p>Knowledge of the effect :</p> <ol style="list-style-type: none"> .1 on trim and stability of MOU in event of damage to and consequent flooding of a compartment, and countermeasures to be taken (afloat mode) .2 of loading supplies and ballasting in order to keep the unit's stresses within acceptable limits .3 of mooring systems and mooring line failure .4 of pre-loading and leg stresses on self-elevating units .5 of loss of buoyancy 	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	MOU structure, stability and stress conditions are maintained within safe limits at all times

Table 6.2 (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
<p>Maintain safety and security of MOU personnel and the operational condition of life-saving, fire-fighting and other safety systems</p>	<p>Knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea) as applicable to MOUs</p> <p>Organization of fire and abandon ship drills</p> <p>Maintenance of operational condition of life-saving, fire-fighting and other safety systems</p> <p>Actions to be taken to protect and safeguard all persons on board in emergencies, including evacuation</p> <p>Actions to limit damage following a fire, explosion, collision, or grounding</p> <p>Precautions to be taken before onset of heavy weather</p>	<p>Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination</p>	<p>Procedures for monitoring fire-detection and safety systems ensure that all alarms are detected promptly and acted upon in accordance with established emergency procedures</p> <p>Life-saving appliances and fire-fighting equipment are maintained in accordance with prescribed standards</p>
<p>Develop emergency and damage control plans and handle emergency situations</p>	<p>Preparation of contingency plans for response to emergencies</p> <p>Ship construction, including damage control</p> <p>Methods and aids for fire prevention, detection and extinction</p> <p>Functions and use of life-saving appliances</p> <p>Evacuation from MOU</p> <p>Precautions to be taken before onset of heavy weather</p>	<p>Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination</p>	<p>Emergency procedures are in accordance with the established plans for emergency situations</p>
<p>Respond to emergencies</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> .1 emergency procedures .2 the effect of trim and stability of flooding due to damage, fire-fighting , loss of buoyancy or other reasons and countermeasures to be taken <p>Effectively communicate stability-related information</p>	<p>Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination</p>	<p>Established procedures are followed during drills and emergencies</p> <p>Communications are clear and effective</p>

Table 6.2 (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Maintain MOU safe for transit, station keeping, mooring and dynamic positioning conditions	<p>Knowledge of:</p> <ul style="list-style-type: none"> .1 the 1972 Collision Regulations, as amended .2 navigation and electronic navigational aids appropriate to the type of MOU .3 towing procedures, including recovery of tow .4 sea-bed composition and characteristics .5 behaviour of mooring systems and force distributions, including the effect of environmental conditions .6 consequences of mooring system failure .7 anchor placement and recovery, and working with anchor handling vessels .8 principles of dynamic positioning system, including capabilities and limitations of thrusters, power systems and maximum allowable position offsets (For Dynamic Position equipped vessels only)* 	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	<p>Transit, station keeping, mooring and dynamic positioning operations are within safe limits at all times</p> <p>Communications are effective and comply with established procedures</p>
Forecast weather and oceanographic conditions	<p>Knowledge of :</p> <ul style="list-style-type: none"> .1 characteristics of weather systems .2 ability to apply available meteorological information to ensure safety of MOU and , upon request, supply other vessels or aircraft with information .3 sources of weather information .4 the effects of weather on the MOU environmental limits 	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	<p>The likely weather conditions for a determined period are based on all available information</p> <p>Actions taken to maintain safety of navigation and operations minimize risk to safety of MOU</p>
Plan and ensure safe transfer of personnel	<p>Knowledge of :</p> <ul style="list-style-type: none"> .1 precautions to be taken during transfer of personnel .2 use of the personnel basket .3 helicopter transfers .4 vessel transfers .5 effect of environmental conditions on method of personnel transfer 	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	Personnel transfers are conducted safely

* Resolution MSC.38(63), annex 2.

Table 6.2 (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Plan and ensure safe loading, stowage, securing and handling of supplies, including dangerous goods	<p>Knowledge of :</p> <ul style="list-style-type: none"> .1 the effect on trim and stability of cargoes and cargo operations .2 safe handling, stowage and care of equipment, supplies and dangerous goods .3 crane and lifting equipment, and their inspections .4 procedures for loading and discharge of helicopters and supply vessels .5 precautions during loading, and unloading, and use of dangerous, hazardous, or harmful goods 	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	<p>The likely weather conditions for a determined period are based on all available information</p> <p>Stowage and securing of cargoes and supplies ensures that stability and stress conditions remain within safe limits, and are in accordance with established guidelines and legislative requirements</p> <p>Information on dangers, hazards and special requirements is recorded in a suitable format for easy reference in the event of an incident</p>
Prevention of pollution	<p>Methods and aid to prevent pollution of the environment</p> <p>Knowledge of :</p> <ul style="list-style-type: none"> .1 pollution prevention systems and controls .2 pollution control procedures, including the unit's MARPOL I/26 and article 3 of OPRC Convention Shipboard Oil Pollution Emergency Plan, MARPOL Annex V Waste Management Plan, and any plan dealing with dangerous/hazardous goods 	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	Operations are conducted without hazarding the environment through spills of oil or dangerous/hazardous goods, or garbage
Monitor and control safe working practices	<p>Knowledge of safe working practices, such as:</p> <ul style="list-style-type: none"> .1 occupational safety, health and hygiene .2 hazardous areas .3 permits to work .4 work over water .5 work in confined spaces <p>Knowledge of personnel training, organization and communication</p> <p>Understanding and inspection of safety equipment</p> <p>Identify, evaluate, control new hazards through engineering controls or safe working practices</p>	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	Operations minimize hazards to personnel

Table 6.2 (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
<p>Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and the protection of the marine environment</p>	<p>Knowledge of international maritime law embodied in international agreements and conventions</p> <p>Regard should be paid to the following subjects:</p> <ul style="list-style-type: none"> .1 certificates and other documents required to be carried on board MOUs by international conventions and/or agreements .2 responsibilities under the relevant requirements of the: <ul style="list-style-type: none"> - International Convention on Load Lines; - International Convention for the Safety of Life at Sea; - International Convention for the Prevention of Pollution from Ships; .3 maritime declarations of health and the requirements of the International Health Regulations .4 responsibilities under international instruments affecting the safety of the MOU, visitors, crew and cargo .5 methods and aids to prevent pollution of the marine environment by MOUs .6 national legislation for implementing international agreements and conventions 	<p>Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination</p>	<p>Procedures for monitoring operations and maintenance comply with legislative requirements</p> <p>Potential non-compliance is promptly and fully identified</p> <p>Planned renewal and extension of certificates ensures continued validity of surveyed items and equipment</p>
<p>Monitor and control industrial operations impacting maritime safety</p>	<p>Knowledge and appreciation of the interrelationship between marine operations and specific industrial activities including, where appropriate, the following:</p> <ul style="list-style-type: none"> .1 drilling and maintenance, where appropriate, of wells .2 construction and offshore maintenance and repair .3 production .4 accommodation support .5 lifting operations .6 pipe-laying .7 diving .8 fire-fighting support 	<p>Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination</p>	<p>Industrial operations are carried out safely</p>

Table 6.3
Specification of minimum standard of competence for barge supervisor

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Plan and ensure safe ballasting and deballasting operations and accounting of changes in deck loads	<p>Knowledge of and ability to apply relevant international and national standards concerning stability</p> <p>Use of loading stability information as may be contained in or derived from stability and trim diagrams, operation manual, and/or computer-based loading and stability programs</p>	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	<p>Ballasting and deballasting are planned and executed in accordance with established procedures</p> <p>Changes in deck loads are accounted for in accordance with established procedures</p>
Operational control of trim, stability and stress	<p>Understanding of fundamental principles of MOU construction, including principal structural members and required periodic inspections, watertight integrity and damage control</p> <p>Basic knowledge of effects of welding, and effects of corrosion on the structure</p> <p>Understanding of fundamental principles and the theories and factors affecting trim and stability and measures necessary to preserve trim and stability</p> <p>Stability criteria for MOU (static and dynamic), environmental limits and criteria for survival conditions</p> <p>Understanding of inclining experiment, deadweight survey, and their use</p> <p>Use of daily loading calculations</p> <p>Knowledge of the effect of mooring systems and mooring line failure</p>	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	MOU structure, stability and stress conditions are maintained within safe limits at all times

Table 6.3 (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Respond to emergencies	Knowledge of : <ol style="list-style-type: none"> .1 emergency procedures .2 the effect of trim and stability of flooding due to damage, fire-fighting, loss of buoyancy or other reasons and countermeasures to be taken Effectively communicate stability related and damage control information	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	Established procedures are followed during drills and emergencies Communications are clear and effective
Seamanship	Knowledge of : <ol style="list-style-type: none"> .1 the 1972 Collision Regulations, as amended .2 navigation and electronic navigational aids appropriate to the type of MOU .3 towing procedures, including recovery of tow Proficiency in the following: <ol style="list-style-type: none"> .1 heavy weather .2 store and bulk liquid transfer .3 manoeuvring and positioning .4 anchor handling .5 dynamic positioning, if applicable Effectively communicate navigational and cargo handling information	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	Transit, station keeping, mooring and dynamic positioning operations are within safe limits at all times Communications are effective and comply with established procedures
Plan and ensure safe loading, stowage, securing and handling of supplies, including dangerous goods	Knowledge of: <ol style="list-style-type: none"> .1 the effect on trim and stability of cargoes and cargo operations .2 safe handling, stowage and care of equipment, supplies and dangerous goods .3 crane and lifting equipment, and their inspections .4 procedures for loading and discharge of helicopters and supply vessels .5 precautions during loading, and unloading, and use of dangerous, hazardous, or harmful goods 	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	The likely weather conditions for a determined period are based on all available information Stowage and securing of cargoes and supplies ensures that stability and stress conditions remain within safe limits, and are in accordance with established guidelines and legislative requirements Information on dangers, hazards and special requirements is recorded in a suitable format for easy reference in the event of an incident

Table 6.3 (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Monitor and control safe working practices	<p>Knowledge of safe working practices, such as:</p> <ul style="list-style-type: none"> .1 occupational safety, health and hygiene .2 hazardous areas .3 permits to work .4 work over water .5 work in confined spaces <p>Knowledge of personnel training, organization and communication</p> <p>Understanding and inspection of safety equipment</p>	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	Operations minimize hazards to personnel
Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and the protection of the marine environment	<p>Knowledge of international maritime law embodied in international agreements and conventions</p> <p>Regard should be paid to the following subjects:</p> <ul style="list-style-type: none"> .1 certificates and other documents required to be carried on board MOUs by international conventions and/or agreements .2 responsibilities under the relevant requirements of the: <ul style="list-style-type: none"> - International Convention on Load Lines; - International Convention for the Safety of Life at Sea; - International Convention for the Prevention of Pollution from Ships; .3 responsibilities under international instruments affecting the safety of the MOU, visitors, crew and cargo .4 methods and aids to prevent pollution of the marine environment by MOUs .5 national legislation for implementing international agreements and conventions 	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	<p>Procedures for monitoring operations and maintenance comply with legislative requirements</p> <p>Potential non-compliance is promptly and fully identified</p> <p>Planned renewal and extension of certificates ensures continued validity of surveyed items and equipment</p>
Provide first aid to a casualty prior to transfer to medical facility	See table A-VI/4-1 of STCW Code	See table A-VI/4-1 of STCW Code	See table A-VI/4-1 of STCW Code

Table 6.4
Specification of minimum standard of competence for ballast control operators

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Plan and ensure safe ballasting and deballasting operations and accounting of changes in deck loads	<p>Knowledge of and ability to apply relevant international and national standards concerning stability</p> <p>Use of loading stability information as may be contained in or derived from stability and trim diagrams, operations manuals, and/or computer-based loading and stability programs</p>	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	<p>Ballasting and deballasting operations are planned and executed in accordance with established procedures</p> <p>Changes in deck loads are accounted for in accordance with established procedures</p>
Operational control trim, stability and stress	<p>Understanding of fundamental principles of ship construction and the theories and factors affecting trim and stability and the measures necessary to preserve trim and stability</p> <p>Stability criteria for MOUs, environmental limits and criteria for survival conditions</p> <p>Understanding the inclining experiment report and its use</p> <p>Use of daily loading calculations</p> <p>Dynamical stability</p> <p>Effect of mooring systems and mooring line failure</p>	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation, formal instruction, simulator training, or examination	Stability and stress conditions are maintained within established limits at all times
Respond to emergencies	<p>Knowledge of emergency procedures</p> <p>Knowledge of the effect on trim and stability of flooding due to damage, fire-fighting, loss of buoyancy or other reasons and countermeasures to be taken</p> <p>Effectively communicate stability-related information</p>	Examination and assessment of evidence obtained from one or more of the following: in-service experience, direct observation during drills and exercises, formal instruction, simulator training, or examination	<p>Established procedures are followed during drills and emergencies</p> <p>Communications are clear and effective</p>
Prevention of pollution	<p>Methods and aids to prevent pollution of the environment</p> <p>Knowledge of relevant international and national requirements, regard should be paid especially to:</p> <ol style="list-style-type: none"> 1. certificates and other documents required by international conventions or national law, how they may be obtained, and their period of validity .2 responsibilities under relevant international agreements 	Examination and assessment of evidence obtained from one or more of the following: in-service experience, formal instruction, or examination	Follows pollution prevention procedures established by international convention, national requirements and company policy

Table 6.5
Specification of minimum standard of competence for maintenance supervisors on non self-propelled units

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Use appropriate tools for fabrication and repair operations typically performed on MOUs	<p>Characteristics and limitations of materials used in construction and repair</p> <p>Characteristics and limitations of processes used for fabrication and repair</p> <p>Properties and parameters considered in the fabrication and repair of systems and components</p> <p>Application of safe working practices in the workshop environment</p>	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <p>workshop skills training, in-service experience, or examination</p>	<p>Identification of important parameters for fabrication of typical MOU-related components is appropriate</p> <p>Selection of material is appropriate</p> <p>Fabrication is to designated tolerances</p> <p>Use of equipment and machine tools is appropriate and safe</p>
Use hand tools and measuring equipment for dismantling, maintenance, repair and re-assembly of on-board plant and equipment	<p>Design characteristics and selection of materials in construction of equipment</p> <p>Interpretation of machinery drawings and handtools</p> <p>Operational characteristics of equipment and systems</p>	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <p>workshop skills training, in-service experience, or examination</p>	<p>Safety procedures followed are appropriate</p> <p>Selection of tools and spare gear is appropriate</p> <p>Dismantling, inspecting, repairing and reassembling equipment is in accordance with manuals and good practice</p> <p>Re-commissioning and performance testing in accordance with manuals and good practice</p>
Use hand tools, electrical and electronic measuring and test equipment for fault-finding, maintenance and repair operations	<p>Safety requirements for working on electrical systems</p> <p>Construction and operational characteristics of on-board AC and DC electrical systems and equipment</p> <p>Construction and operation of electrical test and measuring equipment</p>	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <p>workshop skills training, in-service experience, or examination</p>	<p>Implementation of safety procedures is satisfactory</p> <p>Selection and use of test equipment is appropriate and interpretation of results is accurate</p> <p>Selection of procedures for the conduct of repair and maintenance is in accordance with manuals and good practice</p> <p>Commissioning and performance testing of equipment and systems brought back into service after repair is in accordance with manuals and good practice</p>

Table 6.5 (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Operate alternators, generators and control systems	Generating plant Appropriate basic electrical knowledge and skills Preparing, starting, coupling and charging over alternators or generators Location of common faults and action to prevent damage Control systems Location of common faults and action to prevent damage	Examination and assessment of evidence obtained from one or more of the following: in service experience, simulator training, laboratory equipment training, or examination	Operations are planned and carried out in accordance with established rules and procedures to ensure safety of operations
Maintain engineering systems, including control systems	Appropriate basic mechanical knowledge and skills Safe isolation of electrical and other types of plant and equipment required before personnel are permitted to work on such plant or equipment Undertake maintenance and repair to plant and equipment	Examination and assessment of evidence obtained from one or more of the following: in service experience, simulator training, laboratory equipment training, or examination	Isolation, dismantling and reassembly of plant and equipment is in accordance with accepted practices and procedures. Action taken leads to the restoration of plant by the method most suitable and appropriate to the prevailing circumstances and conditions
Operate, monitor and evaluate engine and machinery performance and capacity	Operation and maintenance of: engines auxiliary machinery including pumping and piping systems, associated control systems and, if appropriate, jacking systems	Examination and assessment of evidence obtained from one or more of the following: in-service experience, formal instruction, simulator training, or examination	Action during drills or in response to emergencies conform to established procedures
Detect and identify the cause of machinery malfunctions and correct faults	Detection of machinery malfunction and location of faults to prevent or minimize damage	Examination and assessment of evidence obtained from one or more of the following: in-service experience, formal instruction, simulator training, or examination	Methods of comparing actual operating conditions are in accordance with recommended practices and procedures Actions and decisions are in accordance with recommended operating specifications and limitations

Table 6.5 (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Organize safe maintenance and repair procedures	<p>Marine engineering practice</p> <p>Organizing and carrying out safe maintenance and repair procedures</p>	<p>Examination and assessment of evidence obtained from one or more of the following: in-service experience, formal instruction, simulator training, or examination</p>	<p>Maintenance activities are correctly planned and carried out in accordance with technical, legislative, safety and procedural specifications</p> <p>Appropriate plans, specifications materials and equipment are available and used for maintenance and repair</p> <p>Actions taken lead to the restoration of the plant by the most suitable method</p>
Operate and maintain survival craft and launching systems and systems for fire prevention, detection and extinction	<p>Maintenance of operational condition of survival craft and launching systems and systems for fire prevention, detection and extinction</p> <p>Actions taken to protect the unit and its personnel and limit damage following fire, explosion, collision or grounding</p>	<p>Examination and assessment of evidence obtained from one or more of the following: in-service experience, formal instruction, simulator training, or examination</p>	<p>Procedures for maintaining equipment ensure that equipment remains operational</p> <p>Actions taken in response to drills or emergencies follow established procedures</p>

Table 6.5 (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Prevention of pollution	<p>Methods and aids to prevent pollution of the environment</p> <p>Knowledge of relevant international and national requirements, regard should be paid especially to:</p> <ol style="list-style-type: none"> 1. certificates and other documents required by international conventions or national law, how they may be obtained, and their period of validity .2 responsibilities under relevant international agreements 	Examination and assessment of evidence obtained from one or more of the following: in-service experience, formal instruction, simulator training, or examination	Follows pollution prevention procedures established by international conventions, national requirements and company policy
Ensure safe working practices	Safe working practices	Examination and assessment of evidence obtained from one or more of the following: in-service experience, formal instruction, simulator training, or examination	<p>Working practices are in accordance with legislative requirements, codes of practice, environmental concerns, and company policies</p> <p>Safe working practices are observed and appropriate safety and protective equipment is correctly used at all times</p>

APPENDIX

GUIDANCE ON DRILLS AND EXERCISES

1 INTRODUCTION

1.1 This guidance is offered to aid in the development of an effective programme of drills and exercises for training and assessment of basic offshore emergency response. Drills and exercises are a primary means of testing and maintaining the emergency response arrangements of a mobile offshore unit (MOU). They also are an integral part of the system of providing basic safety training and other emergency response training to individuals and evaluating individual skills and knowledge in these areas.

1.2 Definitions

1.2.1 **Exercise** means a test of the emergency response arrangements under as near realistic conditions as possible on the MOU and involves all unit personnel.

1.2.2 **Drill** means a form of exercise which provides the opportunity to practice elements of the system. Drills are carried out under realistic conditions while allowing for instruction and training, e.g. breathing apparatus drills for the fire team, casualty handling for first-aid and stretcher teams, etc.

1.3 Drill and exercise programme

1.3.1 The drill and exercise programme should be an integral part of the unit's training programme. The design of a programme of drills and exercises can be considered on four levels.

Offshore/onshore exercises

1.3.2 Since many MOUs rely on shore-based support during response to major emergencies, these exercises are intended to test and develop communications and relationships between the unit and onshore emergency support teams. To maximize the benefits of such exercises, considerable co-ordination and planning may be required.

1.3.3 Arrangements should be made for independent observers, i.e., persons not involved in the actual exercise, to monitor both the offshore and onshore elements of the exercise and provide objective assessment and feedback.

1.3.4 Offshore/onshore exercises should be held at such intervals as to allow each OIM to participate in at least one such exercise every 3 years, i.e., the nominal frequency should be approximately 18 months interval.

Offshore exercises

1.3.5 These exercises are intended to test and develop communications and relationships for those on board the unit and for the unit's emergency support teams. They are also used to test and develop integrated emergency response arrangements for units engaged in combined operations.

1.3.6 When possible, arrangements should be made for independent observers, i.e., persons not involved in the actual exercise, to monitor the exercise and provide objective assessment and feedback.

Routine drills

1.3.7 A programme of routine drills is established to provide systematic practical training and experience in the elements of basic offshore emergency response. The programme should ensure that all the elements of required individual and team competence in basic offshore emergency preparedness training are regularly tested. Various elements can be tested during a drill.

1.3.8 Consideration should also be given to carrying out drills in order to provide training and heighten awareness prior to conducting non-routine or hazardous operations.

Assessment drills

1.3.9 A programme of assessment drills should be specifically established to provide for periodic and systematic demonstration of individual competence in the elements of basic safety training. Other elements of emergency response as may be determined to be appropriate for the unit may also be assessed.

1.4 Evaluation and assessment

1.4.1 Assessors should be assigned for each exercise and drill. If practicable, assessors should not be active participants in the drill or exercise, so that they can dedicate their time and attention to training and assessment.

1.4.2 All assessors should:

- .1 have an appropriate level of knowledge and understanding of the competence to be assessed;
- .2 be qualified in the tasks for which the assessment is being made; and
- .3 have received appropriate guidance in assessment methods and practice and have gained practical assessment experience.

1.4.3 Arrangements should be made periodically which permit the OIM, or other supervisors, to be released from their normal emergency response role to monitor the key aspects of the unit's drills.

1.4.4 As a matter of routine, personnel with key emergency response roles should monitor the performance in their areas and ensure that appropriate action is taken to resolve any problems which are identified.

1.4.5 Drills should be structured so as to also demonstrate that associated emergency appliances and equipment are complete, in good working order and ready for immediate use.

1.4.6 A debriefing should be held after each drill exercise for training purposes and to assist in the overall assessment and evaluation.

1.5 Records and follow-up

1.5.1 Records, similar to the samples provided in attachment 1, should be maintained describing the scope of all drills which are conducted. More detailed reports may be appropriate for exercises.

1.5.2 Records should include any recommendations for improvements or modification which were identified with respect to emergency procedures, drill or exercise procedures, or equipment.

1.5.3 A record, similar to the sample provided in attachment 2, should be maintained of all assessment drills. When assessment drills are completed, suitable endorsements should also be made in individuals' training record books, training passports or other appropriate records.

1.5.4 A system should be established to ensure that all recommendations are properly considered and appropriate action taken.

1.6 Special precautions

1.6.1 For units that may be working with open wells, the status of the well and the safety of well operations should be given special consideration.

1.6.2 For units involved in combined operations, the effect of the drill or exercise on the other unit or facility should be considered. Nevertheless, the development of drill and exercise scenarios addressing combined operations is encouraged.

2 OFFSHORE EXERCISES

2.1 Exercise scenarios

Offshore exercises should be varied and challenging. Scenario details should be adequate to allow for a realistic exercise but not so prescriptive as to prevent variations and an injection of the unexpected into the exercise. An example of an exercise scenario is contained in attachment 3.

2.2 Planning of exercises

2.2.1 Exercises should be carried out at a time which minimizes disruption to operations without detriment to the exercise objectives.

2.2.2 There should be elements of surprise in the timing of the exercise. However, this needs to be balanced with safety and other operational requirements.

2.2.3 Where possible, offshore exercises should be held when there are onshore management or other suitably qualified personnel available to assist in monitoring the exercise and to input realistic variations to the scenarios at random and unexpectedly. If there are no persons with the necessary knowledge or experience of emergency exercise available then the OIM, or other supervisors, should fulfil this function.

2.2.4 Offshore exercises should be held at approximately 3 month intervals.

3 ROUTINE DRILLS

3.1 Drill scenarios

3.1.1 Routine drills are a means of practising emergency response, building teamwork, and providing training in basic safety and other elements of emergency response.

3.1.2 It is essential that routine drills do not become repetitive. Drills should be developed from a selection of the elements relevant to current or planned operations so as to provide variety and a challenge to the personnel of the unit.

3.1.3 All the required elements of basic safety training should be covered by the drill programme within any 3 month period. Additional emergency response elements may be added to address unit-specific concerns such as combined operations (assistance to others), helideck fire fighting, etc. Possible elements for developing routine drills are provided in attachment 4.

3.1.4 Unless a drill is designed to meet a specific training purpose, e.g. breathing apparatus procedures for fire team members, then each drill should include the mustering of all personnel to both their normal and alternative muster points.

3.1.5 For units operating (or scheduled to operate) in areas where hydrogen sulphide (H₂S) is a concern, the H₂S mustering procedures should be included.

3.2 Frequency

3.2.1 One abandon unit and one fire drill should be held every week. Drills should be so arranged that all regularly assigned personnel participate in one abandon unit and one fire drill at least once a month.. A drill should take place within 24 hours after a personnel change if more than 25% of the personnel have not participated in abandon unit and fire drills on board that particular unit in the previous month.

3.2.2 Other drills should be held as frequently as required to ensure that the required levels of competence in basic safety and emergency response preparedness are achieved.

4 ASSESSMENT DRILLS

4.1 Assessment drills are designed for the specific purpose of providing a means for an individual to demonstrate that he or she has achieved the required standard of competence in basic safety (i.e., personal survival, fire fighting, elementary first aid, and personal safety) and other emergency response elements determined to be appropriate for the unit.

4.2 Personnel not regularly assigned to a MOU may experience difficulty in documenting that they have achieved the required standard of competence in basic safety under realistic conditions (i.e., they may have only been assessed during shore-based training). Accordingly, installation managers should be encouraged to include such personnel in assessment drills when they are conducted.

4.3 Because of the importance attached to proficiency in basic safety, individuals failing to demonstrate the required level of proficiency should be immediately provided with remedial training.

4.4 Guidance on assessment drills is provided in attachment 5.

ATTACHMENT 1

SAMPLE DRILL / EXERCISE RECORD

Unit:

Date:

Brief description of drill / exercise scenario: (e.g. Fire in pantry, muster, etc.)

Emergency response elements exercised:

1 Emergency control centre

- Command
- Communications
- Information availability
- Establishing alternate location

2 Mustering

- Accounting for personnel
- Moving and controlling personnel
- Communications

3 Evacuation/escape

- Survival craft boarding
- Survival craft launching
- Escape systems
- Protective equipment
- Communications

4 Fire teams

- Leadership
- Communications
- Fire containment and extinction
- Dewatering

- Breathing apparatus procedures
- Search and rescue
- Casualty handling

5 First aid

- Casualty management
- Casualty handling
- Casualty evacuation

6 Well control (if applicable)

- Trip drills
- Kick drills
- Well control
- Well kill
- Shallow gas

7 Helideck (if installed)

- Leadership
- Fire monitor and rescue equipment
- Casualty handling

8 Collision/flooding

- Manual operation of valves
- Preserving watertight integrity
- Emergency dewatering

9 Man overboard

- Rescue boat launching
- Standby vessel communication

10 Severe storm

- Securing equipment on deck
- Preserving watertight integrity

11 Hydrogen sulphide

12 Diving operations (if applicable)

- On-board emergency while divers submerged
- Emergencies involving divers

13 Assistance to others

Comments on performance:

Recommendations for improvements:

Signed: _____

Position: _____

Date: _____

ATTACHMENT 2

ASSESSMENT DRILL RECORD SHEET
 (A separate record sheet should be completed for each drill)

Unit name:

Location:

Date of drill:

Drill No:

Drill title:

Candidates assessed

Name:	Employer:	Training passport or record No:	Performance:

Assessor:

Name:

Position:

I confirm that I have assessed the performance of the above candidates against the drill objectives and found it to be satisfactory. I have endorsed their individual records accordingly.

Signature:

Date:

OIM:

I confirm that the above drill and assessment was carried out.

Signature:

Date:

ATTACHMENT 3

SAMPLE OFFSHORE EMERGENCY RESPONSE EXERCISE SCENARIO

Objective:

To demonstrate the unit's ability to respond to a major incident which escalates to the point that evacuation is appropriate.

Outline scenario:

- Exercise commences with a manually initiated alarm and a report of fire, collision, loss of well control or other escalating event.
- Emergency response procedures are put into action.
- Person or persons are identified as missing.
- The event escalates until the response teams conclude containment is no longer possible.
- Abandon unit procedures are initiated.
- Personnel proceed to controlled evacuation or escape points, as directed.

Expected response:

- Personnel make job sites safe and proceed to assigned muster areas.
- On units engaged in well operations, the drill crew closes the well and makes it safe.
- The OIM proceeds to designated emergency control point and takes control.
- Standby vessel, emergency response organizations, and onshore base(s) are notified of exercise, as appropriate.
- Mustering, identify missing person or persons and where last seen.
- Fire teams, appropriately clothed, run hoses and commence search of area.
- Where safe and appropriate to do so, fixed fire-fighting systems are activated and performance verified.
- Casualties are located and are moved to a safe area by first aid responders and/or the stretcher bearers.
- Fire escalates and personnel ordered to preferred evacuation points.
- Fire teams are withdrawn and abandon unit alarm is initiated.

Possible scenario variables: (Not all will be used in a single exercise)

- Communications failure between fire team leader, muster checkers and/or OIM.
- OIM incapacitated at any stage during the exercise.
- Other key personal incapacitated.
- Routes to muster areas and/or evacuation points are blocked.
- Critical equipment fails, e.g., loss of a fire pump.
- Search teams are trapped.
- Casualties in other areas require immediate medical attention.

ATTACHMENT 4**POSSIBLE ELEMENTS OF EMERGENCY RESPONSE
FOR DEVELOPING ROUTINE DRILLS****1 Emergency control centre**

- Command
- Communications
- Information availability
- Establishing alternate location

2 Mustering

- Accounting for personnel
- Moving and controlling personnel
- Communications

3 Evacuation/Escape

- Survival craft boarding
- Survival craft launching
- Escape systems
- Protective equipment
- Communications

4 Fire teams

- Leadership
- Communications
- Fire containment and extinction
- Dewatering
- Breathing apparatus procedures
- Search and rescue
- Casualty handling

5 First aid

- Casualty management
- Casualty handling
- Casualty evacuation

6 Well control (where applicable)

- Trip drills
- Kick drills
- Well control
- Well kill
- Shallow gas

7 Helideck (if installed)

- Leadership
- Fire monitor and rescue equipment
- Casualty handling

8 Collision/Flooding

- Manual operation of valves
- Preserving watertight integrity
- Emergency dewatering

9 Man overboard

- Rescue boat launching
- Standby vessel communication

10 Severe storm

- Securing equipment on deck
- Preserving watertight integrity

11 Hydrogen sulphide**12 Diving operations (if applicable)**

- On-board emergency while divers are underwater
- Emergencies involving divers

13 Assistance to others (particularly for combined operations)

ATTACHMENT 5

STANDARD ASSESSMENT DRILLS

Mustering

Drill objectives: Candidates are to demonstrate to the satisfaction of the assessor that on hearing/observing alarms they:

- correctly identify the alarm, appropriately make safe their work area, and proceed to their assigned muster area;
- arrive at the muster area suitably clothed, with the required personal protective equipment, and with such other equipment as may be assigned on the muster list or station bill;
- follow the instructions and directions of the muster checker or other person in control; and
- can don the personal protective equipment.¹

Drill conditions: This drill can form part of the unit's routine drill programme provided that:

- the assessor is in a position to observe the candidates at their muster area;
- the drill includes transferring the group from the muster area to the point of evacuation, or escape, if different from the muster area; and
- persons being assessed demonstrate the ability to don all appropriate personal protective equipment.²

Assessment frequency: Personnel should be assessed performing this drill at 21 to 27 month (nominal 24 month) intervals.

Assessment process: Prior to the commencement of the drill the candidates for assessment should be identified so as to be recognizable by the assessor. The assessor will evaluate each candidate in achieving the drill objectives. In the event that the assessor is not satisfied with a candidate's performance, the candidate's supervisor or employer should be informed.

¹ Including both lifejackets and immersion suits if operating in an area where immersion suits are provided. If sealed immersion suits are provided, individuals may demonstrate donning procedures on suits provided for demonstration and drill purposes.

² For assessment purposes, this part of the drill may take place at the end of the routine drill when other personnel have stood down.

Survival craft boarding procedures

CAUTION - PRECAUTIONS SHOULD BE TAKEN TO PROTECT AGAINST INADVERTENT ACTIVATION OF THE SURVIVAL CRAFT'S RELEASING GEAR DURING THIS DRILL

Drill objectives: By the end of the drill candidates will demonstrate to the satisfaction of the drill assessor that they can:

- board a survival craft in accordance with appropriate procedures;
- secure themselves in the survival craft; and
- assist others in the survival craft.

Drill conditions: This drill can form part of the unit's routine drill programme provided that the assessor is in a position to observe candidates throughout the drill.

Assessment frequency: Personnel should be assessed performing this drill at 21 to 27 month (nominal 24 month) intervals for each type of survival craft installed.

Assessment process: Prior to the commencement of the drill the candidates for assessment should be identified so as to be recognizable by the assessor. The assessor will ensure that each candidate has achieved the drill objectives. In the event that the assessor is not satisfied with a candidate's performance, the candidate's supervisor or employer should be informed.

Survival craft start and launching procedures

CAUTION - PRECAUTIONS SHOULD BE TAKEN TO PROTECT AGAINST INADVERTENT ACTIVATION OF THE SURVIVAL CRAFT'S RELEASING GEAR DURING THIS DRILL

Drill objectives: By the end of the drill, candidates will demonstrate to the satisfaction of the drill assessor that they:

- can secure the survival craft for launch;
- can start the survival craft using both primary and back-up systems;
- are familiar with the procedures for launching and releasing the survival craft;
- know which way to steer the survival craft; and
- are familiar with the essential equipment within the survival craft¹.

Drill conditions: This drill will not normally form part of the unit's routine drill programme. This drill should be carried out at the end of a routine drill or as a separate event. The number of personnel involved in the drill should be restricted, nominally to a maximum of six.

Assessment frequency: Personnel should be assessed performing this drill at 21 to 27 month (nominal 24 month) intervals.

Assessment process: The assessor should ask the candidate to secure the survival craft ready for launching and then ask them to talk through the start-up launch and steering procedures to achieve the drill objectives. In the event that the assessor is not satisfied with a candidate's performance, the candidate's supervisor or employer should be informed.

¹ Care should be exercised to prevent the inadvertent broadcast of distress calls when handling radios, EPIRBs, etc.

Escape drill

Drill objectives: By the end of the drill candidates will demonstrate to the satisfaction of the drill assessor that they know:

- the locations of the unit's escape and emergency communications equipment; e.g. liferafts, knotted ropes, scramble nets, other personnel escape systems and EPIRBs;
- how to deploy the equipment;
- the techniques for using the equipment¹; and
- the precautions for jumping into the water from a height.

Drill conditions: This drill will not normally form part of the unit's routine drill programme. This drill should be carried out at the end of a routine drill or as a separate event. When used for assessment purposes the number of participants on the drill should be restricted to a maximum of six.

Assessment frequency: Personnel should be assessed performing this drill at 21 to 27 month (nominal 24 month) intervals.

Assessor: The assessment will be carried out by a supervisor who has the necessary knowledge and skills.

Assessment Process: The assessor should ask candidates to take them to where the escape systems are located. The candidate should then be asked to talk through the procedures for deploying the equipment, outline how the equipment should be used and, when appropriate, demonstrate its use. In the event that the assessor is not satisfied with a candidate's performance, the candidate's supervisor or employer should be informed.

¹ Care should be exercised to prevent inadvertent broadcast of distress calls when handling radios, EPIRBs, etc.

First aid drill

Drill objectives: By the end of the drill candidates will demonstrate to the satisfaction of the drill assessor that they:

- can take the basic precautions to maintain an airway;
- understand and can apply basic cardio-pulmonary resuscitation (CPR);
- can take necessary precautions to control bleeding; and
- know the actions to take to assist a hypothermia victim.

Drill conditions: This drill should be carried out with a maximum of six candidates in controlled conditions. If available, suitable aids should be used to assist candidates to demonstrate their skills to the satisfaction of the assessor.

Assessment frequency: Personnel should be assessed performing this drill at 21 to 27 month (nominal 24 month) intervals.

Assessment Process: The assessor should take the candidates through the basic requirements of first aid, ask questions of the group, and ask for demonstrations of the various techniques. A first aid mannequin should be available for these demonstrations. In the event that the assessor is not satisfied with a candidate's performance, the candidate's supervisor or employer should be informed.

Fire drill

Drill objectives: By the end of the drill candidates will demonstrate to the satisfaction of the drill assessor that they:

- understand the elements of fire and explosion, types and sources of ignition and classification of fire and appropriate extinguishing agents;
- know the onboard fire-fighting organization and their individual responsibilities;
- can locate fire-alarms, fire-fighting equipment and emergency escape routes;
- can take the necessary actions upon discovery of smoke or fire;
- know the appropriate actions to take to exit a smoke-filled space;
- can properly use escape breathing apparatus, if provided; and
- can properly use equipment commonly used to extinguish small fires.

Drill conditions: This drill should be carried out with a maximum of six candidates in controlled conditions. Actual use of equipment is encouraged if it can be done safely.

Assessment frequency: Personnel should be assessed performing this drill at 21 to 27 month (nominal 24 month) intervals.

Assessment process: The assessor should examine the candidates in their basic knowledge of fire theory, on-board fire-fighting organization and individual responsibilities. Candidates should be asked to individually demonstrate and walk through the actions they would take upon discovery of smoke or fire.
