The code of practice for conducting
Advanced Training for Chemical Tanker Cargo Operations

P6-W65

<table>
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<th>Date of revision</th>
<th>Comment on revision</th>
<th>Approving amendments authority</th>
<th>Endorsing amendments authority</th>
</tr>
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<td>01</td>
<td>01.SEP.2014</td>
<td>STCW Convention, as amended</td>
<td>N. Alipour, Head of Seafarers' Standards' Directorate</td>
<td>H. Mirzaei, Director General of Seafarers' Affairs</td>
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Introduction

Ports and Maritime organization (P.M.O) of the Islamic Republic of Iran in performing its duty and in exercising its prerogative resulting from article 192 of the Islamic Republic of Iran's Maritime Code, 1964 and paragraph 10 of Article 3 of P.M.O manifesto, 1970 enabling it to issue any document, certificate or license for ships, masters, officers and other ship personnel and also in accordance with the provisions of the revised International Convention on Standards of Training, Certification And Watch Keeping For Seafarers (STCW as amended) adopted by the Islamic Consultative Assembly in 1996 and taking in to account Paragraph 6 of Regulation V/1-1 of the mentioned Convention and code develops this "code of practice for conducting Advanced Training for Chemical Tanker Cargo Operations" which is applicable after endorsement by the board of executives of Ports & Maritime Organization.

NOTE: The title of Ports and Shipping Organization changed to Ports and Maritime Organization dated 2008/04/29 through parliamentary act and approved by Islamic council assembly.
1- Objectives

The objective of this code of practice is to specify the minimum requirements for conducting Advanced Training for Chemical Tanker Cargo Operations.

2- Scope of application

This code of practice is applicable to all approved training centers that conduct on Advanced Training for Chemical Tanker Cargo Operations.

3- Definition

For the purpose of this code of practice, unless expressly provided otherwise,

3-1 Approved

Means approved by the Seafarer’s Standards Directorate in accordance with the PMO’s Codes of practices.

3-2 Central Monitoring Office

Central monitoring office which is responsible for approving and monitoring training courses is the Seafarer’s standard directorate of the PMO.

3-3 Certificate of Competency (COC)

Means a certificate issued and endorsed for masters, officers and GMDSS radio operators in accordance with the provisions of chapters II, III, IV or VII of the STCW Convention and entitling the lawful holder thereof to serve in the capacity and perform the functions involved at the level of responsibility specified therein.

3-4 Chemical tanker:

Means a ship constructed or adapted and used for the carriage in bulk of any liquid product listed in chapter 17 of the International Bulk Chemical Code;

3-5 Code of Practice

Means all national rules, regulations and requirements specified in this document which have been drafted by the PMO’s General Directorate of Maritime affairs and endorsed by the PMO’s board of executive

3-6 Company

Means the owner of the ship or any other organization or person such as the manager, or the bareboat charterer, who has assumed the responsibility for operation of the ship from the ship owner and who, on assuming such responsibility, has agreed to take over all the duties and responsibilities imposed on the company by these Codes of practices.
3-7 Convention
Means international convention on standards of training, certification and watch keeping for Seafarers, 1978, as amended.

3-8 Course Completion Certificate or Documentary Evidence
Means a certificate issued through the training center, after successfully completion of training program by the applicants.

3-9 Function
Means a group of tasks, duties and responsibilities, as specified in the STCW Code, necessary for ship operation, safety of life at sea or protection of the marine environment.

3-10 Gross Tonnage
Means the volume of all enclosed spaces of a vessel calculated in accordance with relevant regulations.

3-11 Liquefied gas tanker:
Means a ship constructed or adapted and used for the carriage in bulk of any liquefied gas or other product listed in chapter 19 of the International Gas Carrier Code.

3-12 Master
Means the person having command of a ship.

3-13 Medical Fitness Certificate
Means a certificate issued by the PMO's recognized medical practitioner to the candidates who found to be medically fit.

3-14 Merchant Ship
Means any ship (other than servicing vessel, mobile offshore platform, fishing and naval ships) used for carriage of cargoes, passenger and/or provisions.

3-15 Month
Means a calendar month or 30 days made up of periods of less than one month.

3-16 Officer
Means a member of the crew, other than the master, designated as such by national law or regulations or, in the absence of such designation, by collective agreement or custom.

3-17 Oil tanker
Means a ship constructed and used for the carriage of petroleum and petroleum products in bulk;
3-18 On Board Training Record Book
Means on board training record book approved by Port and Maritime Organization in which practical and theoretical training of seafarer shall be fulfilled according to its content.

3-19 PMO
Means Ports & Maritime Organization (PMO) of the Islamic Republic of Iran

3-20 Rating
Means a member of the ship's crew other than the master or an officer.

3-21 Regulations
Means regulations contained in the annex to the STCW Convention

3-22 Seagoing service
Means service on board a ship relevant to the issue or revalidation of a certificate or other qualification.

3-23 Seagoing Service/Documentary Evidence
Means approved sea going service required to be presented for participating in a training course, maritime examination and issuance of certificate. These documentary evidence should be inserted in CDC and authenticated by company or ship owner or ship owner's associations and in addition be presentable in a form of computer sheet, official letter or other forms as defined in the annex to this code of practice.

3-24 Seagoing Ship
Means a ship other than those which navigate exclusively in inland waters or in waters within, or closely adjacent to, sheltered waters or areas where port regulations apply.

3-25 STCW Code
Means the seafarers' training, certification and watch keeping (STCW ) code as adopted by the 1995 conference resolution 2, as it may be amended by the international maritime organization.

3-26 Training center
Means maritime university/center/ directorate/ department/company and/or any organization conducting maritime training course approved by PMO

3-27 Unlimited Voyages
Means voyages not limited to the near coastal voyages.
4 Responsibilities

4-1 Central monitoring office is responsible for revising this code of practice.

4-2 General Director of Seafarers' Affairs is responsible for approving amendments to this code of practice.

4-3 Deputy of maritime affairs is responsible to endorse amendments to this code of practice on behalf of PMO's board of executive.

4-4 Training centers are to conduct training course in accordance with this Code of practice.

4-5 Central monitoring office is responsible for supervising the implementation of this code of practice in training centers.

5 Procedures:

5-1 Course Objective
The objective of this Training Course is to prepare trainees to achieve competencies set out in the column 1 of table A-V/1-1-3 of the STCW Code.

5-2- Course Duration

5-2-1 Minimum of 56 hours (42 hrs. theoretical & 14 hrs. practical) for each trainee.

5-2-2 Maximum daily contact hours for each trainee are 8 hours.

5-3- Number of Trainees

5-3-1 The maximum number of trainees in each course is 20.

5-3-2 The number of trainees may be increased to 30 when the relevant facilities, teaching aids and class-room space are increased as per criteria set out in the code of practice for approving and monitoring training courses and is approved by the central monitoring office.

5-4- Course Entry Requirements

The course trainees should, at least;
5-4-1 Be not less than 18 years of age;

5-4-2 Hold valid Medical Fitness Certificate, issued in accordance with the provisions of the relevant code of practice;

5-4-3 Hold Valid Certificate of Proficiency on Basic Training for Chemical Tanker Cargo Operations
5-4-4 Have at least three months of approved seagoing service on Chemical tankers or at least one month of approved onboard training on Chemical tankers in a supernumerary capacity, which includes at least three loading and three unloading operations and is documented in an approved training record book (as per appendix of this code of practice) taking into account guidance in section B-V/1 of STCW code.

5-5-Expected knowledge, understanding and proficiency

1- Knowledge of chemical tanker designs, systems, and equipment
2- Knowledge of pump theory and characteristics, including types of cargo pumps and their safe operation
3- Proficiency in tanker safety culture and implementation of safety management system
4- Knowledge and understanding of monitoring and safety systems, including the emergency shutdown system
5- Ability to perform cargo measurements and calculations
6- Knowledge of the effect of bulk liquid cargoes on trim and stability and structural integrity
7- Knowledge and understanding of chemical cargo-related operations
8- Development and application of cargo-related operation
9- Plans, procedures and checklists
10- Ability to calibrate and use monitoring and gas-detection
11- Systems, Instruments and equipment
12- Ability to manage and supervise personnel with cargo-related responsibilities
13- Knowledge and understanding of the chemical and the physical properties of noxious liquid substances
14- Understanding the information contained in a Material Safety Data Sheet (MSDS)
15- Knowledge and understanding of the hazards and control measures associated with chemical tanker cargo operations
16- Knowledge and understanding of dangers of non-compliance with relevant rules/regulations
17- Knowledge and understanding of safe working practices, including risk assessment and personal shipboard safety relevant to chemical tankers
18- Knowledge and understanding of chemical tanker emergency procedures
19- Actions to be taken following collision, grounding, or spillage
20- Knowledge of medical first aid procedures on board chemical tankers, with reference to the Medical First Aid Guide for Use in Accidents involving Dangerous Goods (MFAG)
21- Understanding of procedures to prevent pollution of the atmosphere and the environment
22- Knowledge and understanding of relevant provisions of the International Convention for the Prevention of Pollution from Ships (MARPOL) and other relevant IMO instruments, industry guidelines and port regulations as commonly applied
23- Proficiency in the use of the IBC and IGC Codes and related documents
5-6 Course Minimum Syllabi:

<table>
<thead>
<tr>
<th>Knowledge, understanding and proficiency</th>
<th>Theoretical</th>
<th>Practical</th>
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<tbody>
<tr>
<td><strong>Competence 1: Ability to safely perform and monitor all Cargo operations:</strong></td>
<td>(30.0 hrs)</td>
<td>(14.0 hrs) (Simulator)</td>
</tr>
</tbody>
</table>

**Design and characteristics of a chemical tanker**

Knowledge of chemical tanker designs, systems, and equipment, including:

1. General arrangement and construction
2. Pumping arrangement and equipment
3. Tank construction and arrangement
4. Pipeline and drainage systems
5. Tank and cargo pipeline pressure and temperature control systems and alarms
6. Gauging control systems and alarms
7. Gas-detecting systems
8. Cargo heating and cooling systems
9. Tank cleaning systems
10. Cargo tank environmental control systems
11. Ballast systems
12. Cargo area venting and accommodation ventilation
13. Vapour return/recovery systems
14. Fire-fighting systems
15. Tank, pipeline and fittings’ material and coatings
16. Slop management
Knowledge of pump theory and characteristics, including types of cargo pumps and their safe operation

Proficiency in tanker safety culture and implementation of safety management system

Knowledge and understanding of monitoring and safety systems, including the emergency shutdown system

**Loading, unloading, care and handling of cargo**

Ability to perform cargo measurements and calculations

Knowledge of the effect of bulk liquid cargoes on trim and stability and structural integrity

Knowledge and understanding of chemical cargo-related operations, including:

1. Loading and unloading plans
2. Ballasting and de-ballasting
3. Tank cleaning operations
4. Tank atmosphere control
5. Inerting
6. Gas-freeing
7. Ship-to-ship transfers
8. Inhibition and stabilization requirements
9. Heating and cooling requirements and consequences to adjacent cargoes
10. Cargo compatibility and segregation
11. High-viscosity cargoes
12. Cargo residue operations
13. Operational tank entry
| Development and application of cargo-related operation plans, procedures and checklists |
| Ability to calibrate and use monitoring and gas-detection systems, instruments and equipments |
| Ability to manage and supervise personnel with cargo-related responsibilities |

**Competence 2: Familiarity with physical and chemical properties of chemical cargoes:**
Knowledge and understanding of the chemical and the physical properties of noxious liquid substances, including:

- Chemical cargoes categories (corrosive, toxic, flammable, explosive)
- Chemical groups and industrial usage
- Reactivity of cargoes

Understanding the information contained in a Material Safety Data Sheet (MSDS)

**Competence 3: Take precautions to prevent hazards:**
Knowledge and understanding of the hazards and control measures associated with chemical tanker cargo operations, including:

- Flammability and explosion
- Toxicity
- Health hazards
- Inert gas composition
- Electrostatic hazards

<table>
<thead>
<tr>
<th>Time Duration</th>
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<tbody>
<tr>
<td>(2.0 hrs)</td>
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<tr>
<td>(6.0 hrs)</td>
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</tbody>
</table>
.6 Reactivity
.7 Corrosivity
.8 Low-boiling-point cargoes
.9 High-density cargoes
.10 Solidifying cargoes
.11 Polymerizing cargoes

Knowledge and understanding of dangers of non-compliance with relevant rules/regulations

**Competence 4: Apply occupational health and safety precautions:**
Knowledge and understanding of safe working practices, including risk assessment and personal shipboard safety relevant to chemical tankers:

.1 Precautions to be taken when entering enclosed spaces, including correct use of different types of breathing apparatus
.2 Precautions to be taken before and during repair and maintenance work
.3 Precautions for hot and cold work
.4 Precautions for electrical safety
.5 Use of appropriate Personal Protective Equipment (PPE)

**Competence 5: Respond to emergencies:**
Knowledge and understanding of chemical tanker emergency procedures, including:

.1 Ship emergency response plans
.2 Cargo operations emergency shutdown
.3 Actions to be taken in the event of failure of systems or...
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<thead>
<tr>
<th>Competence</th>
<th>Description</th>
<th>Hours</th>
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<tr>
<td>6</td>
<td>Take precautions to prevent pollution of the environment</td>
<td>1.0 hr</td>
</tr>
<tr>
<td>7</td>
<td>Monitor and control compliance with legislative requirements</td>
<td>1.0 hr</td>
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</table>

Knowledge of medical first aid procedures on board chemical tankers, with reference to the Medical First Aid Guide for Use in Accidents involving Dangerous Goods (MFAG)

Actions to be taken following collision, grounding, or spillage

Total: 56.0 hours

Use of a Material Safety Data Sheet (MSDS)

Proficiency in the use of the IBC Code and related documents

Total: (56.0 hours) (42.0 hrs) (14.0 hrs)
5-7 Facilities and Equipment Required for Conducting the Course

Apart from those facilities, equipments and or requirements mentioned in Code of practice for approval and monitoring of maritime training courses followings have to be provided:

1. Classroom with air conditioning facilities, sufficient lighting and other facilities, suitable for delivering theoretical subjects (such as: white board, computer, multimedia projector and its curtain).

2. Library with related technical books and references such as IMDG code, IBC code, ISGOTT/SIGTTO, OCIMF and IGS/ICS data Sheets necessary for conducting the training course.

3. Relevant educational and training films.

4. Chemical Tanker Cargo Handling Simulator as per section A-I/12 of the STCW Convention and Code.

5. An appropriate workshop for conducting the practical training.

6. A complete set of personnel safety equipment,

7. A set of appropriate protective equipment,

8. Stretcher,

9. Resuscitator (oxygen type)

10. A breathing apparatus with strainer for emergency escapes, along with all types of strainer or filters,

11. An ordinary breathing apparatus for emergency escapes,

12. Oil/Chemical/Gas absorption tubes for detection of toxic gases such as benzene, carbon monoxide and hydrogen sulphide.

13. A portable gas detector,

14. A portable combustible gas indicator,

15. A portable oxygen meter,

16. Gas indicator tubes,

17. Various kinds of oil/Gas/Chemicals,

18. Different gas samples for conducting the practical training.

19. First aid and medical emergency equipment such as first aid kit and satchel, oxygen cylinder and mask.

20. Toxic gas detector and tank escape equipment.

21. Portable interference detector,

22. Equipment for escape from a tank.
5-8 Lecturers and instructors minimum qualifications

5-8-1 Lecturers and instructors shall have completed a course in instructional techniques (TFT) in one of the training centers approved by the PMO, and:

5-8-1-1 Lecturers:

5-8-1-1-1 Hold valid Master CoC on ships of GT≥3000 engaged on unlimited voyages, or Chief Engineer CoC on ships of KW≥3000 engaged on unlimited voyages with 12 months of approved sea service at management levels on Chemical Tankers and,

5-8-1-1-2 Hold valid certificates of proficiencies in Advanced Training for Chemical Tanker cargo operations and,

5-8-1-1-3 Is familiarized with Chemical tanker cargo operations Simulators as per relevant provisions of the STCW Code Section A-1/6.

5-8-1-2 Instructors:

5-8-1-2-1 Hold valid certificates of proficiencies in advanced training for Chemical Tanker cargo operations.

5-9 Assessment and Certification

5-9-1 Upon successful completion of the examination which is carried out during and at the end of the course, the trainee will be awarded relevant course completion certificate issued by the approved training center; and,

5-9-2 Seafarers' Examination and Documents Directorate of the PMO will issue a CoP for those candidates who have successfully completed the above mentioned training course and fulfill other relevant certification requirements set out in the “Code of practices for issuing, revalidation and renewing certificates for seafarers”.

5-10 Revalidation and Renewal of Certificate

5-10-1 CoPs, CoCs and Certificates will be revalidated and renewed in accordance with provisions of the Code of practice for issuing, revalidation and renewing certificates for seafarers.

5-11 Course Approval

5-11-1 It will be carried out as per code of practice for approval and monitoring of maritime training courses.
6- Records

6-1 All records which present the implementation of the content of this code of practice.

7- References

7-1- STCW Convention and STCW Code, as amended
7-2- IMO Model Courses No.1.03
7-3- MARPOL Convention, as amended
7-4- ISGOTT/SIGTTO
7-5- IBC code
7-6- IMDG CODE
7-7- ICS/IGS CODE
7-8- OCIMF
7-9- Codes of practices for issuing, revalidation and renewing certificates for seafarers
7-10- Code of practice for approval and monitoring of maritime training courses

8- Appendix

Approved Onboard Training Record Book For "Advanced Training for Chemical Tanker Cargo Operations" as below:
### Criteria for Evaluation

**Precautions are taken before entering tanks or confined spaces to ensure safe atmospheric. The cargo tanks are in good order and condition and are sufficiently cleaned. Any heating arrangements are functioning.**

The cargo is loaded in accordance with the cargo plan while maintaining proper trim and stability at all times. Any incidents or accidents during loading are reported immediately and proper actions taken.

MARPOL, appropriate industry codes of practice and guidelines, company's documented requirements and those of terminals are followed. Appropriate Valves, pumps, gauges, etc. are maintained in accordance with manufacturers' recommendations. Any defects are reported and appropriate actions taken.

### Knowledge and Experience

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<th>Task/Duty</th>
<th>Designated Training Officer/In Service Assessor (Initial/Date)</th>
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<td>1. Safety</td>
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<tr>
<td>1. Safety</td>
<td>.1 Ship's safety-management system</td>
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<td>1. Safety</td>
<td>.2 Cargo-specific fire-fighting equipment and procedures</td>
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<tr>
<td>1. Safety</td>
<td>.3 Cargo-specific first-aid procedures, including the Medical First Aid Guide for Use in Accidents involving Dangerous Goods (MFAG)</td>
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<tr>
<td>1. Safety</td>
<td>.4 Ship-/cargo-specific hazards, including smoking regulations, oxygen-depleted atmospheres, cargo hydrocarbon narcosis and toxicity</td>
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<td>.6 Permit to work, including hot work and enclosed spaces entry procedures</td>
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<td>.7 Use of personal protective equipment</td>
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<td>.1 Hull/tank construction and limitations</td>
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<td>.2 Cargo connections</td>
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<tr>
<td>.3 Properties and hazards associated with the types of cargo being carried, including use of Material Safety Data Sheets</td>
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<td>.4 The risks that cargo operations (such as purging/gas-fleeing/tank cleaning) may have on the accommodation ventilation systems and actions to mitigate these risks</td>
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<td>.5 Configuration of cargo and ballast system</td>
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<td>.6 Pumps and associated equipment</td>
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<td>.7 Specialist equipment associated with the cargo operations</td>
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<td>.8 Particulars of the tanker’s construction and how this affects the cargo operations</td>
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<th>.3 Trim and stability</th>
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<td>.1 Tanker’s stability information and calculating equipment</td>
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<td>.2 Importance of maintaining stress levels within acceptable limits</td>
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<td>.3 Dangers of free surface effect and “sloshing” effect</td>
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<tr>
<td>.1 Pre-planning of loading/in-transit care, discharge/ballast operations hazards</td>
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<td>.2 Record keeping</td>
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<td>.3 Start up/stopping procedures, including emergency shutdown</td>
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<td>.4 Attention required for mooring arrangements during cargo</td>
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<td>.5 Purging and inerting requirements and associated</td>
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<tr>
<td>.6 Loading cargo, including topping-off operations</td>
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<td>.7 Discharging cargo, including draining and stripping operations including sampling where applicable</td>
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<td>.8 Monitoring of cargo during loading/discharging operations,</td>
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<td>.9 Tank gauging and alarm systems</td>
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<td>.10 Dangers from electrostatic discharge and its prevention</td>
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<td>.5 Tank washing/cleaning</td>
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<tr>
<td>.1 Tank cleaning systems and equipment fitted on the tanker</td>
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<td>.2 Pre-planning of tank washing/cleaning operations</td>
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<tr>
<td>.3 Tank washing procedures, including purging and inerting</td>
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<td>.4 Control of slops/waste product</td>
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<td>.5 Electro-static hazards</td>
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<td>.6 Cleanliness requirements</td>
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<td>.7 Maintenance requirements</td>
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<tr>
<th>.6 Inert gas systems</th>
<th>.1 Inerting system(s) and equipment fitted to the tanker</th>
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<td>.4 Maintenance requirements</td>
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<td>.2 Hazards associated with inerting of spaces, with particular reference to safe entry into tanks</td>
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<td></td>
<td>.3 Purging, maintaining inert atmosphere and gas-freeing operations</td>
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<tr>
<th>.7 Pollution prevention and control</th>
<th>.1 International, flag State and company regulations, documentation and plans equipment, including discharge monitoring</th>
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<tr>
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<td>.2 Operation of the tanker's pollution-prevention systems and equipment, including discharge monitoring</td>
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<td>.3 Operation of the tanker's pollution-containment equipment</td>
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<tr>
<th>.8 Gas-detection equipment and instruments</th>
<th>.1 Use and calibration of personal, portable and fixed gas analysers, with particular reference to oxygen and hydrocarbon monitoring equipment</th>
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<tr>
<td></td>
<td>.2 Operation, maintenance and limitation of cargo tank measuring, level alarm and temperature-measuring systems</td>
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<tr>
<th>.9 Publications</th>
<th>.1 International, flag State and company publications relevant to the operation of the tanker, including SOLAS, MARPOL and applicable guidance manuals</th>
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<tr>
<td></td>
<td>.2 Operating and maintenance manuals specific to the equipment on board</td>
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<td></td>
<td>.3 Established industrial standards and code of safe working practice (e.g., ICS, IGS, OCIMF, SIGTTO)</td>
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</tbody>
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