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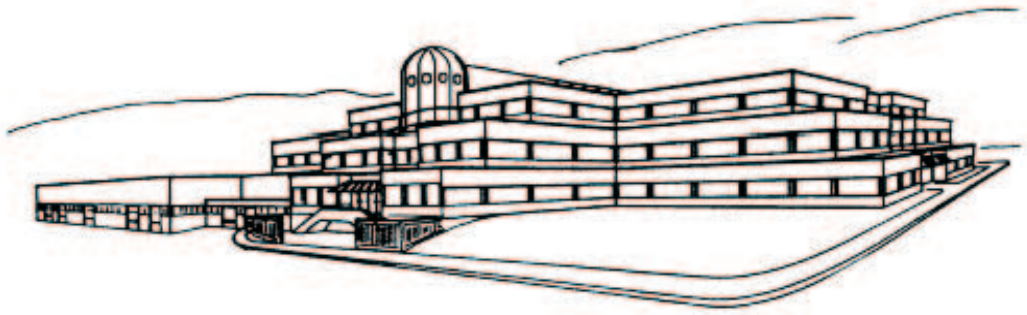

MARINE INSTITUTE

School of Maritime Studies

Offshore Safety and Survival Centre

Basic Survival Training

The Fisheries and Marine Institute
of
Memorial University of Newfoundland

School of Maritime Studies

Offshore Safety and Survival Centre

Basic Survival Training

March 1995
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P.O. Box 4920, St. John's, Newfoundland and Labrador
Canada, A1C 5R3

(709) 778 - 0200

BASIC SURVIVAL TRAINING

TYPE AND PURPOSE: This is a basic course designed to provide personnel with an understanding of the hazards associated with working in an offshore environment, the knowledge and skills necessary to react effectively to offshore emergencies and to care for themselves and assist others in a survival situation.

CALENDAR ENTRY: Hazards, Emergencies and Safety; Emergency Preparedness and Response; Firefighting; Personal Buoyancy Apparatus; Personnel Transfer Devices; Evacuation; Survival Craft and Launching Systems; Launching Systems; Survival; Signalling Devices; Search and Rescue; and Helicopter Safety and Emergency Procedures

CERTIFICATE AWARDED: Certificate of Achievement

PREREQUISITES: Marine Institute approved medical clearance

SCHEDULE:

Duration:	40 hours (5 days)
Theory:	17.5 hours
Practical:	22.5 hours

CLASS SIZE: Maximum: 12

RENEWAL: Valid for three (3) years

EVALUATION: To achieve Pass status participants must:

- Have 100% attendance.
- Demonstrate competency to complete exercises as identified in the practical evaluation checklists.
- Achieve at least 60% on a written examination.

COURSE AIMS:

1) To give students a basic understanding of the hazards associated with the marine environment, offshore petroleum installations, and helicopters.
2) To provide students with the knowledge necessary to react to alarms and emergencies on board offshore petroleum installations and helicopters.
3) To provide students with the knowledge and skills required to assist in emergency, survival, and rescue scenarios.

MAJOR TOPICS:

1.0 Hazards, Emergencies and Safety

2.0 Emergency Preparedness and Response

3.0 Firefighting

4.0 Personnel Buoyancy Apparatus

5.0 Personal Transfer Devices

6.0 Evacuation

7.0 Survival Craft and Launching Systems

8.0 Survival

9.0 Signaling Devices

10.0 Search and Rescue

11.0 Helicopter Safety and Emergency Procedures

COURSE OUTLINE:

1.0 Hazards, Emergencies and Safety

- 1.1 Hazards
- 1.2 Emergencies
- 1.3 Safety

2.0 Emergency Preparedness and Response

- 2.1 Emergency Preparedness
- 2.2 Response to Emergencies

3.0 Firefighting

- 3.1 Fire Theory
- 3.2 Fire Classes
- 3.3 Control of Fire
- 3.4 Self-contained Breathing Apparatus (SCBA)
- 3.5 Fire Prevention
- 3.6 Smoke Hoods

4.0 Personnel Buoyancy Apparatus

- 4.1 Types and Application
- 4.2 Requirements
- 4.3 Components
- 4.4 Procedures

5.0 Personal Transfer Devices

- 5.1 General
- 5.2 Hazards
- 5.3 Procedures

6.0 Evacuation

- 6.1 Circumstances
- 6.2 Methods
- 6.3 Procedures

7.0 Survival Craft and Launching Systems

- 7.1 General
- 7.2 Lifeboats
- 7.3 Life Rafts
- 7.4 Launching Systems

8.0 Survival

- 8.1 Factors
- 8.2 Enemies
- 8.3 Strategies

9.0 Signalling Devices

- 9.1 Types
- 9.2 Applications
- 9.3 Procedures

10.0 Search and Rescue

- 10.1 Facilities and Organization
- 10.2 Equipment
- 10.3 Procedures

11.0 Helicopter Safety and Emergency Procedures

- 11.1 Flight Preparations
- 11.2 Helicopter Safety
- 11.3 In-Flight Emergencies
- 11.4 Compressed Air Helicopter Underwater Emergency Breathing Apparatus (HUEBA)
- 11.5 Helicopter Underwater Escape Training (HUET)

LEARNING OBJECTIVES:

THE EXPECTED LEARNING OUTCOME IS THAT THE STUDENTS WILL BE ABLE TO:

1.0 Hazards, Emergencies and Safety

1.1 Hazards

- Define a hazard.
- List the hazards to offshore petroleum installations.
- List the hazards to personnel on board offshore petroleum installations.
- Relate how hazard levels impact upon accident rates.

1.2 Emergencies

- Define an emergency.
- Describe the relationship between hazard and emergencies on board offshore petroleum installations.
- List and discuss the types of emergencies that happen most frequently to offshore petroleum installations.
- List and discuss the types of emergencies that happen most frequently to personnel on board offshore petroleum installations.
- Discuss the methods of reducing accident rates on board offshore petroleum installations.

1.3 Safety

- Identify the groups responsible for safety on board offshore petroleum installations.
- Differentiate each group's responsibility in maintaining a safe working environment on board offshore petroleum installations.
- List the personal safety equipment required on board offshore petroleum installations.
- Summarize the importance of adhering to established safety rules and procedures on board offshore petroleum installations.
- Explain the recognized process for modifying existing safety rules and procedures on board offshore petroleum installations.
- Outline the methods of promoting accident prevention on board offshore petroleum installations.

2.0 Emergency Preparedness and Response

2.1 Emergency Preparedness

- Explain the orientation / familiarization process for new personnel to the offshore petroleum installation.
- Explain the purpose of a Muster List / Station Bill.
- Summarize the content of a Muster List / Station Bill.
- Explain where Muster Lists / Station Bills are required to be posted.
- Discuss the need for crew preparation and training for offshore petroleum installations.
- Compare the different methods of offshore petroleum installation crew preparation and training.

2.2 Response to Emergencies

- Indicate how personnel aboard an offshore petroleum installation should conduct themselves at emergency stations.
- Discuss correct personal conduct at offshore petroleum installation emergency stations.
- Describe the actions and procedures to follow upon hearing emergency alarms.
- React to alarms during simulated emergency exercises.

3.0 Firefighting

3.1 Fire Theory

- Define the following fire science terminology; fire, fire tetrahedron, flash point, ignition temperature, auto-ignition, spontaneous combustion, fuel, rates of combustion, smoke, flammable range, explosion/fire, products of combustion, extinguish and extinguishing principles.

3.2 Fire Classes

- Name the classes of fire.
- Identify the graphic symbol and its color for each fire class.
- Give examples of each fire class.

3.3 Control of Fire

- Explain the principles of extinguishing fire.
- Name the different methods of extinguishing fire.
- Describe the types of portable extinguishers required on board offshore petroleum installations.
- Explain the limitations of portable extinguishers.
- Relate fire extinguisher ratings to practical applications.
- Demonstrate the operating procedures for various portable extinguishers.
- Prepare hoses and nozzles for firefighting use.
- Describe the water patterns that can be applied to a fire.
- Select the correct water patterns used to extinguish particular types of fires.
- Discuss fire control techniques.
- Perform fire control techniques.

3.4 Self-Contained Breathing Apparatus (SCBA)

- Describe the purpose of a SCBA.
- Describe the operating principles of SCBA.
- Identify the factors limiting the use of SCBA.
- Define “pressure demand” as it relates to a SCBA.
- Describe the function of the main components of a SCBA.
- Practice pre-donning checks for a SCBA.
- Perform donning and doffing procedures for a SCBA.
- Practice functional checks on a SCBA.
- Describe the procedures for dealing with SCBA malfunctions.
- Demonstrate the disassembly and assembly of a SCBA.
- Operate a SCBA in restricted visibility following the prescribed procedures.

3.5 Fire Prevention

- Diagnose the common causes of fire.
- Outline fire prevention measures.
- State the responsibilities of offshore petroleum installation personnel in relation to fire prevention.

3.6 Smoke Hoods

- Describe the purpose of smoke hoods.
- Identify the limitations of smoke hoods
- Perform pre use inspections of smoke hoods.

- Practice donning a smoke hood.
- Use a smoke hood in a simulated escape exercise.

4.0 Personal Buoyancy Apparatus

4.1 Types and Application

- List the personal buoyancy apparatus required by the appropriate authorities to be carried on board offshore petroleum installations and to be worn by passengers during over-water helicopter flights.
- Outline the purpose and functions of personal buoyancy apparatus.
- Describe situations where personal buoyancy apparatus are designed to be used.
- State the limitations of personal buoyancy apparatus.

4.2 Requirements

- Summarize the basic requirements of personal buoyancy apparatus.
- Compare the effectiveness of the different personal buoyancy apparatus.
- State the quantity of each personal buoyancy apparatus required to be on board offshore petroleum installations.
- Explain where the personal buoyancy apparatus is stored on board offshore petroleum installations.

4.3 Components

- Differentiate the main components of the personal buoyancy apparatus.
- Explain the function of the main components of various personal buoyancy apparatus.
- Identify the ancillary components of each type of personal buoyancy apparatus.
- Explain the function of the ancillary components in each type of personal buoyancy apparatus.

4.4 Procedures

- Demonstrate the correct pre and post checks for each type of personal buoyancy apparatus.
- Perform the correct donning and doffing procedures for each type of personal buoyancy apparatus.
- Manoeuvre in and out of the water wearing a personal buoyancy apparatus.
- Operate emergency response equipment wearing a personal buoyancy apparatus.
- Appraise the on board storage placement and arrangements for personal buoyancy apparatus.

5.0 Personnel Transfer Devices

5.1 General

- Discuss situations when personal transfer devices may be utilized.
- Identify various personal transfer devices utilized in the offshore industry.
- Identify components of various personnel transfer devices used in offshore industry.

5.2 Hazards

- Identify potential hazards associated with using personnel transfer devices.
- Discuss the importance of body position and transfer device stability.
- Identify personal protective equipment to be worn during personnel transfer.

5.3 Procedures

- Explain proper procedures for loading and unloading personnel and equipment in personal transfer devices.
- Demonstrate proper procedures for loading and unloading personnel and equipment in personal transfer devices.
- Participate in personnel transfer exercise.

6.0 Evacuation

6.1 Circumstances

- Analyze the circumstances that may lead to an offshore petroleum installation being evacuated.
- Categorize the evacuations.

6.2 Methods

- Determine the methods and associated equipment for evacuating offshore petroleum installations.
- Evaluate the hazard levels for the different evacuation methods used on board offshore petroleum installations.
- Prioritize the evacuation methods for specified circumstances.

6.3 Procedures

- Perform offshore petroleum installation pre-evacuation checks.
- Demonstrate the precautions and procedures for evacuating when using equipment located on board offshore petroleum installations.
- Participate, as a crewmember, in the evacuation of an offshore petroleum installation by any means.
- Perform post-evacuation procedures for the various evacuation methods.

7.0 Survival Craft and Launching Systems

7.1 General

- Define a survival craft.
- Discuss the regulations governing the carriage of survival craft on offshore petroleum installations.
- List the types of survival craft required aboard offshore petroleum installations.
- Compare the various survival craft found on board offshore petroleum installations.
- State the advantages and limitations of each type of survival craft.

7.2 Lifeboats

- Discuss the general requirements of totally enclosed lifeboats.
- Describe the construction, characteristics, components and markings of a totally enclosed lifeboat.
- Identify the special components of a TEMPSC.
- Name the required ancillary equipment carried in lifeboats.
- Demonstrate the correct use of the ancillary equipment carried in lifeboats.
- Conduct pre and post launch checks on a lifeboat.
- Discuss the procedures for boarding a lifeboat.
- Safely board a lifeboat and prepare for launching.

7.3 Life Rafts

- Describe the stowage requirements of life rafts onboard offshore petroleum installations.
- Describe the construction, characteristics, components and markings of marine inflatable life rafts.
- Discuss the function of each of the main components of a life raft.
- Identify the differences between throw over and davit launched life rafts.
- List the items of ancillary equipment normally found in a life raft.
- Demonstrate the correct use of the ancillary equipment carried in life rafts.
- State the actions to prepare a life raft for boarding.
- State the inflation methods for life rafts.
- Demonstrate the techniques for wet and dry boarding of a life raft.
- Demonstrate the techniques for righting a capsized life raft.
- Carry out immediate actions following a launch of a life raft.
- Discuss the survival instructions following the launching of a life raft.
- Participate in practical survival exercises using marine inflatable life rafts.

7.4 Launching Systems

- Categorize the common survival craft launching systems found on board offshore petroleum installations.
- Explain the principles of the common offshore petroleum installation survival craft launching systems.
- List the major components of the common offshore petroleum installation survival craft launching systems.
- Perform pre-launch checks for an offshore petroleum installation survival craft.
- Observe the operation of the launching system during the launch of an offshore petroleum installation survival craft.
- Participate in the launching of various survival craft.

8.0 Survival

8.1 Factors

- List the physical and environmental factors affecting survival in a temperate climate.
- Compare the effects of the physical and environmental factors of survival in a temperate climate.

8.2 Enemies

- List the prominent physiological and psychological enemies of survival in temperate climates.
- Describe the effect physiological and psychological enemies will have on personnel in survival scenarios.
- Identify the physiological and psychological enemies by their signs and symptoms.
- Practice minimizing the effects of the physiological and psychological enemies during open water survival scenarios.

8.3 Strategies

- Define a survival plan.
- Discuss short and long term survival strategies for offshore petroleum installations.
- Discuss the importance of leadership and team effort in survival scenarios.
- Apply leadership and team effort concepts in open water survival scenarios.
- Perform essential tasks during simulated survival scenarios.
- Outline how priorities are given to essential tasks during simulated survival scenarios.

9.0 Signalling Devices

9.1 Types

- Define a signalling device.
- Categorize signalling devices into three group types.
- List the signalling devices required on board offshore petroleum installations and associated survival craft.

9.2 Applications

- Describe the limitations of signalling devices.
- Compare the effectiveness of the different signalling devices.

9.3 Procedures

- Determine the procedures for attaining maximum efficiency from signalling devices.
- Activate signalling devices following the precautions and operating procedures prescribed.

10.0 Search and Rescue

10.1 Facilities and Organization

- Examine government and company responsibilities for rescue facilities and organization.

10.2 Equipment

- Describe the applications for the various rescue equipment carried on board SAR helicopter and standby vessels.

10.3 Procedures

- Prepare various survival craft and their crew for rescue.
- Examine the importance of correctly wearing personal protective clothing during rescue operations.
- Examine the importance of establishing communications with the rescuers.
- Use the various pieces of rescue equipment carried on board SAR helicopter and standby vessels.
- Participate in simulated rescue operations following prescribed precautions and procedures.
- Practice self rescue during simulated rescue operations.
- Demonstrate self rescue by any means.

11.0 Helicopter Safety and Emergency Procedures

11.1 Flight Preparations

- Discuss the personal preparations to be conducted prior to arrival at a heliport.
- Describe heliport check-in and helicopter pre-boarding procedures.
- Examine the characteristics of the helicopter passenger transportation suit systems to be worn by passengers during over-water helicopter flights.
- Discuss pre-flight inspection procedures for HUEBA.
- Demonstrate the correct pre and post checks for the flight suit.
- Demonstrate pre-flight checks on HUEBA.
- Perform the correct donning and doffing procedures for the flight suit.
- Demonstrate donning a transit type survival suit with HUEBA equipment.

11.2 Helicopter Safety

- Identify the danger zones for passengers approaching a helicopter.
- Explain the precautions to be taken when approaching a helicopter's danger zones.

- Discuss the recommended personal conduct during a helicopter flight.
- List the safety equipment carried aboard helicopters.
- Use the safety card to identify and locate emergency exits.
- Discuss the purpose and proper use of helicopter safety equipment.

11.3 In-flight Emergencies

- Categorize helicopter in-flight emergencies.
- Analyze helicopter in-flight emergencies.
- Name the three phases of helicopter in-flight emergencies.
- Identify escape routes from the helicopter.

11.4 Compressed Air Helicopter Underwater Emergency Breathing System (HUEBA)

- Discuss the need for HUEBA.
- Identify time required to egress a capsized helicopter.
- Examine factors affecting individual breath-hold time.
- Discuss egress time versus breath-hold time.
- Examine Boyles Law and the relationship between pressure and volume.
- Discuss the direct effects of pressure on the human body.
- Describe the mechanism of lung over-pressurization.
- Identify the cause, treatment and prevention of; arterial gas embolism, mediastinal emphysema, subcutaneous emphysema, pneumothorax.
- Describe the purpose of HUEBA.
- Identify the two major types of HUEBA.
- Identify the main components of HUEBA.
- Describe the function of the main components of HUEBA.
- Identify the limitations of HUEBA.
- Describe the operating principles of HUEBA.
- Describe procedure for deploying HUEBA.
- Describe HUEBA clearing procedures.
- Identify importance of breathing normally and never holding your breath.
- Identify HUEBA malfunctions including; free flow and flooded.
- Describe actions to take in the event of a malfunction.
- Practice carrying out breathing actions using HUEBA equipment at atmospheric pressure in dry conditions.
- Demonstrate deployment and operation of HUEBA equipment in a shallow water environment (less than 1 meter).
- Demonstrate breathing actions in a shallow water environment (less than 1 meter) including; breathe underwater using HUEBA, deploy and clear HUEBA while underwater, breathe while inverted underwater using HUEBA, deploy and clear HUEBA while inverted underwater.

11.5 Helicopter Underwater Escape Training (HUET)

- Participate in an introductory safety briefing.
- Respond to alarm phase of a simulated emergency.
- Open emergency exits at an appropriate time
- Use emergency exits at an appropriate time.
- Participate, as a passenger, in simulated in-flight emergencies.
- Exit the HUET on the surface of the water.
- Exit the HUET when partially submerged.
- Exit the HUET when capsized.
- Launch a helicopter life raft.
- Use the helicopter life raft in a simulated survival situation.

SUMMARY OF PRACTICAL LEARNING OBJECTIVES:

2.0 Emergency Preparedness and Response

2.1 React to alarms during simulated emergency exercises.

3.0 Firefighting

3.1 Demonstrate the operating procedures for various portable extinguishers.

3.2 Prepare hoses and nozzles for firefighting use.

3.3 Perform fire control techniques.

3.4 Practice pre-donning checks for a SCBA.

3.5 Perform donning and doffing procedures for a SCBA.

3.6 Practice functional checks on a SCBA.

3.7 Demonstrate the disassembly and assembly of a SCBA.

3.8 Operate a SCBA in restricted visibility following the prescribed procedures.

3.9 Perform pre use inspections of smoke hoods.

3.10 Practice donning a smoke hood.

3.11 Use a smoke hood in a simulated escape exercise.

4.0 Personal Buoyancy Apparatus

4.1 Demonstrate the correct pre and post checks for each type of personal buoyancy apparatus.

4.2 Perform the correct donning and doffing procedures for each type of personal buoyancy apparatus.

4.3 Manoeuvre in and out of the water wearing a personal buoyancy apparatus.

4.4 Operate emergency response equipment wearing a personal buoyancy apparatus.

5.0 Personnel Transfer Devices

5.1 Demonstrate proper procedures for loading and unloading personnel and equipment in personal transfer devices.

5.2 Participate in personnel transfer exercise.

6.0 Evacuation

6.1 Perform offshore petroleum installation pre-evacuation checks.

6.2 Demonstrate the precautions and procedures for evacuating when using equipment located on board offshore petroleum installations.

6.3 Participate, as a crewmember, in the evacuation of an offshore petroleum installation by any means.

6.4 Perform post-evacuation procedures for the various evacuation methods.

7.0 Survival Craft and Launching Systems

7.1 Demonstrate the correct use of the ancillary equipment carried in lifeboats.

7.2 Conduct pre and post launch checks on a lifeboat.

7.3 Safely board a lifeboat and prepare for launching.

7.4 Demonstrate the correct use of the ancillary equipment carried in life rafts.

7.5 Demonstrate the techniques for wet and dry boarding of a life raft.

7.6 Demonstrate the techniques for righting a capsized life raft.

7.7 Carry out immediate actions following a launch of a life raft.

7.8 Participate in practical survival exercises using marine inflatable life rafts.

7.9 Perform pre-launch checks for an offshore petroleum installation survival craft.

7.10 Observe the operation of the launching system during the launch of an offshore petroleum installation survival craft.

7.11 Participate in the launching of various survival craft.

8.0 Survival

8.1 Practice minimizing the effects of the physiological and psychological enemies during open water survival scenarios.

8.2 Apply leadership and team effort concepts in open water survival scenarios.

8.3 Perform essential tasks during simulated survival scenarios.

9.0 Signalling Devices

9.1 Activate signalling devices following the precautions and operating procedures prescribed.

10.0 Search and Rescue

10.1 Prepare various survival craft and their crew for rescue.

10.2 Use the various pieces of rescue equipment carried on board SAR helicopter and standby vessels.

10.3 Participate in simulated rescue operations following prescribed precautions and procedures.

10.4 Practice self rescue during simulated rescue operations.

10.5 Demonstrate self rescue by any means.

11.0 Helicopter Safety and Emergency Procedures

11.1 Demonstrate the correct pre and post checks for the flight suit.

11.2 Demonstrate pre-flight checks on HUEBA.

11.3 Perform the correct donning and doffing procedures for the flight suit

11.4 Demonstrate donning a transit type survival suit with HUEBA equipment.

11.5 Use the safety card to identify and locate emergency exits.

11.6 Practice carrying out breathing actions using HUEBA equipment at atmospheric pressure in dry conditions.

11.7 Demonstrate deployment and operation of HUEBA equipment in a shallow water environment (less than 1 meter).

11.8 Demonstrate breathing actions in a shallow water environment (less than 1 meter) including; breathe underwater using HUEBA, deploy and clear HUEBA while underwater, breathe while inverted underwater using HUEBA, deploy and clear HUEBA while inverted underwater.

11.9 Participate in an introductory safety briefing.

11.10 Respond to alarm phase of a simulated emergency.

11.11 Open emergency exits at an appropriate time.

11.12 Use emergency exits at an appropriate time.

11.13 Participate, as a passenger, in simulated in-flight emergencies.

11.14 Exit the HUET on the surface of the water.

11.15 Exit the HUET when partially submerged.

11.16 Exit the HUET when capsized.

11.17 Launch a helicopter life raft.

11.18 Use the helicopter life raft in a simulated survival situation.