SAFETY AT SEA

Basic terms

safety at sea *safety equipment *IMO *safety rules *safety certificate *surveying *convention* ***SOLAS** ***Convention *rules and regulations Load Lines Convention *MARPOL Convention *Colregs *Collision Rules *GMDSS *MERSAR *survivor *davit *slide *rescue boat *lifejacket *lifebuoys *line-throwing apparatus *EPIRB transmitter *VHF radio *hand flare *parachute/smoke signal *muster list/roll fire/boat drill *abandon ship drill *maritime safely *WHO *ILO *ITU *INMARSAT *ship safety system *fire-fighting equipment *C02 system *sprinkler system *extinguisher *drenching monitor *breathing apparatus *smoke helmet *fire suit *precautions *life-saving equipment *disaster *lifeboats *liferafts *buoyant apparatus *coastguard *shipwreck *pollution *routeing scheme *helicopter rescue *man overboard manoeuvre *VTS *busy waters

Safety at sea is a combination of a number of factors. International and national rules lay down the safety equipment that a ship must have to provide for safety at sea. The international rules have been worked out by IMO (International Maritime Organization), which is a United Nations agency. All member countries must therefore comply with the rules set forth by IMO and other organizations dealing with the safety of navigation and with the safety at work on board.

In addition to this the Master is at all times responsible for the general safety of the ship and all on board.

Strict safety rules are imposed on the construction of the ship, her equipment and radio and particular attention is paid to the issuance of the relative certificates and surveying.

On the other hand there are numerous conventions and amendments issued by IMO aimed at improving safety at sea. The International Convention for the Safety of Life at Sea (SOLAS), 1974, has been the basis for all the actual conventions, rules and regulations, such as the 1966 Load Lines Convention, the International Convention for the prevention of Pollution from Ships; 1973 , (modified as Marpol 73/78), the International Regulations for Preventing Collisions at Sea 1972 (colregs), the Global Maritime Distress Safety System (GMDSS) entered into force in 1992, MERSAR (Merchant Ship Search and Rescue), etc.

Besides IMO, numerous other international organizations also deal with maritime safety, i.e. WHO (World Health Organization), ILO (International Labour Organization), International Telecommunications Union (ITU), International Maritime Satellite Organization (INMARSAT), etc.

The Ship Safety Systems include constructional safety (stability), fire fighting and life-saving equipment. The fire-fighting systems encompass the C02 and sprinkler system, portable extinguishers (water, foam, froth, drenching monitors) and personal equipment (breathing apparatus, smoke helmets, fire suits). The engine-room with moving machinery, oil, etc., is a place where special precautions are needed, and if fire breaks out, C02 is used to smother or extinguish the fire.

Life-saving equipment is used when disasters cannot be contained. It includes lifeboats, liferafts and other buoyant apparatus which is fitted to get clear of a sinking ship or to

guard survivors against exposure to heat and cold. Recently "free fall" lifeboats launched by gravity davits and aircraft ramps or slides have been developed. Other equipment involves rescue boats, lifejackets, lifebuoys, line-throwing apparatus, VHF (portable radio) transponders, and EPIRB transmitters, parachute signals, hand flares, smoke signals, etc. Muster lists, fire drills, boat drills, abandon ship, helicopter rescue drills, and man overboard drills are essential for efficient safety at sea.
The sea is a hostile environment, accidents do happen even on the best run ships. This requires great skill and courage on the part of the crew. Shore based safety systems (coastguards etc.) are called upon to intervene in case of a disaster. A shipwreek these days (tankers, LPG's, LNG's, product tankers, etc.) is likely to involve severe pollution. Therefore, routeing schemes, vessel traffic services (VTS) operated by port or canal authorities are aimed at avoiding a possible disaster which may occur in busy waters.

IMO STANDARD MARINE COMMUNICATION PHRASES

IV-B - *SAFETY ON BOARD*

1.1 - *Raising alarm*

Operate general emergency alarm.
Inform ... coast radio station / vessels in vicinity (on radio) and report.
Request assistance (on radio) from ... and report.
Transmit SECURITE/PAN-PAN/distress alert/ MAYDAY and report.

Was distress alert/MAYDAY acknowledged?
- Yes, distress alert /MAYDAY acknowledged by ... coast radio station/ RCC/vessel(s) in vicinity.
- No, distress alert not acknowledged (yet).

Repeat distress alert.

1.2 - *Briefing crew and passengers*

This is your Captain speaking.
We have grounded / a minor flooding / a minor fire in ... .
There is no immediate danger to crew, passengers or vessel - and there is no reason to be alarmed.
For safety reasons I request all crew members to go to their assembly stations.
All officers to report to the bridge.
Watchkeepers remain at stations until further order.
As soon as I have further information I will make another announcement - there is no danger at this time.
We also have radio contact with other vessels / coast radio stations.
The fire / flooding is under control.
This is your Captain speaking. I have another announcement:

The fire/flooding is not under control yet.
Leave the engine room / superstructure / your stations / your cabins / ... immediately close all openings.
Take lifejackets with you.
Take your emergency equipment with you according to muster list.
Stand by fire fighting stations / damage control stations.
All crew members to assembly stations.

1.6 - *Roll call*

Report number of all persons / passengers / crew members at assembly stations.
Number of all persons / passengers / crew members at assembly station ... : ... …passenger(s) / crew member(s) missing.
Search for missing passenger(s) / crew member(s) and report.
Missing passenger(s) / crew member(s) recovered.
Missing passenger(s) / crew member(s) not recovered (yet) - (search continued).
Watchkeepers ta assembly stations.
Lifeboatmen! Check equipment of crew at assembly stations and report.
Complete equipment and report.
Go for blanket / stretcher / ... attd report.
Lifeboatmen! Check outfit of passengers at assembly stations and report.
Outfit of passengers at assembly station ... correct.
Outfit of passengers at assembly station ... not correct (yet).
Passengers and crew! Follow lifeboatmen to lifeboat stations / liferaft stations on embarkation deck.

1.7 - Ordering abandon vessel
Swing out no. ... lifeboat(s) and report.
No. ... lifeboat(s) swung out.
Lower no. ... lifeboat(s) alongside embarkation deck and report.
No. ... lifeboat(s) alongside embarkation deck.
Enter lifeboat(s) (no. ...) and report.
Enter lifeboat(s) / liferaft(s) over... deck.
Enter lifeboat(s) / liferaft(s) aver ladders / nets / manropes.
Jump into water and enter lifeboat(s) / liferaft(s).
Jump onto liferaft(s) alongside vessel.
Hold on to ropes or to your seat when launching.
Let go no. ... lifeboat(s) / liferaft(s) and report.
No. ... lifeboat(s) / liferaft(s) is let go.
Throw over board no. ... liferaft and report.
Inform coast radio stations / vessels in vicinity about number of lifeboats / liferafts launched and report.
Inform coast radio stations / vessels in vicinity about number of persons in each lifeboat/ liferaft and report.

A. Comprehension & vocabulary

A.1 *Complete the following sentences:*

1. Safety rules and shipboard safety equipment are provided in _____
2. The IMO member countries must comply with _____
3. The master is responsible for _____
4. Safety rules on board involve _____
5. The best known international conventions or regulations dealing with safety at sea are - _____
6. In addition to IMO safety at sea is also dealt with in _____
7. The ship safety systems include _____
8. Shipboard and personal safety equipment encompasses _____
9. The ship's life-saving equipment involves the use of _____
10. Routeing and VTS aim at _____

A.2 *Match the abbreviations* (MERSAR) *on the left with their full form on the right:*

a	CRS	**1**	Search and Rescue
b	CSS	**2**	Merchant Ship Search and Rescue Manual
c	CS	**3**	International Code of Signals
d	D/F	**4**	Estimated Time of Arrival
e	EPIRB	**5**	On-Scene Commander
f	ETA	**6**	Rescue Co-ordination Centre
g	INTERCO	**7**	Co-ordinator Surface Search
h	MERSAR	**8**	Emergency Position-indicating Radio Beacon
i	OSC	**9**	Coast Radio Station
j	RCC	**10**	Direction-Finding
k	SAR	**11**	Controlling Station

a	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
		11								

A.3 *Referring to the words associated with* ***fire*** *complete the text below with the appropriate word:*

****alarm *equipment *fire *means *signal *position *fighting *roll *posts *fire***

Fire-fighting

When 1._____ is discovered on board, it must be tackled immediately with all the 2._____ available, and the fire 3._____ must be sounded. As soon as the fire alarm 4._____ sounds, each man must immediately report to his 5._____ , in accordance with the ship's fire roll, bringing with him the prescribed fire-fighting 6.-_____ . Fire- 7._____ is organized according to the fire 8._____ .The duty officers and the crew on deck and in the engine-room, including the helmsman and

the lookout, must however remain at their 9._____ until they are relieved or driven away by the 10._____.

A.4 *Give the full form for the following abbreviations/acronyms:*

IMO _____
SOLAS _____
MARPOL _____
COLREGS _____
GMDSS _____
MERSAR _____
SAR _____
WHO _____
ILO _____
ITU _____
INMARSAT _____
VTS _____
EPIRB _____
ITF _____

A.5 *Complete the text below with the appropriate words:*
****tackled *enforced *carry *sprayed *extinguished *confined *smothered *breaks out *equipped***

Types of fire

The regulations of the SOLAS Convention are 1._____ by means of surveys and certificates. Before leaving the port the ship must be fully 2._____ for fire-fighting, communication with shore or other ships and must 3._____ enough life-boats to accommodate all persons aboard. Various types of fire are 4._____ with different types of fire extinguishers or fixed fire systems. Oil fires must be 5._____ with froth or foam. Engine fires are 6. ._____ with foam, too. If the fire 7._____ it must be 8._____ first and then 9._____.

B. Grammar

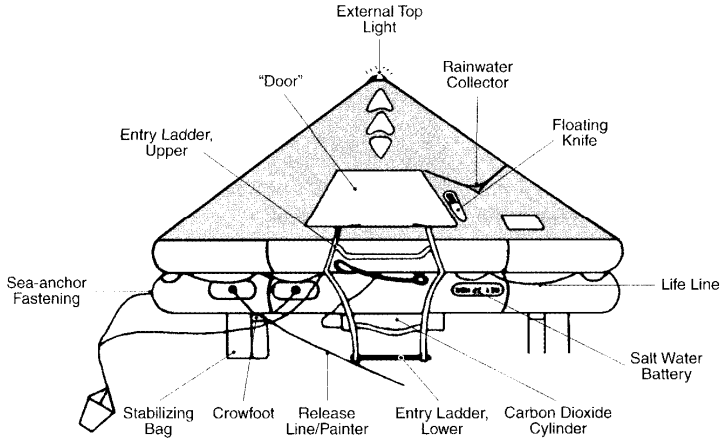
B.1 *Supply the suitables adjectives:*
****climbing *double *floating *closable *oceangoing *rubber *identical *inflatable *suitable***

Liferafts

The most 1._____ rescue device known today is the 2._____ liferaft. The 3._____ raft is lashed on board by means of a slip hook. A release line extends from the casing (valise). It must always be fastened on board the ship and it also acts as a painter.

The equipment is not 4._____ in all types of liferafts, but for 5._____ ships

the requirements are: inflatable 6._____ floor, quoit with line, lighting with salt-water activated battery, bag with repair kit, bellows with bag, special 7._____ knife, instructions, sea anchor, paddles, carbon dioxide cylinder, rainwater collector with water tap, 8._____ entrance, 9._____ ladders at entrances, emergency kit, etc.



B.2 *Supply the correct form of the verbs in brackets:*

Fire-fighting procedure

There are three basic steps in *(fight)* 1._____ fires on board or any fire: Locate! Confine! Extinguish! In case of a fire on board you *(determine)* 2._____ the following points:

l. Where the fire *(be)* 3._____? Not necessarily where the smoke *(come from)* 4._____.

2. What *(burn)* 5._____?

3. What *(be)* 6._____ the extent of the fire?

4. What other combustibles *(be)* 7._____ in the vicinity?

5. What vents and other channels there *(be)* 8._____ that *(facilitate)* 9._____ the spreading of the fire?

6. What is the best means to:

a. *(prevent)* 10._____ the spread of the fire,

b. *(put out)* 11._____ the fire,

c. *(avoid)* 12._____ affecting the stability and buoyancy of the ship.

B.3 *Supply the right form of the verb in the brackets, place it into the sentence and then translate the sentence into Italian:*

l. The ship on fire deliberately *(set).*

2. The C02 room fire suddenly *(catch).*

3. The crew accommodation on fire for six hours *(be).*

4. Fire first in the engine-room and then spread to the accommodation and fuel tanks

(break out).

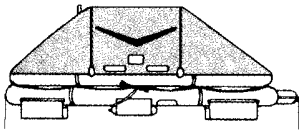
5. It was not easy to the true source of fire *(detect).*
6. The deckhands the fire by using foam *(extinguish).*
7. The crew managed first to confine the fire in the hold by it *(smother).*
8. The fire immediately by the portable fire- extinguishers *(put out).*
9. In fire we used water and the sprinkler system in the hold *(extinguish).*
10. Look, the fire quickly *(spread).*
11. The missile to the tanker *(set fire).*
12. The fire by itself *(go out)*

B.4 *Supply the right preposition:*

Solas convention - regulation 10 (Distress Messages)

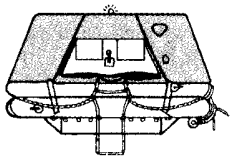
a.) The master 1._____ a ship 2._____ sea, 3._____ receiving a signal 4._____ any source that a ship or aircraft or survival craft thereof is 5._____ distress, is bound to proceed with all speed 6._____ the assistance of the persons 7._____ distress informing them if possible that he is doing so Mayday received. I am coming 8._____ your assistance). If he is unable or 9._____ the special circumstances 10._____ the case, considers it unreasonable or unnecessary proceed 11._____ their assistance, he must enter 12._____ the logbook the reason 13._____ failing to proceed 14._____ the assistance 15._____ the persons 16._____ distress.

b.) The master 1._____ a ship 2._____ distress, after consultation, so far as may be possible, 3._____ the masters of the ships which answer his call 4._____ assistance has the right to requisition such one or more 5._____ those ships as he considers best able to render assistance, and it shall be the duty of the master or masters 6._____ the ship or ships requisitioned to comply 7._____ the requisition, therefore continuing to proceed 8._____ all speed 9._____ the assistance 10._____ persons 11._____ distress.



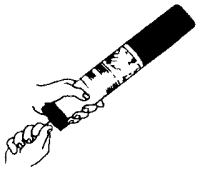
Self-rightening Liferafts

10 and 20 person capacity; specially designed for extremely cold waters



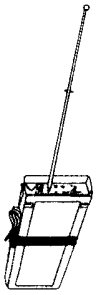
Yachting Liferafts

4,6,8 person capacity, available in various container designs. According to requirements from yachting societies



SOLAS Pyro

parachute signal, hand flares, smoke signals and line throwing devices.
Meeting requirements of all relevent authorities

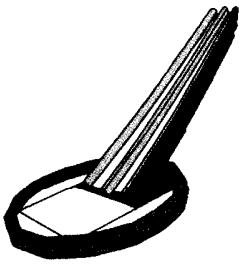


EPIRB RS 3000

for use on board ships and liferafts.
Transmits on the frequencies 12,5 MHz, 243,0 MHz and 2182 KHz.
EPIRBs with other specifications are available

Fire Suit, Design 3898

recommended by the Danish Fire Inspectorate.
2 piece suit jacket of 3 layer Nomex, trousers of 1 layer with wather-proof insertion

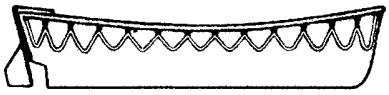


Marine Escape Slide Dual Track

for stowing heights up to 15 m above waterline

Portable Radio

VHF and E.P.I.R.B. transmitters.
Meeting requirements of all relevant authorities



Open G.R.P. Lifeboats

Capacities: from 10 to 61 persons. Rowing or motor lifeboat. Speed for motor lifeboat 4 to 6 knots (davits also available from VIKING)

C. Translation

C.1 *Translate the following sentences into English:*

Codice Internazionale dei Segnali

1. Ho un incendio a bordo.

2. Ho un incendio a bordo e trasporto merci pericolose.
3. La nave «Mistral» ha un incendio a bordo.
4. La nave «Ignition» con un incendio a bordo e stata localizzata in latitudine 14°37' N, longitudine 47°22' W.
5. Ho un incendio nel locale macchine. Richiedo assistenza immediata.
6. Ho un incendio nella stiva.
7. Ho un incendio negli alloggi passeggeri.
8. Il fuoco e sotto controllo.
9. Il fuoco si sta espandendo.
Richiedo mezzi antincendio.

D. Writing skills

D.1 *Use the questions below as guidelines for summarizing the reading text:*

1. Where are safety rules and equipment agreed?
2. What must the IMO member governments comply with?
3. Who is responsible for the overall safety of the ship and all persons on board?
4. What are safety rules imposed on?
5. What are some of the most important international conventions, regulations and safety systems?
6. Which international associations, beside IMO, deal with the safety at sea and on board?
7. What do the ship's safety systems include?
8. Give a short account of the shipboard fire-fighting equipment.
9. What is included in the ship's life-saving, equipment?
10. Which equipment is used to get clear and abandon a distressed ship?
11. What are some of the world's most renowned shore-based safety systems?
12. What is the purpose of routeing and VTS, in particular for a ship carrying flammable or dangerous cargo?

Further reading

PORT OF GENOA

Safety Rules to be Complied with During Stay of Tankers at Sea Terminal of Genoa-Multedo.

The, following are the principal, safety rules that the Master is bound to strictly comply with and enforce during the stay of the ship under his command of Genoa-Multedo.

l. The main propelling machinery must be kept ready to move (standby) and there must always be available on board a sufficient number of crewmen to enable the ship to leave the berth immediately whenever ordered to by the Port of Genoa Authority (Consorzio Autonomo del Porto).

2. Vessel must have ready the accommodation ladder on starboard side and on port side - the pilot ladder rigged forward of the poophouse.

3. Decks and surrounding waters must be property lighted.

4. When mooring to platform anchors must never be dropped.

5. Vessel's firefighting equipment and the men in charge of its operation must always be ready for immediate action (in case of emergency). Men in drunken state must be watched and kept under supervision.

6. The ends provided with eyes of 2 strong 3.5 in./4 in. wire: cables. length of which must be of 80 m./1 00 m. (260 ft./330 ft.) at least, must be placed hanging one fore and one aft to enable the ship to be towed out (to sen) in case of fire.

7. Unless authorised to the contrary and which will only be allowed in exceptional cases by the Oil Harbour Master, it is forbidden:

a. to carry out repair works, cleaning or gasfreeing of tanks or bunkers, etc.;

b. to carry out loading of cargo, water or other liquid products using hoses introduced through the cargo tanks lids.

8. It is strictly prohibited:

a. to keep fires of any kind on board, with the only exception of those,for the service of ship's boilers and galleys if located in special rooms thoroughly protected against gas exhalations and far from the cargo lines;

b. to throw or pump overboard water ballast, bilge-water or water from any other source, that might pollute the port waters;

c. to cause escape of oil from the sea valves due to delay in starting the ballast pumps or any other reasons; to cause escape of oil due to leakage of pipes or valves on board; to provoke overflow of oil from cargo tanks. Accidental leakages on deck must be collected into suitable receptacles and - with all precautions - poured again into the cargo tanks or carried ashore; all scuppers on the main deck and particularly those near the cargo manifolds must be plugged during the loading/unloading and ballasting operations;

d. the use of devices, tools and wrenches not made of nonsparking material, to connect or disconnect hoses, pipes or pipe fittings and to carry out work to any ship's equipment placed on deck or inside those spaces where the generation and/or presence of gas is possible;

e. to smoke on board except in those rooms approved by the Master and to throw overboard lighted matches or cigarettes;

f. the use of rocket signals, flares, etc.;

g. the use of electric hot plates, fans and other equipment which might produce sparks on deck or into those rooms having openings towards the cargo tanks;

h. the use of electric portable lamps and cables and of telephones not being explosion proof;

i. to keep open skylights, doors and hatches of spaces located in way of or near the cargo tanks;

l. to keep open the cargo tanks lids; to keep open Butterworth openings. The ship's personnel should take care that all ullage openings and gas vents are provided with spark arresters and that the latter are sound. They also should take care that the spark arresters placed on the funnels and combustion gases exhausts are sound;

m. shifting of steel tools, winch manoeuvring, loading and unloading of materials, connecting and disconnecting of cargo hoses during the whole period in which sampling and gauging of cargo tanks is carried out;

n. to carry out loading and unloading operations during storms with lightning;

o. the idling of pumps. Ship's personnel should immediately stop pumps that - for any reason - should idle;

p. the blowing of boiler's tubes;

q. the coming onboard of unauthorised people.

9. All engine propelled boats approaching the vessel must be provided with spark arresters on the combustion gas exhausts.

10. During: shifting operations into tanks.

radio apparatus must be switched off and all aerials set to ground;

cargo lines not in use must have all valves closed and manifolds are to be blank flanged.

11. Loading of ship's stores and equipment should be carried out from the extreme poop. In case the aforesaid operations have to be carried out on deck, near the cargo tanks and should it involve the handling of heavy or metallic materials anyway, all precautions relating to the case or those each time specified by the Oil Harbour Master should be taken.

As a general rule the above mentioned operations are not allowed during the loading or ballasting of the ship. The crafts used for the transportation of the materials must approach the ship, stay alongside and move out without making use of the engine.

12. Tankers having on board inflammable or dangerous products, or - being empty or in ballast- having their tanks not certified gasfree, must hoist steadily and well in view, a red flag (letter "B" of the international code of signals) and by night a red light, which can be sighted from round the horizon.