Advanced Operation and Safety Practices in Terminals Handling Ships Carrying Liquefied Gases in Bulk Training Course

Professional Development Training Course Outline

Category	Oil and Gas	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

This advanced training program is a crucial step for professionals involved in the intricate and high-risk world of **liquefied gas terminal operations**. Advanced Operation and Safety Practices in Terminals Handling Ships Carrying Liquefied Gases in Bulk Training Course is designed to provide a comprehensive understanding of the complex **ship-shore interface**, focusing on **cryogenic cargo handling**, **process safety management**, and **emergency preparedness**. The course leverages **real-world case studies** and **advanced simulation** to enhance practical skills, ensuring participants can competently manage the challenges of handling bulk cargoes like **LNG (Liquefied Natural Gas)** and **LPG (Liquefied Petroleum Gas)**.

The global energy transition and increasing demand for natural gas as a cleaner fuel source have made this specialized knowledge more critical than ever. This course goes beyond basic compliance, diving into **risk mitigation strategies**, **operational excellence**, and the latest **international regulations** to cultivate a culture of safety and efficiency. Graduates will emerge with the expertise to not only prevent incidents but also to optimize terminal workflows, ensuring the safe, secure, and environmentally responsible handling of these highly volatile cargoes.

Programme Curriculum

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Course Duration

5 days

Course Objectives

- Mastering Ship-Shore Interface Operations
- Applying Process Safety Management (PSM) principles
- Conducting Hazard Identification and Risk Assessment (HIRA)
- Developing and executing Emergency Response Plans
- Understanding Cryogenic Cargo Handling and its unique properties
- Ensuring compliance with the IGC Code and other international regulations
- Implementing Advanced Firefighting and Spill Control techniques
- Optimizing Terminal Operations for efficiency and safety
- Managing Cargo Transfer Systems and equipment
- Leading Safety Culture and crew competency development
- Utilizing modern Gas Detection and monitoring technologies
- Analyzing Past Incidents and Case Studies to prevent future accidents
- Integrating Environmental Protection protocols into all operations

Target Audience

1. Terminal Operators and Supervisors
2. Port Authority Personnel and Harbor Masters
3. Marine Pilots and Mooring Masters
4. Ship Officers (Deck and Engineering)
5. Safety and Environment Officers
6. Operations Managers in the oil and gas sector
7. Maintenance and Engineering Staff
8. Vetting Inspectors and Auditors

Course Modules

Module 1: Fundamentals of Liquefied Gas & Terminal Infrastructure

- Properties and hazards of LNG, LPG, and other bulk gases.

- Terminal layout, storage tanks, and cryogenic equipment.
- Understanding the ship-shore interface and communication protocols.
- Regulatory framework: IGC Code, SOLAS, and national standards.
- **Case Study:** The Skikda LNG Terminal explosion (Algeria, 2004) to understand system failures.

Module 2: Advanced Cargo Handling and Transfer Operations

- Safe loading, discharging, and ballasting procedures.
- Operational control of cargo pumps, compressors, and loading arms.
- Managing boil-off gas (BOG) and reliquefaction systems.
- Precautions against static electricity and ignition sources.
- **Case Study:** The Milford Haven oil terminal fire (UK, 2011) to analyze effective and ineffective emergency shutdown systems.

Module 3: Risk Management and Safety Procedures

- Conducting HAZID and HAZOP studies for terminal operations.
- Permit-to-Work (PTW) systems and simultaneous operations (SIMOPS).
- Enclosed space entry and gas-freeing procedures.
- Personal protective equipment (PPE) for cryogenic environments.
- **Case Study:** Analyzing the root causes of the Buncefield oil depot fire (UK, 2005) to highlight the importance of safety management systems and alarms.

Module 4: Emergency Response and Incident Management

- Developing and implementing a comprehensive Emergency Response Plan (ERP).
- Advanced firefighting techniques for gas fires and cryogenic spills.
- Spill containment, vapor dispersion, and environmental protection.
- Crisis communication and incident command system (ICS).
- **Case Study:** The Montara oil spill (Australia, 2009) to learn about inter-agency coordination and environmental impact mitigation.

Module 5: Maintenance, Integrity, and Quality Assurance

- Integrity management of terminal infrastructure and piping.
- Inspection, maintenance, and testing of safety-critical systems.
- Quality assurance of cargo transfer and custody.
- Port and flag state inspections.
- **Case Study:** The Deepwater Horizon disaster (Gulf of Mexico, 2010) to understand how poor maintenance, weak safety culture, and lack of oversight can lead to catastrophic failures.

Module 6: Ship/Shore Compatibility and Operational Readiness

- Pre-arrival checks and ship-shore compatibility reviews.
- Establishing and maintaining effective communication links.
- Joint safety meetings and declaration of readiness.
- Operational planning and berthing/mooring protocols.
- **Case Study:** A fictional scenario involving a non-compliant ship attempting to berth, exploring how procedural non-adherence can create significant risk.

Module 7: Human Factors and Leadership in Safety

- Recognizing and mitigating human error in operations.
- Leadership in safety and fostering a positive safety culture.
- Fatigue management and crew resource management (CRM).
- Training and competency frameworks for all personnel.
- **Case Study:** The Piper Alpha disaster (North Sea, 1988) to illustrate how procedural drift and poor communication can compound errors with disastrous results.

Module 8: Advanced Monitoring and Future Trends

- Utilization of advanced gas detection and telemetry systems.
- Integrating automation and digital twin technologies for enhanced safety.
- Future fuels: ammonia, hydrogen, and their implications for terminal design.
- Cybersecurity for industrial control systems.
- **Case Study:** Discussion of a modern terminal's use of real-time data analytics and predictive maintenance to prevent equipment failure.

Training Methodology

The course employs a blended learning approach that combines **theory with practical application**. This includes:

- Interactive Lectures and discussions.
- High-Fidelity Simulator Training for realistic scenarios
- Case Study Analysis and group debriefs to learn from real-world incidents.
- Role-Playing Exercises for emergency response drills.
- On-site or Virtual Tours of a model LNG/LPG terminal
- Pre- and Post-Course Assessments to measure knowledge and competency gain.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
21 Sep 2026	25 Sep 2026	Online	$1,000
21 Sep 2026	25 Sep 2026	Physical	$1,500
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0

Ready to enroll or request a customized program? Book online or contact us:

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