



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF TRANSPORTATION



MARITIME INDUSTRY AUTHORITY

MARINA Training Standard for

REFRESHER COURSE ON ADVANCED FIRE FIGHTING

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ISO 9001:2008

BUREAU VERITAS
Certification
STCW & SIRE



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ACKNOWLEDGEMENTS

Maritime Industry Authority through STCW Office – Research and Development Division wishes to express its sincere appreciation to New Simulator Center of the Philippines Inc. for the valuable assistance and cooperation in the development of this training standard.

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Part A

Course Framework

■ Scope

This **Refresher Course on Advanced Fire Fighting** aims to meet the requirement in paragraph 5 of Section A-VI/3 of the STCW Code which states that “seafarers qualified in accordance with paragraph 4 in advance fire-fighting shall be required, every five years, to provide evidence of having maintained the required standard of competence to undertake the tasks, duties and responsibilities listed in column 1 of Table A-VI/3.”

This course requires a total of 10 instructional hours to cover the subject areas enumerated in Part B - Course Outline.

■ Training Outcomes

Upon completion of this training course, the trainee shall fulfill the requirements in Section A-VI/3 paragraph 5 and 6 of the STCW Code.

Upon successful completion of this course, seafarers must be able to:

- control fire-fighting operations aboard ships;
- organize and train fire parties;
- inspect and service fire detection and fire extinguishing systems and equipment; and
- investigate and compile reports on fire incidents.

■ Entry Standards

Seafarers who shall undergo the Refresher Course on Advanced Fire Fighting must be a holder of a Certificate of Proficiency (COP) in AFF and have proof of approved seagoing service, performing functions appropriate to the certificate held, for a period of at least twelve (12) months in total during the preceding five (5) years or three (3) months in total during the preceding six (6) months immediately prior to revalidating.

They must be medically fit to enable them to participate in all aspects of the training particularly the practical exercises.

■ Course Certificate

On successful completion of the training and course assessment, a Certificate of Completion shall be issued as evidence of having demonstrated the specific abilities enumerated in the Training Outcomes as specified in Section A-VI/3 in paragraph 5 of the STCW Convention, 1978, as amended.

■ Course Intake Limitation

The number of trainees shall not exceed 24 per class. Practical training exercises should be conducted in four (4) sub-groups subject to adequate supervision of an instructor and two (2) assistant instructors.

■ Staff Requirements

The course shall have an Instructor, an Assessor and a Supervisor accredited by the Administration with the following qualifications:

Instructor:

- holder of a valid Certificate of Competency (COC) at the Management Level;
- holder of a valid Certificate of Proficiency (COP) in AFF;
- have not less than six (6) months of seagoing service in the Management Level; and
- holder of a Certificate of Completion in Training Course for Instructors (IMO Model Course 6.09).

Assessors: The assigned assessor must possess the same qualifications of the Instructor and in addition, must have a Certificate of Completion in the training course Assessment, Examination and Certification of Seafarers (IMO Model Course 3.12).

Supervisor: The assigned supervisor of this training course should be a holder of a valid Certificate of Accreditation as supervisor issued by the Administration.

■ Course Assessment

In determining the achievement of required competence in Column 1 of Table A-VI/3, the assigned assessor shall be guided by the criteria for evaluating competence in Column 4, the Intended Learning Outcomes stipulated in the Course Syllabus and the assessment tasks enumerated in the Assessment Plan.

■ Teaching Facilities and Equipment

For the theoretical part of the course, lectures and demonstrations shall be held in a classroom with set of functional audio visual equipment. A classroom of 42 square meters with no side less than 5 meters shall be required for a maximum intake of 24 trainees.

For the conduct of practical exercises, the following training facilities and equipment shall be available:

| Items | Quantity |
|---|------------|
| Facilities: | |
| <ul style="list-style-type: none"> Building with at least 2 levels for smoke and fire drills or a similar facility (Each level should measure at least approximately 7m X 3m X 2m). The different rooms should be designed as follows: <ul style="list-style-type: none"> - Cabin - Corridor - Open room - Electric switchboard room - Engine room with steel grating floor - IMO-approved luminous signs for escape routes | 1 building |
| <ul style="list-style-type: none"> Shower room for male and female | 1 each |
| <ul style="list-style-type: none"> Changing room for male and female | 1 each |
| <ul style="list-style-type: none"> Demonstration table measuring at least 3m x 1m | 1 pc |
| <ul style="list-style-type: none"> Recharging area | 1 area |
| <ul style="list-style-type: none"> Three-sided brick fire trays for oil fire extinguishing exercises | 1 pc |
| <ul style="list-style-type: none"> Steel fire trays approximately 1m x 1m x 0.3m | 1 pc |
| Equipment: | |
| <ul style="list-style-type: none"> Fire-fighting equipment (including equipment for recharging) | |
| <ul style="list-style-type: none"> - Fire hoses (65mm diameter) | 6 pcs |
| <ul style="list-style-type: none"> - Fire hoses (38mm diameter) | 3 pcs |
| <ul style="list-style-type: none"> - 9-liter water extinguishers | 6 pcs |

| Items | Quantity |
|--|----------|
| - 9-liter foam extinguishers | 6 pcs |
| - 5-kilogram carbon dioxide extinguishers | 6 pcs |
| - 10-kilogram dry power extinguishers | 10 pcs |
| - Refills for each type of extinguishers | 4 pc |
| • Large supply of carbonaceous and hydrocarbon fuels (carbon, diesel and lubricating oils) for the fire trays – sufficient to the number of the trainees vis-à-vis to the frequency of conduct | 1 set |
| • Fire hydrants with 2 outlets each connected to a fire pump | 2 pcs |
| • Foam branches | 2 pcs |
| • Branch pipes | 3 pcs |
| • Fire nozzles (2 standard, 2 diffuser and 2 jet spray) | 6 pcs |
| • Foam generators with foam supply | 1 pc |
| • Mechanical foam branch | 2 pcs |
| • High expansion foam generator and foam compound | 1 pc |
| • Standpipe, keys and bars to operate hydrant supply | 2 pcs |
| • Approved sets of protective clothing, overall, gloves, fire boots, helmets with hood/visor and neck protector and rainproof clothing | 30 sets |
| • Fire alarm systems | |
| • Sets of self-contained breathing apparatus, complete with spare cylinders, spare parts and maintenance tools | 25 sets |
| • safety lines (30 metres long) with snaphooks | 1 set |
| • two-way handheld radio | 4 units |
| • Fireman's outfit | 4 sets |

■ Teaching Aids (A)

- A1 Visual presentations
- A2 Pictures/Diagrams:
 - Fire detection and alarm system
 - Fixed fire-extinguishing system
 - Portable and mobile fire extinguishing equipment
 - Emergency towing arrangement
 - The effect of water on ship's stability
- A3 Specimen muster list and contingency plan as per IMO Resolution A. 1072 (28)
- A4 Exercise Sheets

■ IMO and Other International References (R)

- R1 International Convention on Standards of Training, Certification and Watch keeping (STCW) for Seafarers 1978, as amended.
- R2 International Convention for the Safety of Life at Sea (SOLAS), as amended
- R3 IMO Resolution A. 1072 (28) Revised guidelines for structure of an integrated system of contingency planning for shipboard emergencies
- R4 IMO Model Course 2.03 on Advanced Training in Fire Fighting (latest edition)
- R5 Assembly Resolution A.602 (15) – Revised Guidelines for Marine Portable Fire Extinguishers.
- R6 IMDG Code Volume 1, 2 and supplement
- R7 MSC. 1/ Circ. 1614 Amendments to the Revised guidelines for the maintenance & inspection of fire protection systems and appliances
- R8 MSC Res. A.849 (20) Code for the Investigation of Marine Casualty and Accidents
- R9 MSC-MEPC.3/Circ.3, Annex 6 – IMO Fire Casualty Incident Report (Fire Casualty Record)
- R10 International Code for Fire safety System (FSS code) 2015 Edition

Note: MTIs may use additional references as deemed necessary to meet the intended learning outcomes of this training course.

■ Bibliography (B)

The MTI shall provide at least two (2) titles of bibliography of the latest edition for this course to facilitate learning. Below are examples of titles that MTI may choose from although other titles aside from the examples may be used as long as they met the intended learning outcomes of specified topics.

- B1 Cooke, P.C. and Stone, D.J..*Transactions - The Institute of Marine Engineers: Analogue Addressable Fire Detection Systems and Marine Applications*. The Institute of Marine Engineers, Birdcage Walk, London.
- B2 Iwamoto, M., Narisawa T. & Uotani, A. *Review of Engine Room Fires and Guide to Fire Prevention*. ClassNK Tech Bulletin, Nippon Kaiji Kyokai.
- B3 Marine Accident Investigation Branch. *Safety Digest*, Department for the Environment, Transport and the Regions. (DETR), UK Government, (latest edition).
- B4 MNTB (2015). *Fire Courses Criteria*. Witherby Seamanship International, Livingston West Lothian, United Kingdom.

Part B

Course Outline

| Subject Area | Time Allotment (in hours) | |
|---|------------------------------|----------------------------------|
| | Theoretical | Demonstration/ Practical Work |
| Course Introduction | 0.5 | - |
| <i>Competence: Organize and train fire parties</i> | | |
| 1. Composition and allocation of personnel to fire parties | 0.25 | - |
| 2. Strategies and tactics for control of fires in various parts of the ship | 0.25 | 1.0 |
| 3. Preparation of contingency plans | 0.25 | 1.0 |
| <i>Competence: Control fire-fighting operations aboard ships</i> | | |
| 4. Use of water for fire extinguishing, the effect on ship stability, precautions and corrective procedures | 0.5 | - |
| 5. Fire fighting involving dangerous goods | 0.25 | 1.0 |
| <i>Competence: Investigate and compile reports on incidents involving fire</i> | | |
| 6. Assessment of cause of incidents involving fire | 1.0 | 2.0 |
| <i>Competence: Inspect and service fire-detection and fire- extinguishing systems and equipment</i> | | |
| 7. Requirements for statutory and classifications surveys | 0.5 | - |
| 8. Fire detection and extinguishing systems and equipment | 0.5 | 1.0 |
| Sub-total | 4.0 | 6.0 |
| Total Training Hours | 10.0 | |

| | | |
|-------------------|--|--|
| Assessment | | |
|-------------------|--|--|

Note:

It is the responsibility of the MTI to determine the number of hours needed for the conduct of assessment both theoretical and practical as maybe applicable taking into account the number of trainees, number of assessors, number of equipment, vis-à-vis the number of test items for theoretical and the number of exercises for practical assessment.

Part C

Course Syllabus

This course syllabus has been written in intended learning outcome format in which outcome describe what the trainees must do to demonstrate that the knowledge and skills are acquired and proper attitude is developed. All the outcomes are understood to be prefixed by the words “At the end of the session, the trainees should be able to...”

| Intended Learning Outcome | References / Bibliography | Teaching Aid |
|--|---------------------------|--------------|
| Course Introduction Explain the following: <ul style="list-style-type: none"> • requirements in Regulation VI/3 and Section A-VI/3; • competences and KUPs in Table A-VI/3; • objectives of the course; and • course requirements. | R1 | A1 |
| 1. Composition and allocation of personnel to fire parties 1.1 Explain the factors to be considered in organizing fire parties 1.2 Explain the duties and responsibilities of each fire party and its members, based on the muster list | R1, R2, R3, R4 | A1, A3 |
| 2. Strategies and tactics for control of fires in various parts of the ship 2.1 Explain the difference between strategies and tactics for the control of fires 2.2 Given a fire emergency, develop strategies for controlling and extinguishing of fire 2.3 Given a fire emergency, develop tactics for controlling and extinguishing of fire 2.4 Given a fire emergency, apply the strategies and tactics for controlling and extinguishing fire based on the contingency plan | R1, R2, R3, B1, B2 | A1, A3, A4 |

| Intended Learning Outcome | References / Bibliography | Teaching Aid |
|---|---------------------------|--------------|
| 3. Preparation of contingency plans 3.1 Explain the factors to be considered in the preparation of a contingency plan 3.2 Explain the process in preparing contingency plan based on IMO Res. A.1072 (28) and its subsequent amendment 3.3 Given a fire emergency, prepare a contingency plan based on the guidelines in IMO Res. A.1072(28) and its subsequent amendment | R1, R2, R3 | A1, A3, A4 |
| 4. Use of water for fire extinguishing, the effect on ship stability, precautions and corrective procedures 4.1 Examine the effect of water used in extinguishing fire on ship's stability 4.2 Explain the precautions and corrective procedures to be taken to maintain positive ship's stability | R1, R2, R5 | A1, A2 |
| 5. Fire-fighting involving dangerous goods 5.1 Identify various types of dangerous goods onboard ship based on the IMDG Code 5.2 Explain the procedures in extinguishing fire involving dangerous goods as per IMDG Code 5.3 Given a fire emergency, fight fire involving dangerous goods as per IMDG Code | R1, R2, R6 | A1, A4 |
| 6. Assessment of cause of incidents involving fire 6.1 Explain the provisions of MSC Res. A.849(20) – <i>Code for the Investigation of Marine Casualty and Accidents relevant to fire incidents</i> and MSC-MEPC.3/Circ.3, Annex 6 – <i>IMO Fire Casualty Incident Report (Fire Casualty Record)</i> | R1, R2, R8, B3, B4 | A1, A4 |

| Intended Learning Outcome | References / Bibliography | Teaching Aid |
|---|---------------------------|--------------|
| <p>6.2 Conduct an investigation in accordance with the Guidelines to assist investigators in the implementation of the Code of MSC Res. A.849(20) – Code for the Investigation of Marine Casualty and Accidents, at the end of the fire fighting exercise</p> <p>6.3 Evaluate the effectiveness of the fire fighting countermeasures based on the information gathered from the investigation</p> <p>6.4 Record result of fire investigation in the IMO Fire Casualty Record</p> | | |
| <p>7. Requirements for statutory and classification surveys</p> <p>7.1 Explain the compliance to applicable statutory requirements and classification surveys for fire detection and extinguishing systems and equipment in compliance with SOLAS Convention</p> | R1, R2 | A1 |
| <p>8. Fire detection and extinguishing systems and equipment</p> <p>8.1 Inspect fire detection and extinguishing systems and equipment in accordance with performance specification and legislative requirements</p> <p>8.2 Identify the fire detection and extinguishing systems and equipment which can be serviced onboard and ashore</p> <p>8.3 Maintain fire detection and extinguishing systems and equipment allowed to be serviced onboard in accordance with performance specification and legislative requirements</p> | R1,R2, R5, R7, R9 | A1, A2, A4 |

Part D

Instructor's Guide

| Course: Refresher Course on Advanced Fire Fighting | | | Competence 1: Organize and train fire parties | | |
|---|--------------|---|--|--|------------------------------|
| | | | Knowledge, Understanding and Proficiency: <ul style="list-style-type: none"> • Composition and allocation of personnel to fire parties • Strategies and tactics for control of fires in various parts of the ship • Preparation of contingency plans | | |
| | | | Topics: Course Introduction <ol style="list-style-type: none"> 1. Composition and allocation of personnel to fire parties 2. Strategies and tactics for control of fires in various parts of the ship 3. Preparation on contingency plans | | |
| No. of Trainees: Twenty Four (24) Trainees | | | Learning Outcomes: At the end of the lesson, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcomes | | |
| Class Layout: U-shaped for theoretical part only | | | Assessment: Written Test (Multiple Choice and Direct Question) | | |
| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
| 20 minutes | Introduction | Course Introduction <ul style="list-style-type: none"> • Requirements in Regulation VI/3 and Section A-VI/3; • Competences and KUPs in Table A-VI/3; • Objectives of the course; and • Course requirements | Class orientation/ briefing Discussion on the requirements in Regulation VI/3 and Section A-VI/3, the competences and KUPs in Table A-VI/3, objectives of the course; and course requirements | Listening, note taking, inquiring, answering questions, interactive discussion | Visual presentation |

| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
|------------|---------------|---|--|--|--|
| 15 minutes | Core Elements | 1. Composition and allocation of personnel to fire parties 1.1 Factors to be considered in organizing fire parties 1.2 Duties and responsibilities of each fire party based on the muster list | Interactive-discussion of the factors to be considered in organizing fire parties and the duties and responsibilities of each fire party based on the muster list | Participating, sharing insights and learning gained, asking and answering questions | <ul style="list-style-type: none"> PowerPoint Presentation Specimen of Muster List |
| 15 minutes | | 2. Strategies and tactics for control of fires in various parts of the ship 2.1 Difference between strategies and tactics for the control of fires 2.2 Strategies for controlling and extinguishing of fire 2.3 Development of strategies and tactics for controlling and extinguishing of fire | Interactive-discussion of the difference between strategies and tactics for the control of fires and strategies for controlling and extinguishing of fire Practical Exercise: Development of strategies and tactics for controlling and extinguishing of fire | Participating, sharing insights and learning gained, asking and answering questions Practical Exercise: Work in group of 6 to: <ul style="list-style-type: none"> develop the strategies and tactics for controlling and extinguishing of fire | <ul style="list-style-type: none"> PowerPoint Presentation |
| 1 hour | | 2.4 Application of the strategies and tactics for controlling and extinguishing of fire based on the contingency plan | Application of the strategies and tactics for controlling and extinguishing of fire based on the contingency plan <i>(Integrated with Practical Exercise No. 3)</i> | <ul style="list-style-type: none"> apply the strategies and tactics for controlling and extinguishing of fire based on the contingency plan | <ul style="list-style-type: none"> Exercise Sheet No. 1 |

| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
|------------|-------------------|---|--|--|--|
| 15 minutes | | 3. Preparation on contingency plans 3.1 Factors to be considered in the preparation of a contingency plan 3.2 Process in preparing contingency plan based on IMO Res. A.1072 (28) and its subsequent amendment | Interactive-discussion of the factors to be considered and the steps in the preparation of contingency plan Interactive-discussion of sample of contingency plan for fire emergency | Participating, sharing insights and learning gained, asking and answering questions | <ul style="list-style-type: none"> • PowerPoint Presentation • Sample of Contingency Plan • IMO Res. A.1072 (28) and its subsequent amendment |
| 1 hour | | 3.3 Preparation a contingency plan | Practical Exercise: Preparation of contingency plan | Practical Exercise: Work in group of 6 to prepare a contingency plan | <ul style="list-style-type: none"> • Exercise Sheet No.2 |
| 10 minutes | Conclusion | <ul style="list-style-type: none"> • Composition and allocation of personnel to fire parties • Strategies and tactics for control of fires in various parts of the ship • Preparation on contingency plans | <ul style="list-style-type: none"> • Recapitulation of the covered topics • Point of emphasis: <i>Ask trainees to make a generalization</i> | <ul style="list-style-type: none"> • Participating, sharing insights and learning gained • Answering, asking | <ul style="list-style-type: none"> • PowerPoint Presentation |

| Course: Refresher Course on Advanced Fire Fighting | | | Competence 2: Control fire-fighting operations aboard ships | | |
|---|---------------|--|---|---|--|
| | | | Knowledge, Understanding and Proficiency: <ul style="list-style-type: none"> • Use of water for fire extinguishing, the effect of water on ship stability, precautions and corrective procedures • Fire-fighting involving dangerous goods | | |
| | | | Topics: <ol style="list-style-type: none"> 4. Use of water for fire extinguishing, the effect on ship stability, precautions and corrective procedures 5. Fire-fighting involving dangerous goods | | |
| No. of Trainees: Twenty Four (24) Trainees | | | Learning Outcomes: At the end of the lesson, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcomes | | |
| Class Layout: U-shaped for theoretical part only | | | Formative Assessment: Written Test (Multiple Choice and Direct Question) | | |
| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
| 5 minutes | Introduction | <ul style="list-style-type: none"> • Presentation of competence/KUPs • Learning Outcome | Presentation of competence, KUP and Intended Learning Outcomes Review of previous topics | <ul style="list-style-type: none"> • Participating, sharing insights and learning gained, asking and answering questions | <ul style="list-style-type: none"> • PowerPoint Presentation |
| 20 minutes | Core Elements | 4. Use of water for fire extinguishing, the effect on ship stability, precautions and corrective procedures 4.1 Effect of using water in extinguishing fire on ship's stability 4.2 Precautions and corrective procedures to be taken to maintain positive ship's stability | Interactive-discussion of the effect of using water in extinguishing fire and the precautions and corrective procedures to be taken to maintain positive ship's stability | Participating, sharing insights and learning gained, asking and answering questions | <ul style="list-style-type: none"> • PowerPoint Presentation • Illustration of the effect of water on ship's stability |

| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
|------------|---------------|--|--|---|---|
| 15 minutes | Core Elements | 5. Fire-fighting involving dangerous goods | Interactive-discussion of various types of dangerous goods onboard ship and procedures in extinguishing fire involving dangerous goods as per IMDG Code. | Participating, sharing insights and learning gained, asking and answering questions | <ul style="list-style-type: none"> • PowerPoint Presentation • IMDG Code • Exercise Sheet No. 3 • Outputs of Exercise 1 (Strategies and Tactics) and Exercise 2 (Contingency Plan) • Building with at least 2 levels for smoke and fire drills or a similar facility (Each level should measure at least approximately 7m X 3m X 2m) • Three-sided brick fire trays for oil fire extinguishing exercises • Steel fire trays approximately 1m x 1m x 0.3m • Fire hoses (65mm diameter) • Fire hoses (38mm diameter) • Large supply of carbonaceous and hydrocarbon fuels (carbon, diesel and lubricating oils) |
| 1 hour | | 5.1. Various types of dangerous goods onboard ship based on the IMDG Code 5.2. Procedures in extinguishing fire involving dangerous goods as per IMDG Code 5.3. Application of the procedures in extinguishing fire involving dangerous goods as per IMDG Code | Practical Exercise: Application of the procedures in extinguishing fire involving dangerous goods as per IMDG Code | Practical Exercise: Work in group of 6 to apply the procedures in extinguishing fire involving dangerous goods as per IMDG Code | |

| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
|-----------|-------------------|---|---|--|---|
| | | | | | <ul style="list-style-type: none"> • Fire hydrants with 2 outlets each connected to a fire pump • Fire nozzles (2 standard, 2 diffuser and 2 jet spray) • Standpipe, keys and bars to operate hydrant supply • Fire alarm systems • Sets of self-contained breathing apparatus, complete with spare cylinders, spare parts and maintenance tools |
| 5 minutes | Conclusion | <ul style="list-style-type: none"> • Use of water for fire extinguishing, the effect on ship stability, precautions and corrective procedures • Fire-fighting involving dangerous goods | <ul style="list-style-type: none"> • Recapitulation of the covered topics • Point of emphasis: <i>Ask trainees to make a generalization</i> | <ul style="list-style-type: none"> • Participating, sharing insights and learning gained • Answering, asking | <ul style="list-style-type: none"> • PowerPoint Presentation |

| Course: Refresher Course on Advanced Fire Fighting | | | Competence 3: Investigate and compile reports on incidents involving fire | | |
|---|---------------|--|---|--|---|
| | | | Knowledge, Understanding and Proficiency: <ul style="list-style-type: none"> Assessment of cause of incidents involving fire | | |
| | | | Topic: 6. Assessment of cause of incidents involving fire | | |
| No. of Trainees: Twenty Four (24) Trainees | | | Learning Outcomes: At the end of the lesson, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcomes | | |
| Class Layout: U-shaped for theoretical part only | | | Formative Assessment: Written Test (Multiple Choice and Direct Question) | | |
| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
| 5 minutes | Introduction | <ul style="list-style-type: none"> Presentation of competence/KUPs Learning Outcome | <ul style="list-style-type: none"> Explain the competence/KUPs and learning outcome Review of the previous topic | <ul style="list-style-type: none"> Participating, sharing insights and learning gained asking and answering questions | <ul style="list-style-type: none"> PowerPoint Presentation |
| 50 minutes | Core Elements | 6. Assessment of cause of incidents involving fire 6.1 Provisions of MSC Res. A.849(20) – Code for the Investigation of Marine Casualty and Accidents relevant to fire incidents and MSC-MEPC.3/Circ.3, Annex 6 – IMO Fire Casualty Incident Report (Fire Casualty Record) | Interactive-discussion of the Provisions of MSC Res. A.849(20) Code for the Investigation of Marine Casualty and Accidents relevant to fire incidents | Participating, sharing insights and learning gained asking and answering questions | <ul style="list-style-type: none"> PowerPoint Presentation MSC Res.A849(20) - Code for the Investigation of Marine Casualty and Accidents Exercise Sheet No. 4 |
| 2 hours | | 6.2 Investigation in accordance with the Guidelines to assist investigators in the implementation of the Code of MSC Res. A.849(20) – | Practical Exercise: <ul style="list-style-type: none"> Investigation in accordance with pertinent provisions of MSC Res. A.849(20) | Practical Exercise: At the end of fire fighting exercise, conduct an investigation in accordance with pertinent provisions of MSC Res. A.849(20) | |

| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
|-----------|------------|--|---|--|---|
| | | <p>Code for the Investigation of Marine Casualty and Accidents</p> <p>6.3 IMO Fire Casualty Record</p> <p>6.4 Effectiveness of countermeasures</p> | <p>Recording report of fire investigation in the IMO Fire Casualty Record</p> <p>Evaluation of effectiveness of countermeasure based on the information gathered from the investigation</p> | <p>Record result of fire investigation in the IMO Fire Casualty Record</p> <p>Evaluate of effectiveness of countermeasure based on the information gathered from the investigation</p> | <ul style="list-style-type: none"> Exercise Sheet No. 4 |
| 5 minutes | Conclusion | <ul style="list-style-type: none"> Assessment of cause of incidents involving fire | <ul style="list-style-type: none"> Recapitulation of the covered topics Point of emphasis: <i>Ask trainees to make a generalization</i> | <ul style="list-style-type: none"> Participating, sharing insights and learning gained, asking and answering questions | <ul style="list-style-type: none"> PowerPoint Presentation |

| Course: Refresher Course on Advanced Fire Fighting | | | Competence 4: Inspect and service fire-detection and fire- extinguishing systems and equipment | | |
|---|---------------|---|---|--|---|
| | | | Knowledge, Understanding and Proficiency: <ul style="list-style-type: none"> • Fire-detection systems; fixed fire-extinguishing systems; portable and mobile fire-extinguishing equipment, including appliances, pumps and rescue, salvage, life-support, personal protective and communication equipment | | |
| | | | Topics: <ul style="list-style-type: none"> 7. Requirements for statutory and classifications surveys 8. Fire detection and extinguishing systems and equipment | | |
| No. of Trainees: Twenty Four (24) Trainees | | | Learning Outcomes: At the end of the lesson, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcomes | | |
| Class Layout: U-shaped for theoretical part only | | | Formative Assessment: Written Test (Multiple Choice and Direct Question) | | |
| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
| 5 minutes | Introduction | <ul style="list-style-type: none"> • Presentation of competence/KUPs • Learning Outcome | <ul style="list-style-type: none"> • Explain the competence/KUPs and learning outcome • Review of the previous topic | <ul style="list-style-type: none"> • Participating, sharing insights and learning gained asking and answering questions | <ul style="list-style-type: none"> • PowerPoint Presentation |
| 25 minutes | Core Elements | 7. Requirements for statutory and classifications surveys 7.1 Applicable statutory requirements and classification surveys for fire detection and extinguishing systems and equipment in compliance with SOLAS Convention | Interactive-discussion of applicable statutory requirements and classification surveys for fire detection and extinguishing systems and equipment in compliance with SOLAS Convention | <ul style="list-style-type: none"> • Participating, sharing insights and learning gained asking and answering questions | <ul style="list-style-type: none"> • PowerPoint Presentation |

| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
|------------|-------|---|---|---|--|
| 25 minutes | | 8. Fire detection and extinguishing systems and equipment 8.1 fire detection and extinguishing systems and equipment which can be serviced onboard and ashore | Interactive-discussion of fire detection and extinguishing systems and equipment which can be serviced onboard and ashore | Participating, sharing insights and learning gained asking and answering questions | <ul style="list-style-type: none"> • PowerPoint Presentation • Pictures of fire detection and extinguishing systems and equipment which can be serviced onboard and ashore |
| 1 hour | | 8.2 fire detection and extinguishing systems and equipment in accordance with performance specification and legislative requirements 8.3 fire detection and extinguishing systems and equipment allowed to be serviced onboard in accordance with performance specification and legislative requirements | Practical Exercise: <ul style="list-style-type: none"> • Inspection of fire detection and extinguishing systems and equipment • Maintenance of fire detection and extinguishing systems and equipment allowed to be serviced onboard | Practical Exercise: Individual work to: <ul style="list-style-type: none"> • inspect the fire detection and extinguishing systems and equipment • identify fire detection and extinguishing systems and equipment • maintain fire detection and extinguishing systems and equipment allowed to be serviced onboard | <ul style="list-style-type: none"> • Picture of emergency towing arrangement • Exercise Sheet No. 5 • Fire detection system • Fixed fire-extinguishing system • Portable and mobile fire extinguishing equipment including: <ul style="list-style-type: none"> - safety lines (30 metres long) with snaphooks - Sets of self-contained breathing apparatus, complete with spare cylinders, spare parts and maintenance tools - Fireman's outfit |

| Time | Phase | Content | Instructor-led Activity | Student Learning Activity | Instructional Materials Used |
|-----------|------------|--|---|---|---|
| | | | | | <ul style="list-style-type: none"> - Approved sets of protective clothing, coverall, gloves, fire boots, helmets with hood/visor and neck protector and rainproof clothing - Two-way handheld radio • Recharging area • 5-kilogram carbon dioxide extinguishers • 10-kilogram dry power extinguishers • Refills for portable extinguishers • Weighing scale for portable CO2 extinguishers |
| 5 minutes | Conclusion | <ul style="list-style-type: none"> • Requirements for statutory and classifications surveys • Fire detection and extinguishing systems and equipment | <ul style="list-style-type: none"> • Recapitulation of the covered topics • Point of emphasis: <i>Ask trainees to make a generalization</i> | <ul style="list-style-type: none"> • Participating, sharing insights and learning gained, asking and answering questions | <ul style="list-style-type: none"> • PowerPoint Presentation |

Part E

Course Assessment

■ Introduction

This part of the course plan includes the discussions about what should be assessed and how the information will be used. Taking into account that assessment is the process that measures what trainees have learned, it is necessary that the assessment activities are aligned with learning targets, specific standards, and with the instructions given. That is why the learning outcomes in Part C are herein provided as the basis for the assessment of trainee's progress, development and learning of this course.

■ Method of Assessment

A written examination shall be administered in order to measure the acquired knowledge of the trainees. The examinations shall be administered at the end of training in which a passing mark is pre-requisite for the practical assessment.

To ensure representation of all topics covered in an objective type of test and to measure the desired level of thinking skills, the test items to be constructed shall be based on a Table of Specification (TOS). On the following page is a sample TOS and the number of test items indicated is to be used as a **GUIDE ONLY**.

TABLE OF SPECIFICATION

| Subject Area (Knowledge Dimension) | Time Allotment (hrs) | % of Teaching Time | Thinking Skills (Learning Process Dimension) | | | | | | No. of Test Items |
|--|----------------------------|--------------------------|---|------------|----------|----------|----------|--------|-------------------------|
| | | | Remember | Understand | Apply | Analyze | Evaluate | Create | |
| Course Introduction | 0.5 | 5.0 | | | | | | | - |
| 1. Composition and allocation of personnel to fire parties | 0.25 | 2.5 | | 2 | | | | | 2 |
| 2. Strategies and tactics for control of fires | 1.25 | 12.5 | | 1 | 1 | | | | 2 |
| 3. Preparation of contingency plans | 1.25 | 12.5 | | 1 | | 1 | | | 2 |
| 4. Fire -fighting involving dangerous goods | 1.25 | 12.5 | | 1 | 1 | | | | 2 |
| 5. Use of water for fire extinguishing | 0.5 | 5.0 | | 1 | | 1 | | | 2 |
| 6. Assessment of cause of incidents involving fire | 3.0 | 30.0 | | 1 | 2 | | 3 | | 6 |
| 7. Requirements for statutory and classifications surveys | 0.5 | 5.0 | | 2 | | | | | 2 |
| 8. Fire detection and extinguishing systems and equipment | 1.5 | 15.0 | | | 1 | 1 | | | 2 |
| | 10 | 100 | | 9 | 5 | 3 | 3 | | 20 |

1. To compute the value of percentage of teaching time using this formula:

$$\% \text{ of time} = \frac{\text{Time Allotment}}{\text{Total teaching time}} \times 100$$

2. To compute the number of test items per main topic using the formula:

$$\text{No. of test items} = \frac{\% \text{ of teaching time} \times \text{total number of test items}}{100\%}$$

On the other hand, a practical assessment shall be conducted to measure trainees' ability to demonstrate the following skills:

- control fire-fighting operations aboard ships;
- organize and train fire parties;
- inspect and service fire detection and fire extinguishing systems and equipment; and
- investigate and compile reports on fire incidents.

Both methods of assessment used to measure the knowledge, skills and attitudes acquired by the trainees are reflected in the corresponding Assessment Plan. This document details the overall assessment strategy which includes the following information:

- when the assessment is to take place;
- what assessment methods are to be employed;
- the marks/weighting for each assessment;
- who is responsible for conducting the assessment;
- what resources are needed; and
- conditions under which assessments are to be conducted.

Below is a sample of an Assessment Plan. The number of test items and number of exercises for practical assessment indicated are to be used as a **GUIDE ONLY**.

ASSESSMENT PLAN

| STCW Code: Section A-VI/3 - Mandatory minimum requirements for training in advanced fire fighting | | | | | Table A: Table A-VI/3 | | | | |
|---|--------------------|---------------------------|--|--|--|--|--|--|--|
| Instructor: | | | | | Assessor: | | | | |
| Resources Needed: | | | | | | | | | |
| Topics | Written Assessment | | | | Practical Assessment | | | | |
| | No. of Test Items | Assessment Method | Assessment Period | Grading Scheme | Assessment Task | | | | Grading Scheme |
| | | | | | 1. Development of strategies and tactics for controlling and extinguishing of fire 2. Preparation of contingency plans | 3. Application of the procedures in extinguishing fire involving dangerous goods as per IMDG Code | 4. Assessment of cause of incidents involving fire | 5. Inspection and maintenance of fire detection and extinguishing systems and equipment | |
| 1. Composition and allocation of personnel to fire parties | 2 | Multiple Choice Questions | Written Exam and practical assessment are administered at the end of training period | Obtain at least 75% mark from written test | Assessment Criteria | | | | Performance of required tasks based on Assessment Criteria using a Checklist |
| 2. Strategies and tactics for control of fires | 2 | | | | All required entries in the form prescribed in IMO Res.1072(28) are provided. Entries in the Contingency Plan are based on the given emergency muster list or station bill | Fire fighting procedures used is in accordance with IMDG Code for the particular type of dangerous goods Used the appropriate fire fighting equipment and media Fire is extinguished | All required entries in the form prescribed in MSC Res. A.849(20) for fire emergencies are provided. | Inspection and maintenance of fire detection and extinguishing systems and equipment is in accordance with manufacturer's manual | |
| 3. Preparation of contingency plans | 2 | | | | | | | | |
| 4. Fire fighting involving dangerous goods | 2 | | | | | | | | |
| 5. Use of water for fire extinguishing, the effect on ship stability, precautions and corrective procedures | 2 | | | | | | | | |
| 6. Assessment of cause of incidents involving fire | 6 | | | | | | | | |
| 7. Requirements for statutory and classifications surveys | 2 | | | | | | | | |
| 8. Fire detection and extinguishing systems and equipment | 2 | | | | | | | | |
| Total Number of Items | 20 | | | | | | | | |