



**Transport
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TP 4957 E

**MARINE EMERGENCY DUTIES
TRAINING PROGRAMME**

**MARINE SAFETY DIRECTORATE
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REVISIONS

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OBJECTIVES

1. The International Convention on Standards of Training, Certification and Watchkeeping for seafarers (STCW), 1978 as amended in 1995 provides standards regarding emergency, occupational safety and survival functions in Chapter VI of the mandatory Code "A".
2. Compliance with requirements of the above standards to meet mandatory minimum requirements for familiarization, basic safety training and instructions for all seafarers; and training in advanced fire fighting for seafarers designated to control fire fighting operations and sufficient knowledge to launch and take charge of a survival craft in emergency situations.


GOALS

1. To provide seafarers with an understanding of the hazards associated with the marine environment and their vessel.
2. To provide training in the skills required to cope with such hazards to an extent appropriate to their functions on board in shore based approved training courses.

IMPLEMENTATION

Training for the following courses will be conducted by schools, shore establishments and employers offering Transport Canada approved courses effective 1 January, 1999.

- | | |
|---------------------------------|------|
| 1. Basic Safety Course | (A1) |
| 2. Small Vessel Safety Course | (A2) |
| 3. Survival Craft Course | (B1) |
| 4. Marine Fire Fighting Course | (B2) |
| 5. Officer Certification Course | (C) |
| 6. Senior Officer Course | (D) |

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1. ON BOARD FAMILIARIZATION AND SAFETY TRAINING

1.1 EXTENT OF FAMILIARIZATION

RECOMMENDATION

The extent of familiarization and basic safety training needed for persons joining a ship will vary according to circumstances and is indicated in the table under section 1.3.

The master is responsible for ensuring that the training is given and for amplifying the general topics shown in the particular circumstances of his ship.

1.2 GROUP DEFINITION

RECOMMENDATION

The assignment of topics is given by groups which have the following meaning:

Group 1

- All persons on board who have not completed MED A1, or A2 training.
 - untrained new entrants to industry who have not completed that training
 - those aboard for repairs, maintenance or similar purposes
 - those aboard whose tasks are confined to a special industrial scientific or similar purposes

Group 2


- Persons who have completed MED A1, or A2 training.
 - masters of small vessels and restricted engineers
 - uncertificated ratings with more than 6 months industry service

Group 3

- Holders of junior certificates of competency and certificates of qualifications, those who have completed MED B or C training.
 - Master minor waters
 - Limited Masters
 - Junior deck and engineer officers
 - Certificated ratings

Group 4


- Holders of senior certificate of competency, those who have completed MED D training
 - Masters
 - Chief Officers
 - Chief engineers
 - Second engineers

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1.3 ASSIGNMENT OF TOPICS TO GROUPS

RECOMMENDATIONS

TOPICS	GROUP			
	1	2	3	4
TYPES OF EMERGENCIES AND PERSONAL RESPONSE	X			
THE SHIP'S MUSTER LIST, PERSONAL RESPONSIBILITIES AND FUNCTIONS IN THE SHIP'S ORGANIZATION		X		
SHIP'S EMERGENCY RESPONSE ORGANIZATION, PLANS AND INDIVIDUAL RESPONSIBILITIES AND FUNCTIONS				X
CHAIN OF COMMAND AND MUSTER LIST	X			
SHIP'S ALARM SYSTEM, MEANINGS AND RESPONSE	X			
SHIP'S ALARM SYSTEM, INTERNAL COMMUN'S		X	X	X
USE AND LIMITATIONS OF PERSONAL SURVIVAL EQUIPMENT PROVIDED	X			
LOCATION AND TYPES OF SURVIVAL EQUIPMENT AND FIRE FIGHTING EQUIPMENT ON BOARD		X	X	X
LOCATION, FUNCTION OF FIXED FIRE FIGHTING SYSTEMS			X	X
TYPES, USE AND LIMITATIONS OF PORTABLE FIRE EXTINGUISHERS	X			
GENERAL ONBOARD SAFETY PRACTICES ON APPLICABLE VESSELS (i.e. TANKER, MODU, ETC.)	X			
LOCATION AND NATURE OF SPECIAL HAZARDS			X	X

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2. EQUIVALENCY OF OLD/NEW COURSES

OLD COURSES	NEW COURSES
Marine Emergency Duties I	Basic Safety Course A1 or Small Vessel Safety Course A2
Marine Emergency Duties 2, Part A or Marine Emergency Duties 2, Parts A and C	Survival Craft Course B1
Marine Emergency Duties 2, Part B	Marine Fire Fighting Course B2
Marine Emergency Duties 3	Officer Certification Course C Senior Officer Course D

3. COURSE APPROVAL CONDITIONS

General

- Access to course location
- Compliance with course equipment
- Provision of Transport Canada approved instructors
- Suitable teaching environment and facilities
- Compliance with the detailed course content as presented in this document
- The main instructor must have successfully completed MED 3 or Senior Officer Course D
- All instructors must have teaching certificates acceptable to Transport Canada


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4. BASIC SAFETY COURSE - A1

4.1 COURSE APPROVAL CONDITIONS

Equipment

- ⇒ A rescue craft (portable or a lifeboat)
- ⇒ An inflatable liferaft with equipment including E.P.I.R.B. (Minimum 4 persons)
- ⇒ Approved life jackets for each trainee
- ⇒ A complete fireman's suit for each trainee
- ⇒ A variety of Immersion suits for at least 50% of the trainees in a course
- ⇒ One approved lifebuoy with line
- ⇒ One approved lifebuoy with approved light
- ⇒ A rescue sling
- ⇒ A rescue blanket
- ⇒ Portable extinguishers
 - 6 dry chemical
 - 4 CO₂
 - 6 water pressure
- ⇒ Steel trays for containing fires
- ⇒ Training models of Luffing, Gravity, Single arm davits and marine evacuation systems (may be substituted by Audio-visual presentation)
- ⇒ Variety of hand flares
- ⇒ Visual or Audio-visual presentation of the following:
 - T.E.M.P.S.C. (Totally enclosed motor propelled survival craft
 - Partially enclosed lifeboat
 - open lifeboat
 - F.R.C. (Fast rescue craft)
 - EMPRA basket
 - Hypothermia, its effects and means to overcome it
- ⇒ Access to suitable pool facilities or open water

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4.2 NUMBER OF TRAINEES IN COURSES

- ⇒ The number of trainees in a class should not exceed 12 for practical demonstrations and open water or pool exercises under the supervision of an approved instructor.
- ⇒ The number of trainees must not exceed 24 for lectures and audio visual instruction under the supervision of an approved instructor.

4.3 COURSE DURATION

- ⇒ nineteen and one-half hours

4.4 INSTRUCTOR QUALIFICATIONS

- ⇒ The main course instructor must hold a certificate of competency not lower than Master Local Voyage 350 tons certificate, Fishing Master Class II or Chief Engineer of a motor driven fishing vessel. If the course is under the supervision of more than one instructor, the assistant instructor shall hold qualifications related to the marine industry or shall have related skills and shall be approved by Transport Canada.

5. COURSE GOALS, OUTLINE AND LEARNING OBJECTIVES


5.1 COURSE GOALS

- ⇒ To provide all seafarers with basic understanding of the hazards associated with the marine environment and their own vessel; the prevention of shipboard incidents including fire.
- ⇒ To provide seafarers with the knowledge necessary to raise and to react to alarms and to deal with emergencies.
- ⇒ To ensure that all seafarers are able to provide assistance in fire and abandonment emergency situations.
- ⇒ To provide seafarers with the knowledge and skills which will enable them to assist in their own survival and rescue.



5.2 COURSE OUTLINE

Subject Area	Hours	
	Lecture	Practical
1. Introduction and Safety	.5 hour	
1.1 Introduction		
1.2 Principles of Safety		
2. Hazards and Emergencies	1.0 hour	
2.1 Types of emergencies		
2.2 Problems and affects		
3. Firefighting	3.0 hours	3.0 hours
3.1 Nature of Fire		
3.2 Fire Tetrahedron		
3.3 Principals of extinguishment		
3.4 Classes of fire and their symbols		
3.5 Extinguishing agents		
3.6 Safety rules		
3.7 Practical exercises		
4. Emergency response	2 hours	
4.1 Signals and Alarms		
4.2 Muster Lists		
4.3 Drills and Training		
4.4 Action upon discovering emergency		
4.5 Action when called to an emergency		
5. Lifesaving appliances and Abandonment	2.5 hours	2.5 hours
5.1 Life jackets		
5.2 Immersion suits		
5.3 Life buoy		
5.4 Life raft and equipment		
5.5 Survival craft and launching devices		
6. Survival	2.0 hours	1.0 hour
6.1 Factors relating to survival		
6.2 Actions to increase chances of survival and rescue		
6.3 Actions taken after abandoning in a survival craft		
7. Rescue	1.5 hours	.5 hour
7.1 Rescue by civilian or military personnel		
7.2 Rescue Equipment		
7.3 Recognition and operation of signaling devices		
7.4 E.P.I.R.B.s		
7.5 Pyrotechnics		
7.6 Helicopter rescue		
TOTAL	12.5 hours	7 hours
	19.5 hours	

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5.3 TOPICS AND LEARNING OBJECTIVES

TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<p>1. Introduction and Safety (.5 hours)</p> <p>1.1 Introduction</p> <p>1.2 Principals of Safety</p> <p>.1 stresses that the safety rules laid down by the instructor which must be followed at all times</p> <p>.2 states that as we are handling actual equipment, such as pyrotechnics, all safety precautions must be adhered to.</p> <p>.3 states that whereas we are simulating incidents in the actual environment, particular care must be exercised at all times</p>	X		
<p>2. Hazards and Emergencies (1 hour)</p> <p>2.1 Types of Emergencies</p> <p>.1 lists emergencies associated with the marine environment</p> <ul style="list-style-type: none"> - fire - collision - stranding - explosion - icing - equipment failure - capsize - weather conditions - flooding - man overboard <p>2.2 Describes the particular problems associated with various emergencies</p>	X		
<p>3. Firefighting (6.00 hours)</p> <p>3.1 Nature of fire</p> <p>.1 states the conditions required for fire to occur</p> <ul style="list-style-type: none"> - fuel, such as wood, clothes, furniture, gas, oil, etc. - source of ignition - oxygen; fire requires about 16% oxygen in order to burn <p>.2 explains flash point</p>	X		


TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
.3 ignition temperature			
.4 three ways fire is spread			
– conduction			
– convection			
– radiation			
3.2 Fire Tetrahedron		X	
.1 states the three sides of the fire triangle			
– fuel			
– heat			
– oxygen			
.2 adds the fourth side of the tetrahedron - the chemical chain reaction			
3.3 Principles of extinguishment		X	
.1 cooling - water as the easiest method			
.2 smothering - removing the oxygen			
.3 starving - removing the fuel, shut off valves, etc.			
.4 breaking the chain reaction			
3.4 Classes of Fire and their symbols			
.1 Class A - wood, clothing, paper, etc.			
.2 Class B - flammable liquids	X		
.3 Class C - Class A and B with added electricity, e.g. electronics			
.4 Class D - flammable metals; magnesium, lithium, zirconium, sodium, potassium, e.g. flares			
3.5 Extinguishing agents			
.1 water - best for Class A fires, wood, paper, etc.			
.2 foam - Class A, wood paper, etc. and Class B, flammable liquids		X	
.3 Carbon Dioxide - Class B, flammable liquids, flammable gases, and Class C, electrical equipment			
.4 Dry Chemicals- Class B, flammable liquids, flammable gases, and Class C, electrical equipment			



TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
.5 Dry Powder - Class D, flammable metals			
3.6 Safety Rules			
.1 after discovering fire, raise alarm before attacking fire			
.2 never pass the fire to obtain an extinguisher		X	X
.3 test the fire extinguisher first			
.4 keep low to the ground			
.5 aim at the base of the fire and use a sweeping motion			
.6 never turn your back on a fire even after it is out			
.7 never use water or foam on an electrical fire; water is a conductor of electrical currents and may result in electrocution			
.8 water is usually ineffective for flammable liquids, may even make it worse, spread it around or the oxygen in the water may feed the fire			
.9 beware of flashbacks			
.10 as soon as possible, always back up an attack with a portable fire extinguisher with a hose			
.11 report the use of a portable extinguisher to your supervisor and do not return it to its station			
3.7 Practical fire fighting exercises			
.1 demonstrate the correct use of portable fire extinguishers to extinguish Class A, B and C fires, basic work with fire hoses and nozzles			X
4. Emergency Response (2 hours)		X	
4.1 Signals and Alarms			
.1 describes the emergency alarm signal			
.2 discusses other alarm signals			
.3 states who is responsible for the call to abandon ship			

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
4.2 Muster Lists		X	
.1 when is a muster list required			
.2 where is the list placed on the vessel			
.3 what information is to be found on a muster list		X	
4.3 Drills and Training			
.1 the purpose and importance of regular drills and training			
.2 need to be ready for an emergency			
.3 frequency of drills		X	
4.4 Action upon Discovering Emergency situation			
.1 fire			
.2 man overboard			
.3 unconscious casualty			
.4 injured person			
.5 flooding			
4.5 Action When Called to an Emergency		X	
.1 suitable clothing			
.2 donning of lifejacket/immersion suit			
5. Lifesaving Appliances and Abandonment (5 hours)			X
5.1 Life Jackets			
.1 what is a standard approved life jacket			
.2 number of life jackets required on a vessel			
.3 demonstrate proper method of donning a life jacket and use of attachments			
.4 demonstrate entering water from a height and swimming while wearing a lifejacket			
.5 care and stowage			
5.2 Immersion Suits			X
.1 qualities of an immersion suit			
.2 demonstrate proper donning procedure, in darkness, and with necessary speed and use of attachments			
.3 demonstrate entering of water from a height and swimming while wearing an immersion suit			
.4 care and stowage			X

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
5.3 Life Buoy <ul style="list-style-type: none"> .1 to state the number required on a vessel .2 markings, colour, vessel name, retro-reflective tape .3 lights and smoke signals .4 demonstrate how to correctly use them by throwing, entering and securing in it while in the water and waiting for rescue .5 care and stowage 			X
5.4 Life Raft and Equipment <ul style="list-style-type: none"> .1 recognizes the basic types and qualities of a liferaft .2 discuss stowage and releasing mechanism .3 ability to correctly launch the inflatable liferaft .4 demonstrate boarding the liferaft from the water .5 the survival pack and how to use it .6 demonstrates the proper righting procedure .7 care and stowage .8 manoeuvring of a liferaft and demonstrate the setting of anchor to reduce drift 		X	
5.5 Survival Craft and Launching Devices <ul style="list-style-type: none"> .1 discuss characteristics and operation of luffing, gravity and single arm davits .2 discuss marine evacuation systems .3 discuss the characteristics and operations of T.E.M.P.S.C., enclosed lifeboat, open lifeboat and inflatable liferaft 			
6. Survival (3 hours) <ul style="list-style-type: none"> 6.1 Factors relating to Survival <ul style="list-style-type: none"> .1 discuss how each factor affects human response and performance in a survival situation .2 discuss medical aspects of survival including thermal balance, water balance and energy balance 6.2 Actions to Increase Chances of Survival and Rescue <ul style="list-style-type: none"> .1 need to stay together in the water .2 demonstrate the Heat Escape Lessening 		X	X



TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<p>Posture (HELP) position</p> <p>.3 demonstrate how to swim as a group in a chain</p> <p>.4 demonstrate how to form a huddle in the water</p> <p>.5 hypothermia, prevention, recognition and treatment</p> <p>.6 stay near to the spot where vessel went down, stream the sea anchor</p> <p>6.3 Actions Taken After Abandoning a Vessel in a Survival Craft</p> <p>.1 discuss the action taken after leaving the vessel in an enclosed lifeboat</p> <p>.2 discuss the action taken after leaving the vessel in an open lifeboat</p> <p>.3 discuss the action taken after leaving the vessel in an inflatable liferaft</p> <p>7. Rescue (2 hours)</p> <p>7.1 Rescue by Civilian or Military Personnel</p> <p>.1 discuss description and use of rescue :</p> <ul style="list-style-type: none"> - sling - basket - net - litter <p>7.2 Rescue Equipment</p> <p>.1 demonstrate the use of rescue sling</p> <p>.2 demonstrate the use of rescue basket</p> <p>7.3 Recognition and Operation of Signaling Devices</p> <p>.1 identify and demonstrate hand flares and their use</p> <p>.2 demonstrate day light signaling mirror (heliograph)</p> <p>.3 demonstrates signaling flash light</p> <p>.4 identify and demonstrate parachute rockets and their use</p> <p>7.4 E.P.I.R.B.</p> <p>.1 classes of EPIRBs</p> <p>.2 states the frequency specific to the EPIRBs</p> <p>.3 mounting on the vessel - float free, hydrostatic release, etc.</p> <p>.4 registration of the 406 and identification of the signal</p>	<p>X</p> <p>X</p>	<p>X</p>	<p>X</p> <p>X</p>

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<p>7.5 Pyrotechnics</p> <p>.1 states the classes of flares and characteristics</p> <p>.2 in what circumstances should each be used</p> <p>.3 markings on flares</p> <p>.4 expiry dates</p> <p>.5 care and stowage</p> <p>7.6 Helicopter Rescue</p> <p>.1 action to be taken aboard a vessel</p> <p>.2 action to be taken aboard a raft</p> <p>.3 lifting appliances</p> <p>.4 safety procedures aboard the helicopter</p>		X	X
		X	


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6. SMALL VESSEL SAFETY COURSE - A2

6.1 COURSE APPROVAL CONDITIONS

Equipment

- ⇒ A rescue craft (portable or a lifeboat)
- ⇒ An inflatable liferaft with equipment including E.P.I.R.B. (Minimum 4 persons)
- ⇒ Approved life jackets for each trainee
- ⇒ A complete fireman's suit for each trainee
- ⇒ A variety of Immersion suits for at least 50% of the trainees in a course
- ⇒ One approved lifebuoy with line
- ⇒ One approved lifebuoy with approved light
- ⇒ A rescue sling
- ⇒ A rescue blanket
- ⇒ Portable extinguishers
 - 6 dry chemical
 - 4 CO₂
 - 6 water pressure
- ⇒ Steel trays for containing fires
- ⇒ Training models of Luffing, Gravity, Single arm davits and marine evacuation systems (may be substituted by Audio-visual presentation)
- ⇒ Variety of hand flares
- ⇒ Visual or Audio-visual presentation of the following:
 - T.E.M.P.S.C. (Totally enclosed motor propelled survival craft
 - Partially enclosed lifeboat
 - open lifeboat
 - F.R.C. (Fast rescue craft)
 - EMPRA basket
 - Hypothermia, its effects and means to overcome it
- ⇒ Access to suitable pool facilities or open water

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6.2 NUMBER OF TRAINEES IN COURSE

- ⇒ The number of trainees in a class should not exceed 12 for practical demonstrations and open water or pool exercises under the supervision of an approved instructor
- ⇒ The number of trainees must not exceed 24 for lectures and audio visual instruction under the supervision of an approved instructor

6.3 COURSE DURATION

- ⇒ Twenty-six (26) hours


6.4 INSTRUCTOR QUALIFICATIONS

- ⇒ The main course instructor must hold a certificate of competency not lower than Master Local Voyage 350 tons certificate, Fishing Master Class II or Chief Engineer of a motor driven fishing vessel. If the course is under the supervision of more than one instructor, the assistant instructor shall hold qualifications related to the marine industry or shall have related skills and shall be approved by Transport Canada.

7. COURSE GOALS, OUTLINE AND LEARNING OBJECTIVES


7.1 COURSE GOALS

- ⇒ To provide all seafarers with basic understanding of the hazards associated with the marine environment and their own vessel ; the prevention of shipboard incidents including fire.
- ⇒ To provide seafarers with the knowledge necessary to raise and to react to other emergencies.
- ⇒ To ensure that all seafarers are able to provide assistance in fire and abandonment emergency situations.
- ⇒ To provide seafarers with the knowledge and skills which will enable them to assist in their own survival and rescue.
- ⇒ To provide seafarers with instruction on the proper procedures for maintaining emergency equipment, according to manufacturers guidelines.
- ⇒ To provide the seafarers with the knowledge to maintain the appropriate record keeping procedures, for safety equipment.
- ⇒ To ensure that crew members of passenger carrying vessels have the knowledge and skills necessary to maintain the safety of passengers, and give them the needed assistance to survive an emergency.
- ⇒ To enable the crew members of passenger carrying vessels to plan, organize and carry out safety drills with the passengers, in order that the passengers will be aware of safety equipment and procedures.


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7.2 COURSE OUTLINE

Subject Area	Hours	
	Lecture	Practical
1. Introduction and Safety 1.1 Introduction 1.2 Principles of Safety	.5 hour	
2. Hazards and Emergencies 2.1 Types of emergencies 2.2 Problems and affects	1.0 hour	
3. Firefighting 3.1 Nature of Fire 3.2 Fire Tetrahedron 3.3 Principals of extinguishment 3.4 Classes of fire and their symbols 3.5 Extinguishing agents 3.6 Safety rules 3.7 Practical exercises	3.0 hours	3.0 hours
4. Emergency response 4.1 Signals and Alarms 4.2 Muster Lists 4.3 Drills and Training 4.4 Action upon discovering emergency 4.5 Action when called to an emergency	2 hours	
5. Lifesaving appliances and Abandonment 5.1 Life jackets 5.2 Immersion suits 5.3 Life buoy 5.4 Life raft and equipment 5.5 Survival craft and launching devices	2.5 hours	2.5 hours
6. Survival 6.1 Factors relating to survival 6.2 Actions to increase chances of survival and rescue 6.3 Actions taken after abandoning in a survival craft	2.0 hours	1.0 hour
7. Rescue 7.1 Rescue by civilian or military personnel 7.2 Rescue equipment 7.3 Recognition and operation of signaling devices 7.4 E.P.I.R.B.s 7.5 Pyrotechnics 7.6 Helicopter rescue	1.5 hours	.5 hour


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Subject Area	Hours	
	Lecture	Practical
8. Maintenance and Inspection of Emergency Equipment 8.1 Manufacturers Guidelines 8.2 Periodic Inspections 8.3 Servicing 8.4 Fire Fighting Equipment 8.5 Fixed Systems 8.6 Communication Equipment 8.7 Survival Craft, Launching Systems, Personal Lifesaving Equipment 8.8 Record Keeping	3.0 hours	1.5 hours
9. Passenger Control 9.1 Planning 9.2 Conducting Drills 9.3 Awareness of Life-saving Appliance and Control Plans 9.4 Ability to Assist Passengers en route to Muster and Embarking Stations 9.5 Mustering Procedures 9.6 The Human Factor	2.0 hours	
	17.5 hours	8.5 hours
TOTAL	26 hours	


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7.3 Topics and Learning Objectives

TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<p>1. Introduction and Safety (.5 hours)</p> <p>1.1 Introduction</p> <p>1.2 Principals of Safety</p> <p>.1 stresses that the safety rules laid down by the instructor which must be followed at all times</p> <p>.2 states that as we are handling actual equipment, such as pyrotechnics, all safety precautions must be adhered to.</p> <p>.3 states that whereas we are simulating incidents in the actual environment, particular care must be exercised at all times</p> <p>2. Hazards and Emergencies (1 hour)</p> <p>2.1 Types of Emergencies</p> <p>.1 lists emergencies associated with the marine environment</p> <ul style="list-style-type: none"> - fire - collision - stranding - explosion - icing - equipment failure - capsize - weather conditions - flooding - man overboard <p>2.2 Describes the particular problems associated with various emergencies</p> <p>3. Firefighting (6.00 hours)</p> <p>3.1 Nature of fire</p> <p>.1 states the conditions required for fire to occur</p> <ul style="list-style-type: none"> - fuel, such as wood, clothes, furniture, gas, oil, etc. - source of ignition - oxygen; fire requires about 16% oxygen in order to burn <p>.2 explains flash point</p> <p>.3 ignition temperature</p> <p>.4 three ways fire is spread</p> <ul style="list-style-type: none"> - conduction - convection - radiation <p>3.2 Fire Tetrahedron</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>		

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
.1 states the three sides of the fire triangle – fuel – heat – oxygen		X	
.2 adds the fourth side of the tetrahedron - the chemical chain reaction			
3.3 Principles of extinguishment			
.1 cooling - water as the easiest method			
.2 smothering - removing the oxygen		X	
.3 starving - removing the fuel, shut off valves, etc.			
.4 breaking the chain reaction			
3.4 Classes of Fire and their symbols			
.1 Class A - wood, clothing, paper, etc.			
.2 Class B - flammable liquids	X		
.3 Class C - Class A and B with added electricity, e.g. electronics			
.4 Class D - flammable metals; magnesium, lithium, zirconium, sodium, potassium, e.g. flares			
3.5 Extinguishing agents			
.1 water - best for Class A fires, wood, paper, etc.			
.2 foam - Class A, wood paper, etc. and Class B, flammable liquids		X	
.3 Carbon Dioxide - Class B, flammable liquids, flammable gases, and Class C, electrical equipment			
.4 Dry Chemicals- Class B, flammable liquids, flammable gases, and Class C, electrical equipment			
.5 Dry Powder - Class D, flammable metals			
3.6 Safety Rules			
.1 after discovering fire, raise alarm before attacking fire			
.2 never pass the fire to obtain an extinguisher		X	
.3 test the fire extinguisher first			
.4 keep low to the ground			
.5 aim at the base of the fire and use a sweeping motion			
.6 never turn your back on a fire even after it is out			
.7 never use water or foam on an electrical fire; water is a conductor of electrical			


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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> currents and may result in electrocution .8 water is usually ineffective for flammable liquids, may even make it worse, spread it around or the oxygen in the water may feed the fire .9 beware of flashbacks .10 as soon as possible, always back up an attack with a portable fire extinguisher with a hose .11 report the use of a portable extinguisher to your supervisor and do not return it to its station 			
3.7 Practical fire fighting exercises			
<ul style="list-style-type: none"> .1 demonstrate the correct use of portable fire extinguishers to extinguish Class A, B and C fires, basic work with fire hoses and nozzles 			
4. Emergency Response (2 hours)			
4.1 Signals and Alarms		X	
<ul style="list-style-type: none"> .1 describes the emergency alarm signal .2 discusses other alarm signals .3 states who is responsible for the call to abandon ship 			
4.2 Muster Lists		X	
<ul style="list-style-type: none"> .1 when is a muster list required .2 where is the list placed on the vessel .3 what information is to be found on a muster list 			
4.3 Drills and Training		X	
<ul style="list-style-type: none"> .1 the purpose and importance of regular drills and training .2 need to be ready for an emergency .3 frequency of drills 			
4.4 Action upon Discovering Emergency situation			
<ul style="list-style-type: none"> .1 fire .2 man overboard .3 unconscious casualty .4 injured person .5 flooding 		X	
4.5 Action When Called to an Emergency			
<ul style="list-style-type: none"> .1 suitable clothing .2 donning of lifejacket/immersion suit 		X	


TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<p>5. Lifesaving Appliances and Abandonment (5 hours)</p> <p>5.1 Life Jackets</p> <p>.1 what is a standard approved life jacket</p> <p>.2 number of life jackets required on a vessel</p> <p>.3 proper method of donning a life jacket and use of attachments</p> <p>.4 demonstrate entering water from a height and swimming while wearing a lifejacket</p> <p>.5 care and stowage</p> <p>5.2 Immersion Suits</p> <p>.1 qualities of an immersion suit</p> <p>.2 demonstrate proper donning procedure, in darkness, and with necessary speed and use of attachments</p> <p>.3 entering of water from a height and swimming while wearing an immersion suit</p> <p>.4 care and stowage</p> <p>5.3 Life Buoy</p> <p>.1 to state the number required on a vessel</p> <p>.2 markings, colour, vessel name, retro-reflective tape</p> <p>.3 lights and smoke signals</p> <p>.4 demonstrate how to correctly use them by throwing, entering and securing in it while in the water and waiting for rescue</p> <p>.5 care and stowage</p> <p>5.4 Life Raft and Equipment</p> <p>.1 recognizes the basic types and qualities of a liferaft</p> <p>.2 discuss stowage and releasing mechanism</p> <p>.3 ability to correctly launch inflatable liferaft</p> <p>.4 demonstrate boarding the liferaft from the water</p> <p>.5 the survival pack and how to use it</p> <p>.6 demonstrates the proper righting procedure</p> <p>.7 care and stowage</p> <p>.8 manoeuvring of a liferaft and demonstrate the setting of anchor to reduce drift</p> <p>5.5 Survival Craft and Launching Devices</p> <p>.1 discuss characteristics and operation of luffing, gravity and arrow davits</p> <p>.2 discuss marine evacuation systems</p>			X
		X	



TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
.3 discuss the characteristics and operations of T.E.M.P.S.C., enclosed lifeboat, open lifeboat and inflatable liferaft			
6. Survival (3 hours)			
6.1 Factors relating to Survival		X	
.1 discuss how each factor affects human response and performance in a survival situation			
.2 discuss medical aspects of survival including thermal balance, water balance and energy balance			
6.2 Actions to Increase Chances of Survival and Rescue		X	
.1 need to stay together in the water			
.2 demonstrate the HELP position			
.3 demonstrate how to swim as a group in a chain			
.4 demonstrate how to form a huddle in the water			
.5 hypothermia, prevention, recognition and treatment			
.6 stay near to the spot where vessel went down, stream the sea anchor			
6.3 Actions Taken After Abandoning a Vessel	X		
.1 discuss the action taken after leaving the vessel in an enclosed lifeboat			
.2 discuss the action taken after leaving the vessel in an open lifeboat			
.3 discuss the action taken after leaving the vessel in an inflatable liferaft			
7. Rescue (2 hours)			
7.1 Rescue by Civilian or Military Personnel	X		
.1 discuss description and use of rescue sling			
.2 discuss description and use of rescue basket			
.3 discuss description and use of rescue net			
.4 discuss description and use of rescue litter			
7.2 Rescue Equipment			
.1 demonstrate the use of rescue sling			
.2 demonstrate the use of rescue basket			
.3 baskets and stretchers			

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
7.3 Recognition and Operation of Signaling Devices			
.1 identify and demonstrate hand flares and their use			
.2 demonstrate day light signaling mirror (heliograph)			
.3 demonstrates signaling flash light			
.4 identify and demonstrate parachute rockets and their use			
7.4 E.P.I.R.B.		X	
.1 classes of EPIRBs			
.2 states the frequency specific to the EPIRBs			
.3 mounting on the vessel - float free, hydrostatic release, etc.			
.4 registration of the 406 and identification of the signal			
7.5 Pyrotechnics		X	
.1 states the classes of flares and characteristics			
.2 in what circumstances should each be used			
.3 markings on flares			
.4 expiry dates			
.5 care and stowage			
7.6 Helicopter Rescue		X	
.1 action to be taken aboard a vessel			
.2 action to be taken aboard a raft			
.3 lifting appliances			
.4 safety procedures aboard the helicopter			
8. Maintenance and Inspection of Emergency Equipment (4.5 hours)			
8.1 Manufacturers Guidelines		X	
8.2 Periodic Inspections			
8.3 Servicing			
8.4 Fire Fighting Equipment			
.1 fire extinguishers			
- check gauges on pressurized extinguishers			
- turn over to loosen dry powders			
- be sure that partially used or empty extinguishers are set aside for servicing			

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
.2 alarm systems			
.3 fire mains and equipment <ul style="list-style-type: none"> - relief valves - leaks and corrosion - keep system free of ice 			
8.5 Fixed Systems			
.1 all sprinkler heads are unobstructed			
.2 checks for air pressure and water levels		X	
.3 Specific checks according to the type of system			X
8.6 Communications equipment			
8.7 Survival Craft, Launching Systems and Personal Life-saving Equipment		X	
.1 check that the painter is kept dry in raft		X	
.2 check launching and release systems, for corrosion			X
.3 keep all lifesaving and launching system moving parts lubricated			
.4 covers on lifeboats, seals on rafts			
.5 replace outdated equipment in life boat			
8.8 Record keeping			
.1 ensure that written records are kept on all maintenance checks			
.2 keep records of repairs and updates		X	
.3 keep records of any incidents that concern safety equipment and their use			
.4 ensure that there is easy access to any manuals or written instructions			
9. Passenger Control (2 hours)	X		
9.1 Planning			
.1 provide adequate lighting		X	
.2 have exits clearly marked			
.3 provide easy access to life jackets and gear			
.4 provide clear signage system <ul style="list-style-type: none"> - life rafts and lifeboats - life jackets and buoys - muster lists, emergency instructions 		X	
9.2 Conducting Drills			
.1 assists passengers in an emergency	X		

TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
.2 familiarity with drills lessens panic in an actual situation .3 notify passengers that a drill is being held to reduce fright .4 encourage everyone to take part 9.3 Awareness of Life-saving Appliance and Control Plans .1 knowledge of muster lists and emergency instructions .2 knowledge of emergency exits 9.4 Ability to Assist Passengers en route to Muster and Embarkation Stations .1 ability to give clear reassuring orders .2 the control of passengers in corridors, staircase and passage ways .3 maintaining escape routes clear of obstructions .4 methods available for evacuation of disabled persons and persons needing special assistance .5 search of accommodation spaces 9.5 Mustering Procedures .1 the importance of keeping order .2 ability to use procedures for reducing and avoiding panic .3 ability to use, where appropriate, passenger lists for evacuation counts .4 the ability to ensure that the passengers are suitable clothed and have donned their lifejackets correctly 9.6 The Human Factor .1 identify those who may cause problems - fear, panic, aggression .2 for those who may be a problem, find something to keep them busy .3 try to keep families and travelling companions together .4 make use of anyone who can help - some may have special abilities, medical etc.			

8. SURVIVAL CRAFT COURSE - B1


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8.1 COURSE APPROVAL CONDITIONS

Equipment

- ⇒ 1 set of gravity davits to house the lifeboat, sited so as to allow launching into the open water and recovery;
- ⇒ 1 open motor propelled lifeboat, approximately 8 meters in length complete with associated gear; (new or replacement boat should be fire-protected lifeboat complying with SOLAS 1974 Chapter III)
- ⇒ 1 davit-launched inflatable liferaft with launching davit;
- ⇒ 2 twelve or greater capacity inflatable liferafts in containers, one of which placed in a float-free stowage with hydrostatic release unit;
- ⇒ 1 approved lifejacket for each trainee and instructor in the course;
- ⇒ A variety of approved immersion suits for at least 100% of the trainees in the course;
- ⇒ Thermal protected aids for at least 50% of the trainees in the course;
- ⇒ 2 approved lifebuoys, one with a line and the other with an approved light and smoke float;
- ⇒ 1 approved line throwing apparatus;
- ⇒ 2 portable 2-way radiotelephones approved for use in survival craft;
- ⇒ Variety of hand flares, parachute rockets, and day smokes;
- ⇒ 1 demonstration Class 1 approved Emergency Position-indicating Radio Beacon (EPIRB)
- ⇒ 1 demonstration Search and Rescue Transponder (SART)
- ⇒ 1 rescue sling;
- ⇒ 1 rescue basket;
- ⇒ 1 rescue net
- ⇒ 1 basket type stretcher;
- ⇒ 1 approved Retrieval System
- ⇒ Models and audio visual facilities for instructions;
- ⇒ Access to swimming pool with facilities to jump from a height of 3 meters, showers, changing rooms and drying room for wet gear.

8.2 NUMBER OF TRAINEES IN COURSE

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- ▶ The number of trainees in a course must not exceed 12 for practical demonstrations, open water drills and pool exercises under the supervision of an approved instructor.
- ▶ The number of trainees must not exceed 24 for lectures audio visual instructions under the supervision of the approved main course instructor.

8.3 COURSE DURATION

⇒ 32 hours


8.4 INSTRUCTOR QUALIFICATIONS

- ▶ The main course instructor must hold a certificate not lower than master local voyage or second class engineer. If the course is under the supervision of more than one instructor the assistant instructor shall hold qualifications related to the marine industry or shall have related skills and be approved by Marine Safety.

9. COURSE GOALS, OUTLINE AND LEARNING OBJECTIVES

9.1 Course Goals

- ⇒ To provide rigid and inflatable survival craft crews and team leaders with the knowledge and skills necessary to abandon and get clear of the vessel and manoeuvre the survival craft as required.
- ⇒ To provide survival craft crews with the knowledge and skills necessary to coordinate survival activities and increase the chances of survival.
- ⇒ To provide survival craft leaders with the knowledge necessary to use signalling equipment, manage the craft and coordinate the survivors during a rescue operation.


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9.2 COURSE OUTLINE


Subject Area	Hours	
	Lecture	Practical
1. Introduction and safety	0.75	
1.1 Introduction		
1.2 Safety guidance		
2. Emergency situations	0.5	
2.1 Types of emergency		
2.2 Emergency signals		
2.3 Muster list		
3. Principles of survival	0.75	
3.1 Training and drills		
3.2 Actions to be taken when called to survive craft stations		
3.3 Actions to be taken when required to abandon ship		
3.4 Actions to be taken when in the water		
4. Use of personal survival equipment		3.0
4.1 Lifejackets		
4.2 Lifebuoys		
4.3 Immersion suits		
4.4 Thermal protective aids		
4.5 Boarding a liferaft from the water		
4.6 Righting an inverted liferaft		
4.7 Boarding a survival craft on board ship wearing lifejacket/immersion suit		
5. Methods of helicopter rescue	1.0	0.5
5.1 Communication with the helicopter		
5.2 Evacuation from ship and survival craft		
5.3 Helicopter assistance		
6. Survival craft and rescue boat	0.75	
6.1 Lifeboats		
6.2 Liferrafts		
6.3 Rescue boats		
7. Launching arrangements	0.75	
7.1 Boat davits		
7.2 Liferaft davits and related systems		
7.3 Free-fall lifeboat		
7.4 Float-free arrangements		



Subject Area	Hours	
	Lecture	Practical
8. Lifeboat engine and accessories	1.0	0.5
8.1 Starting the engine (manual/electric/hydraulic)		
8.2 Cooling systems		
8.3 Battery charging and block heater		
8.4 Water spray system		
8.5 Self-contained air support system		
9. Evacuation	0.75	0.5
9.1 Launching		
9.2 Clearing the ship's side		
9.3 Marshalling liferafts and rescuing survivors from the sea		
9.4 Actions to take when clear of the ship		
10. Signalling equipment and pyrotechnics	0.25	0.5
10.1 Action to be Taken When Clear of Ship		
10.2 Line throwing apparatus		
11. Actions to take when aboard a survival craft	1.5	
11.1 Routines for survival		
11.2 Use of equipment		
11.3 Apportionment of food and water		
12. Drills in launching and recovering boats		3.0
13. Launching and handling survival craft in rough weather	1.5	
13.1 Boats		
13.2 Liferafts		
13.3 Beaching		
14. Radio Equipment	0.5	1.0
14.1 Portable VHF radio apparatus		
14.2 Emergency position indicating radio beacons (EPIRBs) and Search and Rescue Transponder (SART)		
15. Drills in launching liferafts		3.0
15.1 Davit-launched liferafts		
15.2 Throw-overboard liferafts		


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Subject Area	Hours	
	Lecture	Practical
16. Safe Working Practices	3.0	
16.1 Potential hazards		
16.2 Protective equipment and devices		
16.3 Employer responsibility		
16.4 Employee responsibility		
17. Effective human relationship on board ships	1.0	
17.1 Importance of good human and working relationship		
17.2 Drug and alcohol abuse		
18. Practical exercises and evaluation	2.0	4.0
	16.0	16.0
TOTAL	32 HOURS	


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9.3 TOPICS AND LEARNING OBJECTIVES


TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
1. Introduction and safety (0.75 hour)			
1.1 Introduction			
1.2 Safety guidance			
.1 states the safety rules laid down by the chief instructor which must be obeyed during the course			
.2 explains the use of the orders "STILL" and "CARRY ON" and the actions to take on hearing them	X		
2. Emergency Situations (0.5 hour)			
2.1 Types of Emergency			
.1 lists emergencies which may lead to abandoning ship as:			
– fire	X		
– collision			
– stranding			
– explosion			
– adverse reaction of dangerous goods or hazardous bulk cargo			
– shifting of cargo			
– foundering			
.2 describes the particular difficulties with regard to abandonment which may be encountered in the different emergencies	X		
	X		
.3 explains that in the case of fire it may be prudent to launch or prepare to launch some or all survival craft immediately to stand by while fire fighting continues.			
2.2 Emergency signals			
.1 describes the general emergency alarm signal	X		
.2 describes the fire alarm signal	X		
.3 states who would give the signal to abandon ship and how the signal might be made	X		
.4 recognize emergency signs and symbols			
2.3 Muster list			

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.1 describes the contents of a muster list	X		
.2 lists the duties assigned to each member of the crew	X		
.3 states that the person in charge of a survival craft must have a list of its crew	X		

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.4 explains that it is the duty of the person in charge of the survival craft to see that the crew under his command are acquainted with their duties	X		
.5 states that the second in command should also have a list of the crew	X		
.6 states that the muster list specifies substitutes for key persons who may become disabled	X		
.7 states that the muster list specifies which officers are assigned to ensure that life-saving and fire appliances are maintained in good condition and are ready for immediate use	X		
3 Principles of survival (0.75 hour)			
3.1 Training and drills			
.1 explains the need for regular training and drills	X		
.2 states the requirements for abandon ship drills	X		
.3 states the requirements for on-board training and instruction in the use of the ship's life-saving appliances	X		
.4 explains the need to be familiar with all of the ship's life-saving appliances	X		
.5 describes the provision and contents of a training manual or manuals	X		
.6 recognizes the symbols related to life-saving appliances and arrangements			X
3.2 Actions to be taken when called to survival craft stations			
.1 describes personal preparation for abandoning ship	X		
.2 states that the person in command of each survival craft should check that all crew are present and that crew and passengers are suitably dressed and have correctly donned lifejackets	X		
.3 describes the preparations which should be made for launching survival craft	X		
.4 explains that boats should only be lowered to embarkation deck level on instructions from the master	X		

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.5 states that the persons assigned in the muster list should take emergency radio equipment, EPIRBs and other items to their stations	X			
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TOPICS AND LEARNING OBJECTIVES		COMPLIANCE THROUGH		
		Knowledge	Viva-Voce	Application
3.3	Actions to be taken when required to abandon ship			
	.1 states that the ship should only be abandoned on the orders of the master or person in charge of the ship	X		
	.2 lists additional items which may be put into a lifeboat when time permits	X		
	.3 describes the supervision of boarding lifeboats	X		
	.4 describes the supervision of boarding davit-launched liferafts	X		
	.5 describes how throw-over liferafts should be boarded from the ship	X		X
	.6 demonstrates jumping on to inflatable liferafts	X		
	.7 explains why every effort should be made to keep dry when boarding survival craft	X		
	.8 states that an immersion suit or thermal protective aid should be worn if required	X		
	.9 states that the person in charge should ensure that all of the boat's crew are present and all occupants are seated, with safety belts fastened where appropriate, before lowering	X		
	.10 states that a check should be made to ensure that hands and arms are clear of the boat's sides	X		
	.11 states that motor lifeboat engines should be started	X		
	.12 states that water spray and air support systems should be set to operate and the closure of hatches should be checked if launching into oil on the surface	X		
	.13 states that a check should be made to see that it is clear below before lowering a boat or throwing a raft overboard	X		
	.14 explains what the person in charge should do	X		
3.4	Actions to be taken when in the water			
	.1 states that a person should never enter the water without a lifejacket	X		
	.2 explains that anything buoyant will help a survivor in the water	X		
	.3 explains that a person in the water will cool and suffer from	X		


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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
exposure very quickly, even in temperate areas, unless wearing an immersion suit			
.4 explains that survivors in the water should swim to survival craft, buoyant wreckage or one another if within range, but otherwise avoid unnecessary exertion	X		
.5 describes the lifejacket light and whistle as an aid to rescue			X
.6 demonstrates how to hold on to a boat or raft	X		
4 Use of personal survival equipment (3 hours)			
4.1 Lifejackets			
.1 knows the storage location of lifejackets	X		X
.2 dons a lifejacket correctly, without assistance, within a period of 1 minute			X
.3 jumps into the water from a height while wearing a lifejacket			X
.4 swims a short distance while wearing a lifejacket			X
.5 uses the attached whistle			X
.6 demonstrates the 'heat-escape-lessening posture' (HELP)			X
.7 knows the operation of lifejacket light	X		
4.2 Lifebuoys			
.1 throws a lifebuoy with buoyant line attached to a person in the water			X
.2 demonstrates the use of lifebuoy without line			X
.3 uses a lifebuoy for support			X
.4 demonstrates retrieval of persons from water			X
.5 knows the use of lifebuoy lights and smoke signals for marking man overboard			X
4.3 Immersion suits			
.1 knows the maintenance, storage and operation of immersion suit			X
.2 unpacks and dons an immersion suit			X
.3 while wearing an immersion suit and lifejacket:			X
– jumps from a height into the water			X
– swims a short distance			X


TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - joining or leaving a group 			
4.4 Thermal protective aids			
<ul style="list-style-type: none"> .1 unpacks and dons a thermal protective aid in a liferaft/lifeboat 			X
<ul style="list-style-type: none"> .2 puts a thermal protective aid on a person simulating unconsciousness in a liferaft/lifeboat 			X
4.5 Boarding a liferaft from the water			
<ul style="list-style-type: none"> .1 boards a liferaft from the water while wearing a lifejacket/immersion suit 			X
<ul style="list-style-type: none"> .2 assists an exhausted survivor to board a liferaft 			X
<ul style="list-style-type: none"> .3 throws the rescue quoit and line to a person in the water 			X
4.6 Right an inverted liferaft			
<ul style="list-style-type: none"> .1 rights an inverted liferaft while wearing a lifejacket 			X
4.7 Boarding a Survival Craft on Board Ship Wearing a Lifejacket/Immersion Suit			X
5 Methods of helicopter rescue (1.5 hours)			
5.1 Communicating with the helicopter			
<ul style="list-style-type: none"> .1 demonstrates the hand and arm hoisting signals 			X
<ul style="list-style-type: none"> .2 explains that information may be passed to the helicopter through shore-based radio stations or shipboard radio if suitable equipment is available 	X		
5.2 Evacuation from ship and survival craft			
<ul style="list-style-type: none"> .1 describes the requirements for a helicopter pick-up area on board 	X		
<ul style="list-style-type: none"> .2 explains the importance of flood lighting obstructions such as masts and funnel at night 	X		
<ul style="list-style-type: none"> .3 states that on no account should the helicopter winch cable be secured to any part of the ship 	X		
<ul style="list-style-type: none"> .4 states that lifejackets should be worn during evacuation by helicopter 	X		

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.5 describes the means of evacuation from lifeboats and liferafts	X		
.6 describes precautions against being turned over in a liferaft by the helicopter's down-draft	X		
.7 describes method of discharging static electricity	X		
.8 states that pilot's instructions should be followed	X		
.9 states to prepare evacuation area	X		
.10 states to prepare fire fighting equipment	X		
.11 explains the importance of attaching medical requirements and documents to injured person			
5.3 Helicopter Assistance			
.1 describes methods of lifting persons by means of a:			
– rescue sling	X		
– rescue basket	X		
– rescue net	X		
– rescue litter	X		
.2 explains that an injured person should be transferred from the ship's stretcher to the litter provided by the helicopter	X		
.3 describes how a member of the helicopter crew may assist in picking up survivors	X		
.4 demonstrates the correct way to don a rescue sling when on deck or in water and adopt a safe posture in it			X
6 Survival craft and rescue boats (0.75 hour)			
6.1 Lifeboats			
.1 describes construction and fittings of the following lifeboats:	X		
– open	X		
– partially enclosed	X		
– self-righting partially enclosed	X		
– totally enclosed	X		
– with a self-contained air support system	X		
– fire-protected	X		
.2 describes the particular characteristics and facilities of each type of boat listed in objective 6.1.1	X		

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.3 interprets the markings on a lifeboat with respect to the number of persons it is permitted to carry including numbering of lifeboats			X
6.2 Liferrafts			
.1 describes the construction, particular characteristics and facilities of:			
– inflatable liferafts	X		
– rigid liferafts	X		
– evacuation systems/platform	X		
.2 describes the stowage of liferafts	X		
.3 interprets the markings on a liferaft container with respect to the number of persons it is permitted to carry and how to move it			X
6.3 Rescue boats			
.1 describes the construction, particular characteristics and facilities of rescue boats	X		
.2 outlines the requirements for the carriage of survival craft and rescue boats in:			
– passenger ships	X		
– cargo ships	X		
.3 interprets the markings on a rescue boat/ liferaft with respect to the number of persons it is permitted to carry			X
7 Launching arrangements (0.75 hour)			
7.1 Boat davits			
.1 describes the arrangements for stowage, securing, gripes, tricing pendants and the methods of launching and recovering boats with:			
– gravity davits	X		
– luffing davits	X		
– single-arm davits	X		
.2 describes methods of disengaging lifting hooks	X		
.3 outlines on-board maintenance of davits, falls and disengaging gear	X		
7.2 Liferaft davits and related systems			

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.1 describes the liferaft launching davits	X		
.2 explains the operation of the release hooks	X		
.3 describes how the hook is recovered ready for launching another liferaft	X		
7.3 Free-fall Lifeboat			
.1 describes the arrangements for free-fall launching over the stern	X		
.2 explains the gantry is provided as an alternative method of launching and for recovery of the boat	X		
7.4 Float-free arrangements			
.1 describes the working of a hydrostatic release unit for liferaft securing strap	X		
.2 explains the sequence of events leading to the release of the fully inflated liferaft in the case of a ship sinking	X		
.3 describes the on-board maintenance of hydrostatic release units	X		
8 Lifeboat engine and accessories (1.5 hours)			
8.1 Starting the engine (manual, electric, hydraulic)			
.1 checks levels of fuel and lubricating oil			X
.2 checks that gear lever is in neutral			X
.3 follows manufacturer's instructions and sets controls			X
.4 primes the fuel system, if necessary			
.5 starts engine and adjusts throttle			X
.6 checks oil pressure gauge and water cooling, if applicable			X
.7 operates ahead and astern propulsion			X
.8 stops engine and turns off fuel			X
.9 explains how to clean the fuel required for a lifeboat			X
.10 states the quantity of fuel required for a lifeboat			X

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.11 explains the use of block heaters, when fitted	X		
.12 explains how to start a cold outboard motor engine	X		
.13 states that the manufacturer's specification for petrol/oil mixture should always be followed to avoid damage to the engine			X
.14 demonstrate manual/hydraulic/electric start			
8.2 Cooling systems			
.1 describes the following cooling systems:			
– air-cooled	X		
– fresh-water-cooled	X		
– seawater-cooled	X		
.2 explains that fresh-water cooling systems require protection with antifreeze when trading to cold areas	X		
.3 states that the engine should be capable of running with the lifeboat out of the water for a minimum of 5 minutes	X		
.4 states that outboard motors should never be started out of the water	X		
.5 explains that outboard engines should never be laid horizontally as cooling water may drain into the engine	X		

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TOPICS AND LEARNING OBJECTIVES		COMPLIANCE THROUGH		
		Knowledge	Viva-Voce	Application
8.3	Battery charging and block heater			
	.1 states that batteries for engine starting, searchlight and fixed radio installation can be charged from the engine	X		
	.2. describes arrangements for charging batteries from the ship's power supplies	X		
8.4	Water spray system			
	.1 states that fire-protected lifeboats are fitted with a water spray system which can be turned on or off	X		
	.2 describes how to activate/engage a water spray system	X		
	.3 explains that the spray is driven by a self-priming pump that starts as soon as the boat enters the water	X		
	.4 states that the system should be flushed with fresh water and completely drained after drills	X		
8.5	Self-contained air support system			
	.1 explains that all entrances and openings should be closed when using the self-contained air support system	X		
	.2 states that the system will provide for the air to remain breathable and for the engine to run normally for not less that 10 minutes	X		
	.3 describes how to activate air supply system	X		
9	Evacuation (1.25 hours)			
9.1	Launching			
	.1 states the importance of seeing that the launching area is clear below before lowering survival craft	X		
	.2 explains how boat painters should be set up before launching	X		
	.3 describes the use of bowsing-in for boarding and slacking off with tackles	X		
	.4 explains how to bowse-in tackles	X		
	.5 describes lowering the boat from the dock and from on board	X		
	.6 describes the unhooking of falls or operation of disengaging gear	X		
		X		




TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.7 distinguishes between normal release and on-load release and states when each would be used	X		
.8 explains the difficulties which could arise if the ship is still making headway and launching at < 5 knots	X		
.9 describes the launching of davit-launched liferafts	X		
.10 explains that the bowsing lines and painter must be passed into the liferafts before lowering, to ensure that they do not snag on anything	X		
.11 describes the release hooks for davit-launched liferafts	X		
.12 states when to release the safety-catch on the hook, where fitted	X		
.13 states when to unload lifeboat ladder	X		
.14 states to keep the lifelines clear	X		
.15 explains to watch waves before launching	X		
.16 states to watch overboard discharges	X		
.17 states to wait for winch operator before leaving ship			
9.2 Clearing the ship's side			
.1 describes how to get clear of the ship's side in a lifeboat: – using the engine – under oars	X		
.2 describes how the painter can be used to assist in clearing the ship's side	X		
.3 describes how to clear the ship's side in a liferaft	X		
.4 explains the method of getting away from the lee side of a ship	X		
9.3 Marshaling liferafts and rescuing survivors from the sea			
.1 explains that motor lifeboats and rescue boats should be used to tow liferafts clear and pick up survivors in the water	X		
.2 describes how to pick up a survivor from the water	X		
.3 describes how to bring an injured or exhausted survivor aboard a lifeboat	X		
.4 states that anyone entering the water to assist a survivor must	X		

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
have a line attached			
9.4 Actions to take when clear of the ship			
.1 states that boats and rafts should attempt to get about 100 m clear of the ship	X		
.2 describes how survival craft should be secured together	X		
.3 explains the use of sea-anchors	X		
.4 lists immediate actions as:			
– inventory of survivors	X		
– streaming sea-anchor	X		
– setting an EPIRB to function	X		
– erecting the canopy in boats	X		
– issuing anti-seasickness pills	X		
– bailing craft dry	X		
– treating the injured	X		
– inflating liferaft floor in cold conditions	X		
– getting radio equipment ready	X		
– posting lookouts	X		
– using daylight signalling mirror (heliograph)	X		
– instruction and practice in the use of pyrotechnics	X		
– securing to other survival craft and looking for survivors in the water	X		
.5 explains the need to ventilate a liferaft after it has been inflated before closing the openings	X		
.6 states that instructions on how to survive are contained in liferafts	X		
10 Signalling equipment and pyrotechnics (0.75)			
10.1 Actions to take when clear of the ship			
.1 lists the devices for signalling or attracting attention as:			
– pyrotechnics	X		
– torch suitable for Morse signalling	X		
– daylight signalling mirror	X		
– whistle	X		
– EPIRB/SART/VHF	X		
.2 demonstrates how to use the daylight signalling mirror			
.3 states that a copy of the life-saving signals is provided			X
10.2 Line Throwing Apparatus	X		
	X		

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
11 Actions to take when aboard a survival craft (1.5 hours)			
11.1 Routines for survival			
.1 explains that the person in charge should do everything possible to maintain morale by displaying knowledge and leadership	X		
.2 explains that organizing survivors to undertake tasks for their safety and comfort helps to maintain morale	X		
.3 states the importance of maintaining a constant lookout	X		
.4 lists the instructions which should be given to the lookouts	X		
.5 lists other tasks which should be assigned to crew members	X		
.6 states the main dangers to survivors			
11.2 Use of equipment			
.1 lists the normal equipment of a lifeboat	X		
.2 lists the normal equipment of a liferaft	X		
.3 describes the use of each piece of equipment	X		
.4 describes the stowage of the equipment	X		
.5 explains that equipment not actually in use should be stowed in lockers or containers or lashed down so that it will not be lost in the event of a capsized	X		
.6 describes the markings and use of a boat compass	X		
11.3 Apportionment of food and water			
.1 states the quantities of food and water carried in a: – lifeboat	X		
– liferaft	X		
.2 explains how to ration and issue water and emergency food	X		
.3 explains the dangers of drinking seawater	X		
.4 describes the arrangements for collecting rain water and how to store it	X		
.5 states that eating fish or foods other than the survival craft rations increases dehydration	X		

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.6 explains how to minimize dehydration in hot conditions	X		
.7 explains necessity of portable water in winter conditions	X		
12 Drills in launching and recovering boats (3 hours)			
.1 acts as an efficient member of a launching crew			X
.2 takes charge and allocates duties for launching, handling and recovery			X
.3 gives correct orders for embarkation, launching and clearing the ship's side			X
.4 demonstrates the ability to row and steer by compass			X
.5 acts as coxswain in handling a lifeboat under power and oars			X
.6 streams a sea-anchor			X
13 Launching and handling survival craft in rough weather (1.5 hours)			
13.1 Boats			
.1 explains how to reduce the risk of damage to a lifeboat or injury to occupants during lowering if the ship is rolling heavily		X	
.2 describes the use of oil to quell breaking seas along the ship's side		X	
.3 explains how to lower a boat into heavy swell		X	
.4 describes how blocks may be lifted as soon as unhooked to prevent injury to occupants		X	
.5 describes the use of the sea-anchor and how to rig an oil bag		X	X
.6 describes the use of the steering oar when lying to a sea-anchor		X	
.7 explains how to heave-to when running before the wind			
13.2 Liferafts			
.1 explains that in strong winds great difficulty will be experienced in getting clear of the lee side of a ship		X	
.2 explains that the launching position may be different than its original location		X	X
.3 explains how to position survivors to minimize the danger of		X	X

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
capsizing when lying to a sea-anchor			
.4 explains the precautions when lashing a liferaft to other survival craft in rough weather		X	
.5 explains to tow the raft into open sea for better visibility		X	
13.3 Beaching			
.1 states the types of beaches to be avoided if possible		X	
.2 states that when possible beaching should be undertaken in daylight		X	
.3 describes how to beach a boat under oars through surf		X	
.4 describes how to beach a boat under power		X	
.5 explains that persons should leave a boat over the stern to avoid being swept back to sea by the undertow		X	
.6 explains that an effort should be made to save the boat and its gear		X	
.7 describes the landing signals for the guidance of small boats with crews or persons in distress		X	X
.8 describes how to beach a liferaft		X	
.9 states that all gear should be secured and the entrances opened to allow rapid escape		X	
.10 explains that the raft should be carried clear of the beach to provide continuing shelter for survivors and visibility for search and rescue		X	
.11 describe problems associated with beaching and disembarking an enclosed boat			
14 Radio equipment (1.5 hours)			
14.1 Portable VHF radio apparatus			
.1 demonstrates how to use GMDSS portable two-way VHF radiotelephones including the requirements for a dedicated primary battery	X		
.2 simulates a MAYDAY call, with the information which should be included	X		X
14.2 Emergency position-indicating radio beacons (EPIRBs) and Search and Rescue Transponders (SART)			
.1 states the requirement for the carriage of EPIRBs in survival craft	X		
.2 describes Class II EPIRBs	X		
.3 states that they are capable only of manual activation and deactivation	X		

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.4 states that the apparatus will operate for a period of not less than 48 hours	X		
.5 states that survival craft class II EPIRBs operate on the 406 MHz frequency	X		
.6 describes a Class I EPIRBs operating on 406 MHz	X		
.7 describes test procedures	X		
.8 states that Class I EPIRB is automatically activated after floating free	X		
.9 demonstrates the manual activation and deactivation of the EPIRB			
.10 states that the EPIRB will operate for a period of not less than 48 hours	X		X
.11 states that a satellite EPIRB transmits a special identification code distress message to a polar orbiting satellite for retransmission to special receiving stations	X		
.12 states that the inspection of EPIRBs and VHF radios is in conjunction with ship's radio inspection	X		
.13 states the requirements for the carriage of search and rescue transponder (SART)	X		
.14 states the stowage requirements of search and rescue transponder (SART)	X		
.15 describes their purpose, function and inspection standards			
15.1 Davit-launched liferafts			
.1 acts as an efficient member of a launching crew			X
.2 takes charge and allocates duties for launching			X
.3 gives correct orders for swinging out the raft, securing it and boarding			X
.4 lowers liferaft			X
.5 operates the safety catch of the lifting hook, when fitted at the correct time			X
.6 recovers the hook ready for the next launch			X
.7 clears away from ship's side and streams a sea-anchor			X
15.2 Throw-overboard liferafts			
.1 checks that the painter is securely fastened to a strong point or to the hydrostatic release unit (where fitted) and its purpose and function			X
.2 releases the liferaft manually			X
.3 throws the liferaft into the water and hauls in the slack of the			X

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
painter, causing the raft to inflate and securing it			
.4 boards the liferaft and explains how to get clear of ship's side			X
16 Safe Working Practices (3 hours)			
16.1 Potential hazards			
.1 lifting appliances, other equipment and moving machinery parts	X		
.2 unsafe work area including slippery decks	X		
.3 enclosed spaces/holds, tanks and other compartments	X		
.4 hot work operations, fire prevention and protection	X		
.5 scaffolds and stages	X		
.6 ladders and gangways	X		
.7 electric equipment, bright lights and noise	X		
.8 ineffective safe guards or safety devices	X		
.9 pressure vessels	X		
.10 obstructed emergency exit	X		
16.2 Protective equipment and devices			
.1 personal protective equipment	X		
.2 notices and signs	X		
.3 fitting of guards on fixed and mobile equipment	X		
.4 audible warning devices	X		
16.3 Employer responsibility			
.1 provide safe work environment	X		
.2 adopt preventive procedures	X		
.3 ensure compliance with safe working practices	X		
.4 periodic inspections by qualified persons	X		
.5 provide approved safety equipment or ensure its use	X		

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TOPICS AND LEARNING OBJECTIVES		COMPLIANCE THROUGH		
		Knowledge	Viva-Voce	Application
16.4	Employee Responsibility			
	.1 acquire knowledge and familiarity with equipment	X		
	.2 states to follow instructions	X		
	.3 states to obey orders	X		
	.4 states to report sub standard and dangerous equipment and procedures	X		
17	Effective human relationship on board ships (1 hour)			
17.1	Importance of good human and working relationship			
	.1 social responsibilities	X		
	.2 employment conditions	X		
	.3 individuals rights	X		
	.4 obeying orders of superiors			
17.2	Drug and alcohol abuse			
	.1 dangers	X		
	.2 symptoms	X		
	.3 awareness and actions to be taken	X		
18	Practical exercises and evaluation (6 hours)			


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10. MARINE FIRE FIGHTING COURSE - B2

10.1 COURSE APPROVAL CONDITIONS

Equipment

- ⇒ A two storey steel ships mock-up having a rectangular shape measuring approximately 11m x 6m. The mock up shall be divided into compartments such as cabins, corridors, open rooms, an electric switchboard room, an engine room with a grating floor, and connecting doors in such a manner as to expose the trainee in a realistic manner to shipboard fires. Means shall also be provided to teach trainees the use of escape ladders, hatchways and to effectively cope with engine room fires. An efficient communication system whereby commands from a command post can be relayed to trainees at the emergency situations within the mock-up.
- ⇒ A fire box with an open top and front divided into compartments in which the three types of fires can be lit and extinguished by the trainees. Alternatively steel trays approximately 1m x 1m x .3m high with a raised back plate which can be used for the same purpose.
- ⇒ A steel or open concrete pit approximately 2.5m x 2.5m x .3m for simulating large oil fires.
- ⇒ Means to simulate engine room bilge oil fires.
- ⇒ 2 fire hydrants with two outlets each.
- ⇒ A large supply of carbonaceous and hydrocarbon (wood, diesel and lubricating oils etc.) for the fire trays, **recognizing provincial regulations.**
- ⇒ 6 water extinguishers (9 litre)
- ⇒ 6 foam extinguishers (9 litre)
- ⇒ 6 carbon dioxide extinguishers (5 kilogram)
- ⇒ 12 dry powder extinguishers (10 kilogram)
- ⇒ Refills for all types of extinguishers.
- ⇒ 6 fire hoses (65 mm diameter)
- ⇒ 8 fire hoses (38 mm diameter)
- ⇒ 6 fire nozzles (2 standard, 2 diffuser, 2 jetspray).
 - (sufficient hoses and water pressure to provide a minimum of 3 nozzles
 - (1 ½ inch) at each live fire location.)
- ⇒ 1 generator of high-expansion foam and foam compound.

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- ⇒ 2 mechanical foam branches.
- ⇒ 1 International shore connection
- ⇒ 2 standpipes, with keys to and bars to operate the hydrant supply.
- ⇒ 30 sets of protective clothing, overalls, gloves, fire-boots, helmets, and rain proof clothing.
- ⇒ 25 sets of self-contained breathing apparatus (SCBA) with visor and neck protector, complete with spare cylinders, spare parts and maintenance tools including sets for instructors only.
- ⇒ Smoke generator
- ⇒ Approved facilities for recharging compressed-air bottles.
- ⇒ Facilities and equipment for cleaning, inspection and maintenance of SCBA after use.
- ⇒ Facilities for classroom, showers, changing rooms and storage for items of equipment.

10.2 NUMBER OF TRAINEES IN COURSE


- ⇒ The number of trainees in a course must not exceed 12 for practical demonstrations and exercises under the supervision of an approved instructor.
- ⇒ The number of trainees must not exceed 24 for lectures and audio visual instructions under the supervision of the approved main course instructor.

10.3 COURSE DURATION

- ⇒ 32 hours

10.4 INSTRUCTOR QUALIFICATIONS


- The main course instructor must hold a certificate not lower than master local voyage or second class engineer. If the course is under the supervision of more than one instructor the assistant instructor shall hold qualifications related to the marine industry or shall have related skills and be approved by Marine Safety.

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11. COURSE GOALS, OUTLINE AND LEARNING OBJECTIVES

11.1 COURSE GOALS

- ⇒ lists the main aims as:
- ⇒ to provide knowledge about the dangers of fires in ships, the ways in which fires are caused and their prevention.
- ⇒ to provide knowledge and skills necessary to enable him/her to effectively operate the fire fighting equipment found on board ships.
- ⇒ to provide knowledge and skills necessary to protect himself/herself and others on board from hazards while fighting shipboard fires.
- ⇒ to provide knowledge and skills necessary to enable him/her to evaluate the fire situation, plan an attack, extinguish the fire, overhaul and secure the fire scene and supervise a reflash watch.
- ⇒ to provide skills and knowledge necessary to enable him/her to rescue a casualty from a smoke filled space.
- ⇒ to provide knowledge and skills necessary to enable him/her to operate fixed fire extinguishing systems.
- ⇒ to provide training in the maintenance and inspection of fire extinguishing equipment.
- ⇒ to provide instructions in the hazards applying to fires in dangerous goods and safe methods of combating such fires.


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11.2 COURSE OUTLINE

Subject Area	Hours	
	Lecture	Practical
1. Introduction, Safety and Principles	0.75	
2. Theory of Fire	1.5	
2.1 Conditions for fires		
2.2 Principles of fire fighting		
2.3 Properties of flammable materials		
2.4 Fire hazard and spread of fire		
2.5 Classification of fires and appropriate extinguishing agents		
3. Fire Control aboard Ships	1.75	
3.1 Areas of fire hazard		
3.2 Fire precautions		
4. Ship Fire-fighting Organization	1.5	
5. Training of Seafarers in Fire Fighting	2.5	11.0
5.1 Knowledge of equipment		
5.2 Training and fire drills		
5.3 Repairs and maintenance		
6. Procedures for Fire fighting	3.0	
6.1 Ship at sea		
6.2 Ship in port		
6.3 Ship having cargo of dangerous goods		
6.4 Oil tankers		
7. Use and Care of Fire Appliances and Equipment		1.75
7.1 Fireman's outfits		
8. Fire-fighting Process Hazards	1.5	
8.1 Dry distillation		
8.2 Chemical reactions		
8.3 Boiler uptake fires		
8.4 Fires in water-tube boilers		
9. Ventilation control including smoke extractor	1.5	
9.1 Theoretical aspects		
-Horizontal, vertical and combined ventilation		
-Mechanical, hydraulic and natural ventilation		
-Positive and negative ventilation techniques		
-Manoeuvring of vessel to achieve ventilation		
-Use of positive pressure ventilation fans		
-Hazards during overhaul, need for and use of ventilation		




Subject Area		Hours	
		Lecture	Practical
9.2	Practical Work -demonstration of streams		1.25
10	Management and control of injured persons	0.5	
10.1	Immediate and follow up actions taken		
10.2	Record keeping		
11	Coordination with shore-based fire-fighters	0.5	
11.1	Procedure		
11.2	Recording of activities		
12	Review and Final Assessment (Practical Exercises)	1.0	2.0
		16	16
Total		32 HOURS	


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11.3 TOPICS AND LEARNING OBJECTIVES


TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<p>1 Introduction, Safety and Principles (0.75 hours)</p> <p>.1 states the safety rules laid down by the main instructor which must be adhered to during the course</p> <p>.2 lists the principles of survival in relation to fire as:</p> <ul style="list-style-type: none"> - knowledge of theory of fire and fire precautions - regular training and drills - preparedness for any fire emergency - knowledge of escape routes - knowledge of dangers of smoke and toxic fumes - regular inspection and maintenance of: <ul style="list-style-type: none"> • fire-detection equipment • fixed fire-extinguishing equipment • portable fire extinguishers • mobile fire extinguishers • compressed-air-operated breathing apparatus • fireman's outfit 	X	X	
<p>2 Theory of Fire (1.5 hours)</p> <p>2.1 Conditions for fires</p> <p>.1 lists conditions required for fire to occur as:</p> <ul style="list-style-type: none"> - the presence of material (gas, liquid or powder) which acts as fuel - a source of ignition, e.g. chemical, biological or physical - the presence of oxygen, as air or from oxidizing agents <p>.2 sketches how these three conditions can be represented as a triangle (the fire triangle)</p> <p>.3 sketches how the addition of a "chain reaction", forming a square or a tetrahedron, represents a continuously burning fire</p>	X	X	X
<p>2.2 Principles of fire fighting</p> <p>.1 states that the principle of fire fighting rests on the removal of one of the sides of the fire tetrahedron</p> <p>.2 describes the use of water as a fire-fighting medium in terms of:</p> <ul style="list-style-type: none"> - being abundantly available - lowering the temperature below the ignition point - its smothering action, starving the fire of oxygen 		X	X

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - the smothering action of steam, starving the fire of oxygen - causing water damage - the possibility of endangering the stability of the ship 		X	
.3 States the danger of using water in cases of: <ul style="list-style-type: none"> - fire in electrical systems - fire in cargoes which emit flammable gases when wet 		X	
.4 describes the use of carbon dioxide as a fire-fighting medium in terms of: <ul style="list-style-type: none"> - its smothering action by replacing oxygen - being used only in enclosed spaces - having only a limited quantity on board - not appreciably lowering the temperature - ensuring that there are no personnel in spaces which will be flooded with carbon dioxide 		X	
.5 describes the use of a halon or alternate agent as a fire-fighting medium in terms of: <ul style="list-style-type: none"> - its inhibiting effect by stopping the chain reaction - being used only in enclosed spaces - having only a limited quantity on board - being used in lower concentrations than carbon dioxide and not being directly dangerous for any personnel in an enclosed space - being broken down in a fire into toxic components 		X	
.6 describes the use of foam as a fire-fighting medium in terms of: <ul style="list-style-type: none"> - its smothering action by blanketing the fire - having only a limited quantity on board - having a choice of heavy, medium and light foams - each type of foam requiring its own nozzle or foam generator - light foams being used only in enclosed spaces - foam having some cooling effect - some foams causing varying degrees of water damage 		X	
.7 describes the use of chemical powder as a fire-fighting medium in terms of: <ul style="list-style-type: none"> - its inhibiting effect by stopping the chain reaction - having only a limited quantity on board - causing damage to electrical and electronic equipment 		X	
.8 states the importance of cutting off the fuel supply in situations such as: <ul style="list-style-type: none"> - engine-room fires involving burst oil pipes - gas fires 		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - galley fires - on electric fires cut off power source <p>.9 describes means for cutting off fuel supply as being by:</p> <ul style="list-style-type: none"> - closing supply valve - stopping pumps - dropping (emptying) high tanks <p>.10 states the importance of limiting the ingress of air by means of:</p> <ul style="list-style-type: none"> - stopping fans - closing dampers and doors 		X	
<p>2.3 Properties of flammable materials</p> <p>.1 defines</p> <ul style="list-style-type: none"> - flammability - ignition point - burning temperature - burning speed - thermal value - lower flammable limit (LFL) - upper flammable limit (UFL) - flammable range - flashpoint - auto-ignition 	X		
<p>.2 gives examples of how static electricity can occur</p>	X		X
<p>.3 explains reactivity</p>		X	
<p>.4 explains ignition sources</p>		X	
<p>2.4 Fire hazard and spread of fire</p> <p>.1 defines heat flow</p> <ul style="list-style-type: none"> - conduction - radiation - convection currents 	X		
<p>.2 states that spread of fire occurs as a result of equalization in temperature between fire and surroundings via:</p> <ul style="list-style-type: none"> - conduction - radiation - convection currents 		X	
<p>.3 lists examples of each method of propagation</p>			
<p>.4 lists fire hazards in the engine-room, including:</p>		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - combustible liquids - fuel and lubricating oils - oil leaks and oil-soaked insulation - hot surfaces, e.g. exhaust pipes, engine parts overheating - defects in lagging - hot work, e.g. welding, cutting by oxy-acetylene torch - auto-ignition, e.g. oil dripping on hot surface 		X	
.5 lists hazards in the galley, including: <ul style="list-style-type: none"> - combustible liquids, e.g. cooking oil, hot fat - hot surfaces, e.g. ovens, frying pans, flues - defective electrical connections - extraction fans and ducts 		X	
.6 lists hazards in accommodation, including: <ul style="list-style-type: none"> - combustible materials, e.g. furnishings, personal effects - matches and cigarette smoking - defective or overloaded electrical systems - unauthorized electrical equipment 		X	
.7 lists hazards from cargoes, including: <ul style="list-style-type: none"> - self-heating cargo and spontaneous combustion - oxidizing cargoes and organic peroxides - compressed flammable gas - pyrophoric cargoes <ul style="list-style-type: none"> • flammable liquids and solids • substances liable to react with themselves, with water, with other cargoes and with materials of the ship - explosives - states how to recognize the presence of these materials by referring to labels 		X	
.8 describes hazards from smokers in terms of: <ul style="list-style-type: none"> - temperature of a burning cigarette, which is 500 °C - carelessness with cigarettes, pipes and matches, setting fire to bedclothes, contents of wastepaper bin and furnishings 		X	
.9 lists four phases of fire development as: <ul style="list-style-type: none"> - ignition (incipient) - developing (surface fire) - absolute fire (fire in depth in solids) - burning out 		X	
.10 states the temperature of a normal fire, such as coal, wood or hydrocarbon fires, and the temperature in burning metals		X	
.11 states the effect of temperature rise on the rate of the chain reaction, i.e. fire intensity		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> • high-temperature probes • rate-of-rise-of-temperature probes • patrols – fire appliances, including <ul style="list-style-type: none"> • fixed systems, e.g. water, foam, carbon dioxide and halon • portable, e.g. water, foam, carbon dioxide and powder 		X	
<p>.2 lists, for fires in the accommodation:</p> <ul style="list-style-type: none"> – causes, including <ul style="list-style-type: none"> • combustible materials • matches and cigarette smoking, including careless disposal of burning cigarettes or ash • textiles adjacent to hot objects such as radiators and lamps • defective and overloaded electrical systems • in a laundry, incorrect installation of a tumbler drier or failure to keep it clean – methods of containment, including <ul style="list-style-type: none"> • fire doors and dampers • sprinkler system • fire-retardant materials in construction • fire-retardant deck coverings • fire-retardant furnishings – methods of detection, including <ul style="list-style-type: none"> • smoke detectors • temperature probes • sprinkler system • patrols – fire appliances, including <ul style="list-style-type: none"> • fixed system, e.g. water hydrants and hoses • portable, e.g. water 		X	
<p>.3 lists, for fires in the galley:</p> <ul style="list-style-type: none"> – causes, including <ul style="list-style-type: none"> • overheating of combustible liquids and fats • overheating of deep-fat fryers • hot surfaces • defective electrical connections • greasy flues – methods of containment, including <ul style="list-style-type: none"> • fire doors, ventilation and flue dampers • fire blankets – methods of detection, including <ul style="list-style-type: none"> • patrols • fixed detection systems – fire appliances, including <ul style="list-style-type: none"> • fixed system, e.g. water hydrants and hoses • portable, e.g. water (not for fat or oil fires), carbon dioxide and powder 		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<p>.4 lists, for fires in the radio room or battery room and for electrical fires:</p> <ul style="list-style-type: none"> – causes, including <ul style="list-style-type: none"> • overloads and short circuits • defective insulation • fractured and loose connections • in battery room, build-up of hydrogen (due to lack of ventilation) and its ignition, e.g. from smoking – methods of containment, including <ul style="list-style-type: none"> • fire doors – methods of detection, including <ul style="list-style-type: none"> • observation – fire appliances, including <ul style="list-style-type: none"> • portable, e.g. carbon dioxide and powder <p>.5 lists, for fires in holds and in containers:</p> <ul style="list-style-type: none"> – causes, including <ul style="list-style-type: none"> • cargoes liable to self-heating and spontaneous combustion (coal, copra) • bulk cargoes liable to emit flammable gas, (coal, direct reduced iron) • loss of integrity of packages containing explosive, flammable or reactive substances • collection of oily materials as a result of insufficient cleaning and of leakage from tanks 		<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> – methods of containment, including <ul style="list-style-type: none"> • hatch covers, 'tween-decks and hull structure • use of dampers • remote control of extinguishing media – methods of detection, including <ul style="list-style-type: none"> • smoke detectors • temperature probes – fire appliances, including <ul style="list-style-type: none"> • fixed systems, e.g. water spray, high-expansion foam, carbon dioxide and halon • portable, e.g. water, foam, powder and carbon dioxide • mobile, e.g. foam-making equipment 		X	
.6 lists, for flammable ship's stores: <ul style="list-style-type: none"> – potentially hazardous materials, which include <ul style="list-style-type: none"> • paints and varnishes approved by an Administration • lubricating oil • cleaning fluids, paint thinners, paraffin • fuel for motor lifeboats and emergency engines • oxygen and acetylene cylinders – approved storage areas for such materials, e.g. <ul style="list-style-type: none"> • paint store • deck lockers – prohibited storage area for paints, oils, cleaning fluids, e.g. <ul style="list-style-type: none"> • accommodation • machinery spaces – approved methods of handling between shore and ship in order to avoid <ul style="list-style-type: none"> • spillage • ignition from any cause • delay in transporting the materials from shore to storage 		X	
3.2 Fire precautions			
.1 lists structural fire-protection provisions, including: <ul style="list-style-type: none"> – division of the ship into main vertical zones by thermal and structural boundaries – inert gas protection on tankers – lockers for combustible materials – use of flame-retardant materials – flame screens and other devices for preventing the passage of flame – the use of steel – provisions with respect to the fire main: diameter, pressure 		X	
		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<p>.2 describes fire-fighting equipment and systems for a ship, including:</p> <ul style="list-style-type: none"> - distribution and quantity of <ul style="list-style-type: none"> • fire-extinguishing gas, CO₂ or halon or alternate agent • hydrants and fire hoses • portable fire extinguishers 			

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - sprinklers • fireman's outfits - arrangements for the supply of power and water, including emergency supplies - spaces subject to automatic fire detection - provision of emergency controls 			
<p>.3 lists fire safety procedures, including</p> <ul style="list-style-type: none"> - maintaining cleanliness on board - ensuring observance of smoking only in approved spaces - keeping doors closed - maintenance of fire appliances, including fire dampers - observance of approved fire-fighting methods - observance of regular fire drills and instructions 		X	
<p>.4 explains the organization and tasks of fire parties, including:</p> <ul style="list-style-type: none"> - making best use of available personnel <ul style="list-style-type: none"> • need to be flexible in choice • personnel are to be trained to use different equipment • how to establish who is on board and available • training in agreed method for establishing which members of fire parties are in fire zone - the choosing of assembly points for fire parties <ul style="list-style-type: none"> • difference between assembly point and site of fire • how an assembly point is indicated • considerations in choosing suitable assembly points • communications between assembly points and bridge - initial and subsequent actions of fire parties on hearing alarm <ul style="list-style-type: none"> • considers dangers of entering a space which is on fire • observes restriction on the use of certain fire-fighting media • considers means for resolving conflict between the need for prompt action and the prevention of wrong action • has a full knowledge of the muster list 		X	
<p>.5 states procedures which must be observed when a ship is in a dockyards for repairs, including:</p> <ul style="list-style-type: none"> - safety procedures for dockyard personnel - responsibility for fire fighting - control of testing 			
4 Ship Fire-fighting Organization (1.5 hours)			
<p>.1 states that the central control station will be on the bridge</p>			
<p>.2 states that the master will be in charge</p>		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.3 states that the fire officer/officers will report to the bridge and receive instructions			
.4 lists the information which central control station requires, including: <ul style="list-style-type: none"> - the time at which the fire alarm was given - the position and nature of the fire - confirmation that fire parties are at their assembly points and that the fireman's outfits are available - confirmation that the fire main is pressurized - report on initial attempts to extinguish fire using portable extinguishers - report on effect of fire on services, e.g. lighting - report on persons present or trapped in compartments or unaccounted for 			
.5 lists information which should be available on the bridge, including: <ul style="list-style-type: none"> - arrangement drawings, in a convenient size, of ship engine-room and accommodation - details of accesses and escapes from the different zones of the ship - details of fire-extinguishing equipment, both fixed and portable, for the entire ship, including storage position of refills - stability information - details of survival equipment and where it is stored - stowage plans - information on dangerous goods 		X	
.6 lists communication methods available, including: <ul style="list-style-type: none"> - telephones - loud hailers - direct speech, e.g. bridge to machinery control room - radio telephones, hand-held radios - messengers 		X	
.7. lists methods of damage control and containment of fires, including: <ul style="list-style-type: none"> - bridge-operated closing of watertight doors and release of fire doors to their shut position - stopping of ventilation fans and closing of dampers on funnel and other places - closing of all windows and portholes in accommodation, galley and other spaces - turning ship to give best position relative to wind direction for fighting the fire - cooling boundary bulkheads 		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - using fire blankets as necessary - maintaining fire-watch after fire is extinguished <p>.8 explains how the stability of the ship is monitored and controlled, including:</p> <ul style="list-style-type: none"> - calculating the change in GM caused by the weight of the extinguishing water and its free surface effect - arranging pumping or draining of fire-fighting water from affected spaces, including cutting holes in ship's side 		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> – for cargo fires, calculating the effect of having to move cargo to attack a fire – assessing the effect of any damage which causes spaces to be flooded by seawater – considering possibilities of moving vessel to shallow water or even allowing it to ground <p>.9 explains the organization of fire parties, including:</p> <ul style="list-style-type: none"> – how each fire party is identified – how each member of a fire party is identified what the safeguards are for keeping in contact with each person and knowing his position – the duties of each fire party, including <ul style="list-style-type: none"> • the reconnaissance team, equipped with portable fire extinguishers • the fire-hose team • the help, search and first aid team • the technical team for checking lifts, closing fire dampers, controlling ventilation fans and fuel shut-off valves, starting emergency generator and emergency fire pump and for refilling used extinguishers as required and preparing for gas flooding <p>5 Training of Seafarers in Fire Fighting (13.5 hours)</p> <p>.1 States that, after joining a ship, the crew must be given instruction on the emergency procedures in use and trained in the use of its fire appliances and its equipment, paying particular attention to:</p> <ul style="list-style-type: none"> – the location and use of portable fire extinguishers containing <ul style="list-style-type: none"> • water • foam • dry chemical • carbon dioxide • halon or alternate agent – the location and use of mobile fire extinguishers containing <ul style="list-style-type: none"> • foam • dry chemical • carbon dioxide – the location and use of fixed fire-extinguishing appliances, e.g. <ul style="list-style-type: none"> • fire hydrants, hoses and nozzles • water sprinklers water sprays • foam system • carbon dioxide system • halon system or alternate system – the location and use of fireman's outfit and in particular 		X	X
		X	X
		X	X
		X	X

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> • learning how to don the protective clothing quickly • knowing where the personal equipment is stowed and what it comprises 			

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> • checking and using the approved breathing apparatus • checking and using the fireproof lifeline and being familiar with the signalling codes <p>.2 states that, for crew training, realistic but safe fire drills should be held in various areas of the ship, including:</p> <ul style="list-style-type: none"> – general functions, covering <ul style="list-style-type: none"> • starting the emergency generator • starting the emergency fire and bilge pump • selecting the appropriate valves for providing water for fire fighting, flooding holds or pumping out bilges • identifying the emergency controls and their function – improving personal safety by practising <ul style="list-style-type: none"> • moving and finding the way in spaces with restricted visibility • moving through small apertures • finding and removing casualties • using compressed-air breathing apparatus and the fireproof lifeline in these conditions – machinery spaces, assuming mock fires, e.g. <ul style="list-style-type: none"> • fire on diesel alternator due to fuel-oil spray from fractured fuel injection pipe striking hot exhaust pipe • fire in bilge due to fuel oil being ignited by sparks from welding work in the vicinity • fire at top of engine-room due to lubricating oil leaking from a fractured pipe to the turbocharger bearing and striking the hot surface of turbocharger • fire adjacent to boiler due to blow-back from furnace • fire in switchboard caused by loose connection • fire in the economizer or boiler uptake due to accumulation of soot – accommodation spaces, assuming mock fires, e.g. <ul style="list-style-type: none"> • fire in a cabin due to bedclothes catching fire from a fallen cigarette • fire in crew lounge due to defective electrical connection – fire in galley, including: <ul style="list-style-type: none"> • fire on top of stove due to spilled cooking fat • fire in deep-fat fryer including ventilation and extraction ducts – fire in deck container, e.g. <ul style="list-style-type: none"> • fire due to defect in integral refrigeration unit – fire in cargo spaces, taking into account cargo on board, e.g. <ul style="list-style-type: none"> • in holds, 'tween-deck or containers • involving dangerous goods 		X	X

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.3 states that the members of fire parties are given training, which includes: <ul style="list-style-type: none"> – instruction in the duties of each fire party to which a crew member may be assigned – instruction in the duties of each member of a fire party and how these duties are allocated, e.g. by number or otherwise exercises to make each fire party proficient including first aid			
.4 states that crew members who operate a fire patrol system will be trained to ensure that they are familiar with the arrangements of the ship as well as the location and operation of equipment, including: <ul style="list-style-type: none"> – manually operated call points – fixed fire-detection and alarm system – telephones – portable fire extinguishers and their limitations – hydrants, hoses and nozzles 		X	
.5 demonstrates the ability to carry out the exercises listed in objectives 5.1 to 5.4			X
.6 describes how to recharge, repair and maintain portable fire extinguishers		X	
6 Procedures for Fire Fighting (3.0 hours)			
6.1 Ship at sea			
.1 states that, when the fire alarm is given, the fire procedure and the emergency stations procedure are put into effect; for example: <ul style="list-style-type: none"> – the crew assembles at the designated fire stations as given on the muster list – the fire parties assemble, on orders from the bridge, and carry out their tasks aimed at containing the fire – the ship's course and speed are altered as necessary to assist in containing the fire – the pumps are prepared to dispose of extinguishing water – for engine-room fires, the ship is stopped – the master decides the most appropriate method for fighting the fire and this is implemented by the fire officer – the early preparations are made to launch lifeboats – the appropriate Mayday/Pan Pan or Sécurité message be broadcast 		X	
.2 states that the master controls the fire-fighting operations from the bridge, as indicated in section 4		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.3 states that when the fire is extinguished, a fire-watch is kept, the requirement for emergency stations is cancelled and an investigation into the fire, as indicated in section 10, is begun		X	
6.2 Ship in port			
.1 states that, when the fire alarm is given, the fire procedure and the emergency stations procedure are put into effect, as indicated in section 6.1		X	
.2 states that the following additional procedures must be followed: call the port fire brigade		X	
– inform the appropriate authority		X	
– confirm with harbour master that the master of the ship will remain in overall charge			
– confirm with harbour master that the fire brigade will take charge of the fire-fighting operations, assisted by the crew as required			
– confirm with harbour master that he will keep the master informed of any hazards to the dock installation and any actions required			
– check who is on board			
– make preparations for ship to leave port if required, either by own power or with help of tugs			
– evacuate non-essential personnel			
.3 states that, when the fire has been extinguished, a fire-watch is kept, the requirement for emergency stations is cancelled and an investigation into the fire is begun		X	
6.3 Ship having cargo of dangerous goods			
.1 states that the stowage plan should be marked to show the position and class of dangerous goods		X	
.2 states that a fire-fighting plan should be prepared showing which fire-fighting media and appliances can safely be used			
.3 states that the dangers and the consequent risk to the crew should be assessed when the cargo is loaded			
.4 states that, when the fire alarm is given, the fire procedure and the emergency procedure are put into effect. as indicated in section 6.1		X	
.5 states the danger of rushing into action without knowing the nature of the cargo			
.6 states that, when the fire has been extinguished, a fire-watch is kept, the requirement for emergency stations is cancelled and an investigation into the fire is begun			

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<p>6.4 Oil Tankers</p> <p>.1 states that, when the fire alarm is given, the fire procedure and the emergency procedure are put into effect, as indicated in section 6.1</p> <p>.2 states that the additional requirements for a tanker include:</p> <ul style="list-style-type: none"> - a fixed fire-extinguishing system in the pump-room - remotely controlled foam monitors on the deck - inert gas-system or steam smothering for the cargo tanks - isolation valves fitted in the fire main at the poop front and at specified distances forward of the poop front to allow <ul style="list-style-type: none"> • control of the water supply to the foam monitors in the event of damage to the fire main • control of the water supply if the emergency fire pump is in use • a division into gas-dangerous and gas-free spaces 		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - strict segregation between cargo, machinery/accommodation spaces and systems <p>.3 states that, when the fire has been extinguished, a fire-watch is kept, the requirement for emergency stations is cancelled and an investigation into the fire is begun</p>		X	
<p>7 Use and Care of Fire Appliances and Equipment (1.75 hours)</p> <p>7.1 Fireman's outfits</p> <p>.1 demonstrates the inspection and maintenance of fireman's outfit and schedule which should include checking:</p> <ul style="list-style-type: none"> - that all outfits are in their correct stowage positions - that the personal equipment is undamaged and complete - that the battery of the electric safety lamp (hand lantern) is fully charged - that the breathing apparatus is ready for use - that the compressed air bottles, including all spares, are kept fully charged - that, after any use, the breathing apparatus is dismantled to ensure that all parts are clean and all valves are operating correctly - that the fireproof lifeline is undamaged 			X
<p>8 Fire-fighting Process Hazards (1.5 hours)</p> <p>8.1 Dry distillation</p> <p>.1 defines dry distillation as a combustion process in which a flammable material burns with insufficient oxygen to achieve complete combustion of the material</p> <p>.2 states that an example of dry distillation is the making of charcoal</p> <p>.3 lists the following sequence of events as an example of the danger of dry distillation:</p> <ul style="list-style-type: none"> - fire is in a closed space - heat builds up but there is incomplete burning - the opening of an access introduces fresh air - the result is a flash towards the access opening - persons in the process of entering will be injured or burned unless they are protected <p>.4 states that dangers of dry distillation may be mitigated by:</p> <ul style="list-style-type: none"> - cooling the compartment externally by hosing it with water 		X	
		X	
		X	
		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - entering the access in a crouched position behind a water screen (spray nozzle) - directing water towards the deckhead of the space on fire <p>.5 explains, because of the above, the inadvisability of taking hurried action when smoke is seen issuing from a closed cabin</p>		X	
8.2 Chemical reactions			
<p>.1 defines chemical reactions as the effect of the addition of one or more of the following substances to a chemical:</p> <ul style="list-style-type: none"> - water - heat - steam - oil - foam - carbon dioxide - sand 		X	
<p>.2 lists some of the effects as:</p> <ul style="list-style-type: none"> - explosion from the development of flammable gas - spontaneous combustion - the development of toxic fumes - the generation of smoke 		X	
<p>.3 states that chemical reactions during fire fighting are more likely to occur with fire in cargoes and in accommodation areas</p>		X	
<p>.4 lists some examples of chemical reactions causing or exacerbating fires, including:</p> <ul style="list-style-type: none"> - the production of acetylene when calcium carbide comes into contact with water - the decomposition of steam when applied to coal fires - the production of hydrogen when Direct Reduced Iron (DRI) comes into contact with water - oxidizing cargoes, such as some fertilizers, sustaining a fire even if blanketed in an extinguishing gas - cargoes spontaneously igniting in air, e.g. phosphorus when its packaging gets damaged - self-heating of cargoes such as grain when wet - production of methane in coal cargoes to dangerous levels when ventilation is restricted 		X	
<p>.5 states that the correct response to fire in dangerous goods is given in the Emergency Procedures for Ships Carrying Dangerous Goods</p>		X	
<p>.6 states that the correct response to fire in bulk materials possessing chemical hazards is given in the Emergency</p>		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
Schedules of the Code of Safe Practice for Solid Bulk Cargoes			X
.7 with the aid of the General Index of the IMDG Code and the emergency Procedures for Ships Carrying Dangerous Goods, determines the response action for a fire in a given substance			X
.8 with the aid of the Code of Safe Practice for Solid Bulk Cargoes, determines the response action for fire in a given bulk cargo			
8.3 Boiler uptake fires			
.1 defines boiler uptake fires as those occurring in: <ul style="list-style-type: none"> – uptakes, economizers and air heaters of steamships – exhaust pipes, economizers and waste-heat boilers of ships propelled by internal-combustion engines 		X	
.2 states that the usual cause of such fires is an accumulation of carbon deposits, with or without oil, which become overheated and catch fire		X	
.3 states that the difficulties and hazards of fighting these fires are: <ul style="list-style-type: none"> – inaccessibility of all sections of the uptake in the upper section of the engine-room – the possibility of explosion if access doors to the economizer are opened – the possibility of the economizer tubes reaching a temperature of 700°C, when the following can take place <ul style="list-style-type: none"> • the iron in the tubes will burn in steam • the reaction will be self-sustaining and will generate the products of combustion will be black oxide of iron and free hydrogen • the burning of iron in steam will be independent of a supply of oxygen • the hydrogen produced will burn if air is introduced • explosion 		X	
.4 states that a procedure for containing and extinguishing the fire is to: <ul style="list-style-type: none"> – shut down the boiler and/or main engine – spray the external surfaces in way of the fire with water to keep the temperature down – close necessary dampers and boiler change-valve to exclude air from fire – protect essential electrical and other equipment below the fire zone against water damage – continue cooling until it is considered safe to open the economizer for examination and thorough cleaning on the fire side 		X	

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
<p>8.4 Fires in water-tube boilers</p> <p>.1 states that iron-in-steam fires can occur in water-tube boilers due to:</p> <ul style="list-style-type: none"> – shortage of water in the boiler causing overheating of the tubes above the water level and undue delay in shutting down the boiler – an uncontrollable soot fire in the furnace after a boiler has been shut down in a port, coupled with a shortage of water in the boiler causing overheating of the tubes above the water level <p>.2 states that if fire is discovered before the temperature of the tube has reached 700°C, the preferred method of fire fighting is:</p> <ul style="list-style-type: none"> – to direct through burner apertures, or equivalent, the maximum amount of water available as solid jets and through feed pumps to the source of the fire, assuming boiler tubes have fractured or burned – to keep air casings and uptakes cool by hosing them with water – to avoid using fire spray nozzles, foam appliances or carbon dioxide directly on the fire <p>.3 states that the fire-fighting procedures in section 8.3 must be used if the iron-in-steam fire has developed</p>		X	
<p>9 Ventilation Control Including Smoke Extraction (2.75 hours)</p> <p>.1 describe the horizontal, vertical and combined ventilation</p> <p>.2 describe the mechanical, hydraulic and natural ventilation</p> <p>.3 explain the positive and negative ventilation techniques</p> <p>.4 describe manoeuvring of vessel to achieve ventilation</p> <p>.5 explain use of positive pressure ventilation fans</p> <p>.6 identify the hazards expected during overhaul, need for and use of ventilation</p>		X	
<p>10 Management and Control of Injured Persons (0.5 hours)</p> <p>.1 states the immediate and follow-up actions taken</p> <p>.2 documenting reports received from doctors or hospitals</p>		X	
<p>11 Coordination with Shore Based Fire Fighters (0.5 hours)</p>			

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TOPICS AND LEARNING OBJECTIVES	COMPLIANCE THROUGH		
	Knowledge	Viva-Voce	Application
.1 describe the procedure relating to: <ul style="list-style-type: none"> - availability of ships plans - consultation with master/OIC on plans to fight fire and roles and responsibilities 		X	
.2 states the records maintained should contain <ul style="list-style-type: none"> - actions taken and exercises conducted 			
12 Review and Final Assessment (3 hours) (Practical Exercises)		X	X

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12. OFFICER CERTIFICATION COURSE - C

12.1 COURSE APPROVAL CONDITIONS

⇒ At least 50% of the time in the course will be devoted to practical exercises.

Equipment

⇒the equipment required for this course will include all equipment as stated in section 8.1, section 10.1 and additional equipment as stated below

⇒a simulated arrangement for a fixed fire detection system

⇒audio visual training material for the following:


- heat activated detectors
- smoke detection systems
- flame detectors
- sprinkler systems
- foam systems
- Halon systems
- CO₂ systems
- dry chemical deck/galley systems
- general alarms
- crowd/passenger control
- internal communication equipment
- portable radios
- ELTs
- evacuation systems
- survival craft propulsion systems
- man overboard situations at sea/anchor/in port
- hypothermia

⇒ sufficient printed material for all trainees in classroom instructions on search and rescue

12.2 NUMBER OF TRAINEES IN COURSE

⇒ The number of trainees in a course not to exceed 12 for practical demonstrations and exercises under the supervision of an approved instructor.

⇒ The number of trainees must not exceed 24 for lectures and audio visual instructions under the supervision of the approved main course instructor.

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12.3 COURSE DURATION

⇒ 19 ½ hours


12.4 INSTRUCTOR QUALIFICATIONS

⇒ The main course instructor must hold a certificate of competency not lower than Master Local Voyage or a Second Class Marine Engineer. If the course is under the supervision of more than one instructor, the assistant instructor shall hold qualifications related to the marine industry of shall have related skills and be approved by Transport Canada.

13. COURSE GOALS, OUTLINE AND LEARNING OBJECTIVES


13.1 COURSE GOALS

- ⇒ To provide junior officers and key personnel with the knowledge and skills necessary to enable them to inspect and maintain all emergency equipment in a state of readiness.
- ⇒ To provide junior officers and key personnel with the knowledge and skills necessary to enable them to operate and understand the limitation of a vessel's fixed fire detection and extinguishing installations.
- ⇒ To provide the officer in charge of a bridge or engine room watch with the knowledge and skills necessary to enable him/her to respond to an emergency situation.
- ⇒ To provide the junior officer and key personnel with the knowledge and skills necessary to lead an emergency team.
- ⇒ To provide the junior officer and key personnel with the knowledge and skills necessary to enable them to record salient events during an emergency.
- ⇒ To provide the junior officer and key personnel with the knowledge and skills necessary to enable them to control passengers and personnel other than trained crew members, during an emergency.
- ⇒ To provide junior deck officers with the knowledge and skills necessary to enable them to respond to a distress signal, execute a search, and rescue survivors using the vessel's equipment.
- ⇒ To provide junior deck officers with the skills necessary to enable them to conduct formal on-board training sessions and the on-board familiarization and safety training course as prescribed in SOLAS Chapter 3, Regulation 18, section 4.

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13.2 COURSE OUTLINE

Subject Area	Hours	
	Lecture	Practical
Fixed Fire Detection and Extinguishing Installation	1 hour	3 hours
Inspection and Maintenance of Emergency Equipment	1.5 hours	2 hours
Response of Bridge, Deck and Engine Room Watch Officer to Emergencies	1 hour	
Emergency Response Team Leadership	1 hour	
Firefighting On-Scene Leaders Plan of Attack	1.5 hours	1.5 hours
Incident Recording	.5 hour	.5 hour
Crowd Management	.5 hour	.5 hour
Search and Rescue	1.5 hours	1.5 hours
Communications	.5 hour	.5 hour
Conduct Training Sessions	1 hour	
	10 hours	9.5 hours
TOTAL	19.5 hours	


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13.3 TOPICS AND LEARNING OBJECTIVES


TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<p>1. Fixed Fire Detection and Extinguishing Installations (4 hours)</p> <p>.1 identify fixed fire fighting systems, and areas that the system would protect, list the system's limitations and understand the correct operating procedures of:</p> <ul style="list-style-type: none"> - fire main - water sprinkler - water deluge - water curtain - foam - carbon dioxide - halon - deck dry chemical - galley dry chemical - inert gas - steam smothering <p>.2 explain and demonstrate correct operation for water, halon, dry chemical, foam and CO₂ fixed fire fighting systems relating to:</p> <ul style="list-style-type: none"> - pre-activation check and actions: - activation and injecting the agent into the area protected: - post activation checks and action: 		X	
<p>2. Inspection and Maintenance of Emergency Equipment (3.5 hours)</p> <p>2.1 Fire Alarms</p> <p>.1 states that for the fire alarms and the actuating switches:</p> <ul style="list-style-type: none"> - a plan should be available which shows their positions - a schedule should be prepared that shows dates when surveys, inspections, maintenance and testing should be carried out - a record should be kept of defects found and repairs carried out - the manufacturer's instruction manual should be used as a basis for the schedule referred to above <p>2.2 Fire Detection Equipment</p> <p>.1 states that a scheme similar to that in 2.1 should be prepared and operated</p>	X	X	X



TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
.2 states that additionally, the maintenance schedule should include: – testing the correct operation of each head or probe, as appropriate for: • smoke (ion) detectors • flame detectors (infrared or ultraviolet rays from the flames) • heat detectors (thermal contact) • rate-of-change-of-temperature detector • bursting temperature of sprinkler bulb in a sprinkler system		X	
2.3 Fixed Fire-Extinguishing Equipment			
.1 states that a scheme similar to that in section 2.1 should be prepared and operated for each type of fixed fire extinguishing equipment		X	
.2 states what additional maintenance is required for a sprinkler system		X	
.3 states what additional maintenance is required for a carbon dioxide system and that the maintenance schedule for the carbon dioxide system should also include: – testing the level of liquid gas in the cylinders		X	
.4 states what additional maintenance is required for a halon system		X	
.5 states what additional maintenance is required for a fixed-pressure water-spraying system		X	
.6 states what additional maintenance is required for a foam making system		X	
2.4 Fire Main, Hydrants, Hoses and Nozzles			
.1 states that a scheme similar to that in section 2.1 should be prepared and operated		X	
.2 states what additional maintenance is required for the fire mains, hydrants and nozzles		X	
.3 describes the measures that have to be taken in icy conditions to keep the fire-main system free of ice as being: – shut down the pump and close valves as required – drain all water from the pipes		X	

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> – keep checking that the system is empty of water – put up warning notices on the bridge that the fire main has been drained of water 			
.4 states that the practice of opening one or more hydrant valves does not prevent the system from becoming frozen in icy conditions		X	
2.5 Portable and Mobile Fire Extinguishing Equipment			
.1 states that a scheme similar to that in section 2.1 should be prepared and operated		X	
.2 states that when a portable or mobile fire extinguisher has been discharged, it should be prepared for further use and how		X	
.3 states that neither a partially discharged extinguisher nor an empty one should be placed in its previous position before being refilled	X	X	
2.6 Fireman's Outfits			
.1 states that a schedule similar to that in section 2.1 should be prepared and operated	X		
.2 states what additional maintenance is required for the fireman's outfit			X
2.7 Fire Control Plans			
.1 states that the fire-control plans must be checked periodically to ensure they are legible and up to date		X	
.2 states that the duplicate set of fire-control plans or the booklet containing them, which are for the assistance of shore side fire fighting personnel, are checked to confirm that they are in good condition		X	
.3 checks that the guide signs to the duplicate plans are intact and distinct		X	
2.8 Liferafts			
.1 states that for liferafts: <ul style="list-style-type: none"> – a plan should be available which shows their positions and a regular inspection 	X		

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
of the raft, its stowage and securing / releasing system is carried out			
2.9 Lifejackets, Immersion Suits and Life Buoys			
.1 states that a scheme similar to that in section 2.1 should be prepared and operated	X		
.2 states what additional maintenance is required for lifejackets	X		X
.3 states what additional maintenance is required for immersion suits	X		X
.4 states what additional maintenance is required for lifebuoys and their fittings	X		X
.5 states that the stowage location and signage for lifejackets, immersion suits are accessible, adequate, dry and ventilated	X		X
2.10 Pyrotechnic Distress Signals and Line Throwing Equipment			
.1 states that a scheme similar to that in section 2.1 should be prepared and operated	X		
.2 states what additional maintenance is required for pyrotechnic distress signals and line throwing equipment	X		
2.11 EPIRBs, SARTs and Radio Communications			
.1 states that a scheme similar to that in section 2.1 should be prepared and operated	X		
.2 states what additional maintenance is required for EPIRBs and SARTs	X		X
2.12 Lifeboats			
.1 states that a scheme similar to that in section 2.1 should be prepared and operated	X		
.2 states what additional maintenance is required for lifeboats	X		X
2.13 Survival Craft Launching Systems			
.1 states that a scheme similar to that in section 2.1 should be prepared and	X		X




TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
operated			
.2 states what additional maintenance is required for survival craft launching systems	X		
3. Response of Bridge, Deck and engine Room Watch Officer to Emergencies (1 hour)			
.1 state the initial reactions of the bridge, deck and engine room watch to a specific emergency situation when:		X	
– in port			
– at sea			
– in dry dock			
– lay-up			
– undergoing refit			
.2 states what actions are to be considered during an emergency situation		X	
.3 explain the process of handing over the responsibility to senior officers or responsible parties		X	
.4 brief look out on the response of the bridge or deck watch to a man overboard situation at:	X		
– sea			
– when secured alongside			
– at anchor			
4. Emergency Response Team Leadership (1 hour)			
.1 given information on an emergency situation, assimilate and interpret orders from the Master and assign to the available team members, keeping the Master apprised of the ongoing situation	X		X
– participate in a simulated emergency situation involving various teams and group leaders			
– discuss leadership style			
– discuss the need for concise positive orders			
– leadership by example			
– ensuring a contingency plan is available			
– discuss the role of the emergency response team within the overall orders and objectives set by senior officers			
– discuss the response team’s			

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<p>communications with senior officers</p> <ul style="list-style-type: none"> - follow pre-plan actions for emergency and adjust to meet specific needs - organize equipment and personnel so they are available as required - recognize the value of pre-planning, the use of emergency plans for location reminder, coordination and communication during an emergency 			
<p>5. Firefighting On-Scene Leaders Plan of Attack (3 hours)</p> <p>.1 identify emergency equipment, fire and water tight subdivisions, stairways, ventilation trunking, fire mains, electric cable runs and hazard locations on various ships' plans</p> <p>.2 state uses of ships' plans during emergency situation</p> <p>.3 establish a pre-plan for an attack on a fire in a specific location indicated on the ship's plan. Select the appropriate approach and hydrant, including the provision of sufficient hose for the task, establish a staging area and determine how ventilation can be utilized to advantage. Brief the team and communicate readiness, start and progress of the attack</p> <p>.4 coordinate and control team members and support groups or individuals as required to effect a positive outcome</p> <p>.5 establish boundary cooling and or fire patrols around perimeter of fire area and on ventilation trunking passing through area</p> <p>.6 control electric power in the fire area for protection of fire team, bearing in mind the possibility preference power may also pass through the area</p> <p>.7 fire scenarios to include:</p> <ul style="list-style-type: none"> - cabin fires - engine room fires - boatswain's and or paint locker fires - cargo hold fires on cargo vessels - car deck fires on Ro-Ro vessels - container fires on container vessels - fires on passenger or ferry vessels 	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>		<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - helicopter pad fires involving helicopters - tank deck fires on tankers <p>.8 state importance of a plexiglass covered emergency information set of plan views and elevation of the vessel for use on the bridge during an emergency and for the team leaders to have pocket size plans available for consultation during any emergency</p>		X	
<p>6. Incident Recording (1 hour)</p> <ul style="list-style-type: none"> - States that the recording of relevant information, such as time, situation, progress, decisions, results, communications in a chronological order as they may occur must be kept. This real time record is then used for deck logbook, official logbook entries and for reports and investigation purposes. A chronological record is to be maintained in the engine room as a resource for the engine room logbook. - States that photographic evidence of the situation, with time, angle, scale and other information would be valuable to the investigation. - States that accident investigation by regulatory authorities may be made in specific instances and therefore evidence and if possible, the accident scene must be preserved as much as possible. 	X		
<p>6.1 Fire Investigation and Reporting</p> <p>.1 States what information should be recorded to assist in handling the incident as well as form a log for a report on and an investigation into the incident</p>		X	
<p>.2 states that the report should also contain conclusions from the facts established, including:</p> <ul style="list-style-type: none"> - an analysis and discussion of the facts - the conclusions reached from this analysis and discussion - recommendations on the actions required to avoid a recurrence 		X	

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> – recommendations, if any, to improve fire prevention and fire fighting procedures 			
6.2 Abandonment Investigation and Reporting			
.1 States what information should be recorded to assist in handling the incident as well as form a log for a report on and an investigation into the incident	X		
.2 states that the report should also contain conclusions from the facts established, including: <ul style="list-style-type: none"> – an analysis and discussion of the facts – the conclusions reached from this analysis and discussion – recommendations on the actions required to avoid a recurrence – recommendations, if any, to improve emergency prevention and emergency procedures 		X	
6.3 Search and Rescue Operation a Investigation and Reporting			
.1 States what information should be recorded to assist in handling the incident as well as form a log for a report on and an investigation into the incident	X		
7. Crowd Management (1 hour)			
.1 demonstrate ability to direct passengers and personnel other than trained crew members, during an emergency situation			X
.2 states the need to prevent panic and how to provide control over passengers during an emergency		X	
.3 state how assistance may be obtained from passengers, such as: <ul style="list-style-type: none"> – medical assistance from physicians and or nurses – fire fighters – mariners 		X	
.4 state the methods of forming passengers into groups for movement to survival craft and or to other parts of the vessel and how to maintain the family unit		X	

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
.5 states what information would be given to passengers to prepare them for abandonment and survival phases of an emergency situation		X	
.6 demonstrate how to secure lifejacket and check all lifejackets are secured properly <ul style="list-style-type: none"> - check passengers are wearing the correct size lifejacket - check tie tapes are secured properly 			X
8. Search and Rescue (3 hours)			
.1 states and describes the contents of the MERSAR publication	X		
.2 recognize the following search patterns and state their advantages and limitations in search operations: <ul style="list-style-type: none"> - expanding square - parallel track - sector - ship-aircraft co-ordinated 		X	
.3 define the duties of the: <ul style="list-style-type: none"> - Rescue Coordination Centre (RCC) - On Scene Commander (OSC) 	X	X	
.4 plot and conduct search pattern as directed by Master with information from the On Scene Commander (OSC) or Coordinator Surface Search (C.S.S.) taking account of: <ul style="list-style-type: none"> - set and drift - leeway - sea conditions - size of vessel - navigational considerations and equipment 			X
.5 briefs lookouts and establishes a watch system for those conducting the search		X	
.6 provide the communications link between Master and OSC/CSS to update progress of search	X		
.7 discusses the most effective methods of rescue available on different types and sizes of vessels, such as use of: <ul style="list-style-type: none"> - guest wrap - rescue boat - own lifeboat - vessel's crane(s) or booms 		X	

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - rescue baskets or net - scramble nets - pilot or jacob's ladder - vegetable oil or making a lee - accommodation ladder 			X
.8 organize and lead crew on deck to conduct the rescue on a specific vessel, stating the preferred rescue method, location and listing the equipment required and describe what methods there are for rescuing survivors			
.9 list the type of after rescue care survivors may require, organize and provide the care given different crew and vessel parameters	X		
9. Communications (1 hour)			
.1 demonstrates ability to operate internal communications systems such as telephone and hand-held walkie-talkies, using marine terminology and standard communication procedures.		X	
.2 demonstrates ability to manually activate: <ul style="list-style-type: none"> - class 1 and class 2 EPIRBs - SART 		X	
.3 discuss advantages of different types of internal communications systems and when and how each may be most effective in use		X	
.4 state the need to keep a log of communications and critical incidents as they happen during an emergency situation		X	
10. Conduct Training Sessions (1 hour)			
.1 utilizing STCW Chapter VI, A-VI/1, SOLAS Regulation number 18, Ship Safety Bulletin 6-95 and employer's guide for familiarization training conduct and on-board familiarization training session for new crew members			X
.2 states methods of instruction suitable for on-board familiarization training by: <ul style="list-style-type: none"> - identifying topics or subjects requiring instruction - constructs a lesson plan for delivery of the information required 		X	

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TOPICS AND LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> – select, identify or produce information materials and aids for delivery – compose evaluation questions to determine if learning has taken place – select strategies for delivery of material to meet the education and background of the individuals or class – determine suitable time and duration of training session – provide documentation on training delivered and evaluation 			

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14. SENIOR OFFICER COURSE - D

14.1 COURSE APPROVAL CONDITIONS

- ⇒ The course may be conducted at an approved shore establishment or on a securely moored functional vessel in port.

Equipment

- ⇒ Particulars and plans of various types of vessels.
- ⇒ Copies of C.S.A., National, International and I.M.O. documents.
- ⇒ Various marine casualty investigation reports (National and International)
- ⇒ Access to equipment of a fully operational approved MED establishment or the vessel is essential.

14.2 NUMBER OF TRAINEES IN A COURSE


- ⇒ The number of trainee in a course must not exceed 12.

14.3 COURSE DURATION

- ⇒ 13 hours

14.4 INSTRUCTOR QUALIFICATIONS

- ⇒ The course instructor must hold a certificate of competency not lower than Master Local voyage or a Second Class Engineer.

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15. COURSE GOALS, OUTLINE AND LEARNING OBJECTIVES

15.1 COURSE GOALS


- ⇒ To provide a vessel's senior management with the knowledge and skills necessary to ensure their junior officers, key personnel and emergency response teams are properly prepared and organized to deal with any emergency situation.
- ⇒ To provide a vessel's senior management with the knowledge and skills necessary to assess damage to the vessel and coordinate the response to minimize the effect from damage.
- ⇒ To provide a vessel's senior management with the knowledge and skills necessary to coordinate the vessel's response to an emergency on their own vessel and others in distress.

15.2 COURSE OUTLINE


Subject Area	Hours	
	Lecture	Practical
1. Contingency Plans	0.5 hours	1.5 hours
1.1 formulate muster lists		
1.2 marine Casualty reports		
2. The Orientation and Emergency Training of crew members	1 hour	1 hour
3. Emergency Management	1 hour	1 hour
4. Damage Control	2 hours	1 hour
5. Abandon Ship	1 hour	-
6. Search & Rescue	2 hours	1 hour
	7.5 hours	5.5 hours
TOTAL	13 hours	

15.3 TOPICS AND LEARNIG OBJECTIVES

TOPICS & LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
1. Contingency Plans (2 hours)			
1.1 formulate an emergency muster list, emergency procedures guide and a contingency plan for a given vessel in response to various types of emergencies when: - at sea - in port - during refit	X		X
1.2 using marine casualty reports, discuss the response of ships crew to emergencies and the effect of their action.			X
2. The Orientation and Emergency Training of crew members (2 hours)			
2.1 discuss the statutory requirements for boat and fire drills	X	X	
2.2 list the type of emergencies that may be encountered	X		X
2.3 discuss the requirements for drills and training of crew to meet needs of emergencies in 2.2	X	X	
2.4 discuss the planning, preparation and conduct of formal and informal training sessions		X	
2.5 discuss the planning, management and conduct of emergency drills including universal drills, emergency squad and team drills		X	


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TOPICS & LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
2.6 plan, prepare, manage and conduct training drills for a given vessel in the following anticipated emergencies: ⇒ fire ⇒ collision ⇒ structural failure ⇒ grounding ⇒ foundering			X
3. Emergency Management (2 hours)	X	X	
3.1 discuss the management of the emergency response and the senior officer's responsibility and duties during an emergency			
3.2 discuss the decision making process and supply of adequate information		X	
3.3 discuss the dangers of decision making based on inadequate information		X	
3.4 discuss internal communications on board a vessel		X	
3.5 conduct a simulated communications exercise using correct procedures, language and methods			X
3.6 assess an emergency situation, organise a response and manage the response			X
3.7 discuss case studies of marine emergencies to highlight leadership styles (see 1.2)	X	X	X

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TOPICS & LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
4. Damage Control (3 hours)			
4.1 assess damage and its effects on vessels seaworthiness			
.1 know the SOLAS requirements for stability and subdivisions	X		
.2 discuss permeability and use of stability data to assess damage on a vessels seaworthiness	X	X	
.3 discuss pressure points on bulkheads in flooded compartments	X	X	
.4 discuss flooding rates from damage and fire fighting water			
.5 knowledge of effects of excess water (free surface effects) pumping and drainage of excess water	X		
4.2 assess the feasibility of damage control and emergency response plan			
.1 discuss the theory of damage control to minimize the effects of damage and preserve a vessel's sea-worthiness under the following situations: - pressurizing tanks, double bottoms, cofferdams; - shoring hatches, bulk-heads;			

TOPICS & LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
<ul style="list-style-type: none"> - cement boxes, collision mats; - jury rigs; - engineroom leaks 			
.2 discuss the feasibility of damage control			
.3 discuss methods of reducing or preventing oil pollution due to a damaged hull			
4.3 assess effects on vessels stability of large quantities of water including fire fighting water			
.1 understand the flow rate of water from fire fighting equipment such as: <ul style="list-style-type: none"> ⇒ sprinkler systems ⇒ deluge systems ⇒ water containers ⇒ hoses and nozzles 	X	X	
.2 calculate the effect of fire fighting water on the vessels stability given data for separate decks with reference to: <ul style="list-style-type: none"> ⇒ shift of the centre of gravity ⇒ reduction in ability to remain in the upright position (G.Z.) ⇒ list ⇒ angle of down flooding ⇒ effects on vessels stability by free surface of water 			X

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TOPICS & LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
5. Abandon Ship Decision (1 hour)			
5.1 assess on emergency situation and make a decision to: ⇒ stay with the vessel ⇒ partial abandonment of the vessel		X	
.1 discuss emergency conditions which would make abandonment a consideration		X	
.2 discuss conditions and reasons to delay abandonment or only partially abandon a vessel		X	
.3 discuss methods of abandonment and their relative advantages and disadvantages	X	X	
.4 discuss command and control required and the communications necessary for: ⇒ delayed abandonment of a vessel ⇒ partial abandonment of a vessel ⇒ total abandonment of a vessel		X	
6. Search & Rescue (3 hours)			
6.1 explain the search & rescue organisations, agencies and their functions, areas of responsibility, geographic areas of operation and equipment available	X	X	

TOPICS & LEARNING OBJECTIVES	Compliance through		
	Knowledge	Viva-Voce	Application
.1 discuss researched rescue in Canadian and adjacent waters as outlined in the Canadian Shipping Act and the Annual Notice to Mariners with reference to: ⇒ rescue coordination centres ⇒ marine rescue sub centres ⇒ geographic division and SAR responsibilities ⇒ master of a Canadian vessel's responsibilities and obligations			
.2 discuss the role of the AMVER system			
.3 discuss the role of GMDSS	X	X	
.4 discuss the resources available for SAR in Canadian and adjacent waters ⇒ vessels ⇒ aircraft ⇒ associated equipment	X	X	
6.2 coordinate a search and rescue operation			X
.1 explain the role of the "on scene coordinator" with reference to MERSAR and CANMERSAR	X	X	
.2 discuss with reference to MERSAR and CANMERSAR, the role of a vessels Master in planning and conducting a search and rescue	X	X	
.3 discuss the ship handling required and rendering of assistance to other vessels and survivors relevant to weather conditions, survival equipment and vessel types		X	