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LNG SHIP AND LNG BUNKER VESSEL INSPECTIONS

FOR MARINE SURVEYORS, ENGINEERS & FLAG PORT STATE - Advanced Technical,
Commercial, Standards and Safety Considerations



Objectives of this Training Course:

After the completion of this course, the participants will be able to:

- ❖ Reinforce knowledge about operations that are carried out in accordance with all relevant national and international maritime legislation, local regulations, and industry best practices.
- ❖ Evaluate the different procedures and factors affecting cost of the operation.
- ❖ Ensure overall safety for LNG operation on the use of correct size and number of fenders and certified tested hoses.
- ❖ Become familiar with LNG vessels, operations and LNG equipment.
- ❖ Enhance understanding of Ship-to-Ship transfer equipment, design, maintenance – and training methods for STS.
- ❖ Familiarise the differences of Person in Overall Advisory Control, Mooring Master and Master of the Ship.
- ❖ Establish a useful methodology in reducing risk.
- ❖ Understand environmental challenges.
- ❖ Recognise and understand differences in operations and hazards between oil and gas vessels.
- ❖ Understand requirements for LNG vessel compatibility and Optimoor studies and follow an LNG spill response case study

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About this Training Course:

Course designed specifically for individuals and teams engaged in the LNG Vessel and Bunkering Industries. An intensive 3-day Instructor Led course will equip the participants with a detailed practical grounding in LNG and operations specifically designed for Marine Surveyors, Marine Engineers, Insurance professionals and Port State.

In depth coverage for skilled maritime professionals whether Classification Surveyors, Warranty, Insurance or Port State. By the end of the course participants will also appreciate the core technologies underpinning the LNG industry in Liquefaction, Shipping and Regasification.

In addition, have an understanding of global LNG markets, new builds and technologies, that form the basis for much of the world's LNG trade. Starting at LNG production and sale, through the maritime industry supply chain. Learn the practical tools and techniques that can be utilised to manage risk more effectively and make better practical decisions. Real-life examples will help to illustrate the main concepts and possibilities.

In-depth Analysis of the Following LNG Topics include:

- Current world energy supply
- Trends in LNG and New Energy development
- Technology Development in LNG and Transfer Inspections
- LNG In service inspections
- Service LNG leak testing
- LNG Hose ops and vessels procedures
- LNG Vessel Construction, Design, Engineering and New Builds
- Recent Developments in LNG Procedures and Standards
- Marine Surveying and Inspections for LNG Bunkering
- Applicable codes– LNG
- LNG Classifications and Societies
- Introduction to LNG Properties and LNG Science
- LNG Properties, LNG Science and Chemical composition
- LNG Transfer Failures Investigation and Root Cause Analysis – Diagnosis, Analysis and Planning
- LNG for Marine Engineers and Tech Superintendents – Wear down, Fatigue and Failure Management Practices and planning for LNG Fuel and Bunkering
- Discuss onboard planned maintenance systems – PMS
- Discuss Trend analysis – T.A
- LNG Quality and Quantity technologies
- LNG as a Fuel and Ship Design Configurations
- Current LNG Propulsion Options, LNG Fuel Tanks, LNG STORAGE
- LNG Fuel Systems
- Cryogenics, BOG Roll Over and LNG Blending
- LNG Critical Equipment and failures – Factual Case studies
- Impacts on Ship Configurations and Operation
- LNG Vessel Technology and Operations
- Vessel operational preparedness for LNG
- Measures to reduce energy consumption in ship applications
- Cut operating costs while, at the same time, reducing emissions
- Technological efficiencies to reduce energy Consumption in all ship application

Who should attend this Training Course?

This course is intended for the following LNG professionals:

- ❖ Ship owners, operators, surveyors and managers
 - ❖ Marine engineers and technical superintendents
 - ❖ Bunkering companies and fuel suppliers
 - ❖ Port and terminal operators
 - ❖ Classification societies and regulatory bodies
 - ❖ Maritime consultants and surveyors
 - ❖ Insurance and risk professionals
 - ❖ Equipment manufacturers for marine fuel systems
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- ❖ Energy and shipping traders

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❖ Environmental compliance officers

Other useful information at a glance:

Course level:	Intermediate
Maximum number of participants:	10

This course is through Online Instructor Led Training format or corporate 'In House' training worldwide.

More testimonials from past participants about OUR COURSES:

PSC LNG and Offshore Technical Operations course by the trainer. Great to get back up to speed with these new technologies", Senior Marine Manager, TEEKAY Offshore GRP

"We have utilised this training for our LNG Tech Superintendent's. There are a lot of benefits," Led Surveyor - LNG Singapore

"With LNG Bunkering growth development, this course was key," Senior Marine Superintendent, Carnival Cruise Line GRP

"Our LNG further projects and oversight committee obtained terrific value," Technical Superintendent, Qatar LNG

"The offshore technical aspects are excellent.," Offshore Asset Manager, TOTAL Marine Ltd

3-DAYCOURSE AGENDA BELOW.

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DAY 1:

LNG Markets

- Current world energy supply
- Trends in LNG and New Energy development
- Technology Development in LNG
- Market drivers for LNG

What LNG Facilities are currently available worldwide?

- Existing infrastructure and locations
- Potential future development by regions
- Standardisation of facilities and procedures, is there any?
- What would be the best infrastructure in region and else where

Exercise & Case Study & Comparison Analysis

- The commercial arguments for LNG as marine fuel
- LNG and Low-sulphur fuels LSFO explained. LSFO vs. LNG as alternative fuel sources

Recent Developments in LNG Procedures and Standards

- Applicable codes
- International Safety Management (ISM)
- Tanker Management Self-Assessment (TMSA)
- International Ship and Port Security (ISPS)
- LNG Codes, Guidelines, Class and Regulations
- International code safety of ships using gases as fuel (IGF)

LNG Operations and Procedures for various delivery methods

Barge

- Key principles of LNG STS
- Parties involved, pre planning and equipment
- Mooring, operations and manoeuvring
- Cargo transfer operations

Land to Ship

- Truck to Ship (TTS) and Loading Arm options
- Parties involved and roles in preparedness
- Equipment and compatibility
- Key steps in preparation
- Operations

Terminal pipeline

- ISO standard (28460-2010)
- Pilotage and Vessel Traffic Services (VTS)
- Tug and mooring boat operators
- Terminal layout and operations
- Terminal and ship operator collaboration

LNG Custody Transfer, Measurement and Calculations

- System setup parameters
- Ship and surveyor roles
- Certificate of Loading
- Bill of Lading issuance and presentation for certain receiving countries
- Types of Custody Transfer Measurement
 - Systems and equipment
 - Liquid form measurement
 - Volumetric measurement
 - Temperature measurement
 - Custody Transfer Measurement system (CTMs) testing and checks

DAY 1 (CONTINUED):

- LNG Custody Transfer Procedure

LNG and Transfer Inspections

- In service inspections
- Service leak testing
- Hose ops and vessels procedures
- Color couplings indexes
- Operational risk profiles in Bunkering
- Inspections and Audit: Rigging
- Inspections and Audit: Wire Ropes
- Inspections: Handling and Chains
- Inspection: Shackles and hardware

Case Study & Exercise

- LNG Transfer Failures Investigation and Root Cause Analysis – Diagnosis, Analysis and Planning

End of Day 1

DAY 2:

Introduction to LNG Properties and LNG Science

- LNG Properties
- LNG Science and Chemical composition
- General and Specific Risks
- Risk Assessments – Operations, People and Training
- Risk Control measures

LNG Safety and Risk Management

- Risk Analysis and Job Safety Analysis – Objectives
- Technical characteristics of LNG
- Handling, storage and spill risk
- Volatile cargo and gas vapours leak from ruptured tanks, Hoses and pipelines, causing oxygen deficiencies
- Gas Hazard Monitoring Equipment for JSA
- Adverse Weather Working – Guideline examples for JSA
- Approach to LNG and Installations
- Hose construction and length
- Hose quality and identification

The 'Golden' Safety Rules – LNG Port and Vessel Operations

LNG and Offshore Installation and Safety Management Practices

- OIM – Operations inside 500m safety zone
- Manoeuvring; safe approach, weather monitoring
- LNG and Bunkering Cargo handling and Planning
- LNG Installation Data Cards
- Accidental causes – fire on board ships
- LNG, Bunkers and Mechanical energy
- Liquids and gases
- Bunkers, Fire and the Fire Responses safety
- Investigation priorities upon arrival due to Bunkering failure
- Determining the point of origin
- Reconstruction of fire
- Documentation, sketches, sketching systems plotting methods

SWP/JSA Exercise – HSE Health and Safety Workplace Practises SWP/JSA for end-to-end Bunkering LNG

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DAY 2 (CONTINUED):

LNG Infrastructure decisions, location, designs, equipment

- Optimum location and equipment required
- LNG supplier contract and bunker cost to vessels
- Equipment types, storage tanks, pumps, Road rail requirements
- Emergency response facilities

LNG Project Facility Development

- Decide on location and facilities
- What operations will we do and how
- HAZID, what are the project risks
- Costing, development time, personnel
- Technical issues in LNG Bunkering Facility Development
- Feasibility assessment for a small-scale LNG project

Sloshing in membrane tanks

- In large LNGCs
- In small fuel tanks and bunker vessel

Organisation

- Master
- Person in charge Communications
- Receiving vessel and bunker supplier
- Verbal & non verbal communications

Hazardous areas

- Definition of the hazardous area
 - Electrical equipment in hazardous areas Safety and security zones
 - Definition of safety and security zone Cryogenic protection
- Controlling sources of ignition
- Potential sources of ignition
 - Static electricity
 - Galvanic currents

PPE

- Protective clothing
- Resuscitators and BA

Basic principles of gas fuelled engines

- Pure gas engines
- 4 Stroke dual fuel engines
- 2 stroke dual fuel engine HP and LP gas injection

Knocking and methane number

- Cause of knocking
- Problems caused by knocking
- Methane number and relationship to knocking

Quality measurement

- Recognise the issues associated with taking a sample of LNG liquid
- Describe the way in which samples may be taken
- Discuss the use of gas chromatography in determining composition of samples

(CONTINUED):

End of Day 2

DAY 3:

LNG Port and Vessel Planning – Considerations, Consultations

- Market assessment – demand
- Port and Vessel operations, emergencies, mooring systems
- Other options road tankers, ship to ship, alongside jetty
- Public relations, environment, jobs, education
- Risk Assessment, Operational and Safety benchmarks for LNG Bunkering Facilities

LNG Trading route developments

- New production facilities and locations
- New trading routes and hubs developing
- Off-shore industry expansion options for LNG as fuel
- On shore development of infrastructure
- Remote supplies and disaster recovery, portable LNG

LNG as a Fuel and Ship Design Configurations

- Current LNG Propulsion Options
- LNG Fuel Tanks
- LNG STORAGE
- LNG Fuel System
- Impacts on Ship Configurations and Operation
- Suitable Ship Types
- LNG and other Ship design efficiencies
- TOTE – New LNG Fuel Containership
- Retro fitting of existing vessels with LNG technology

Vessel Technology and Operations

- Vessel operational preparedness for LNG
- Measures to reduce energy consumption in ship applications
- Cut operating costs while, at the same time, reducing emissions
- Technological efficiencies to reduce energy Consumption in all ship application
 - Tankers and Bulker
 - Containership
 - RORO
 - Ferries
 - OSV

Exercise: Implementation of end-to-end LNG bunkering

- Developing a 10-point check list - LNG Bunkering

LNG for Marine Engineers and Tech Superintendents – Wear down, Fatigue and Failure Management Practices and planning for LNG Fuel and Bunkering

- Overview of SMS & PMS
- Discuss onboard planned maintenance systems – PMS
- Discuss Trend analysis – T.A
- Analysis of Condition monitoring technical – CME
- OEM Main Engine component failures relevant to engine performance

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DAY 3 – CONTINUED

LNG and other advanced technologies

- Future: LNG Test and Technology Centre – Liquid Natural Gas (LNG) has characteristics that impacts on ship design and operation
- LNG Fuelled Propulsion for Ships
- Innovative LNG transfer systems
- Development of offshore LNG Transfer
- Robotics and AI technology available
- Fibre optics and software compatibilities
- OEM and aftermarket installations
- Checklists for Marine Surveyors and Engineers

BUNKING VESSELS, FPSO, FSRU, FPO Systems and Designs

- Factual Case studies and developments
- Recent build designs from South Korea, China shipyards
- LNG vessel past and future design developments
- Development of cryogenic equipment and designs
- BOG Roll over considerations and tank designs
- Cryogenic Hoses designs and testing facilities around the globe
- QCDC and loading arms
- Manifold, Saddle and ESD 1 and 2 designs

LNG Cargo Care, Shell LNG and LNG VOY for Marine Surveyors

- What are they, how do Charterparty agreements affect you
- Trends in LNG cargo and losses in freight
- BOG fuel and MFO equivalents
- Concerning trends in LNG usage and BOG in Shipping
- Cargo Care Officers roles
- JCC, Henry Hub trading
- Differing LNG compositions
- LNG Enrichment blending
- Quality and Quantity
- Control mechanisms and technologies
- LNG Raman Analysers



**MARINE LNG INSTITUTE – CERTIFICATIONS AND CERTIFICATES
ISSUED AFTER COMPLETION.**

REGISTRATION FORM

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DELEGATE DETAILS

Delegate 1

Mr Ms Mrs Dr Others: _____

Name : _____

Job Title : _____

Department : _____

Telephone No. : _____

Email : _____

PAYMENT METHODS

By Direct Transfer. Please quote your Students Name with the remittance advise via email to student enrolments via our website. www.marinelnginstitute.com

All bank charges to be borne by payer. Please ensure that the full invoiced amount per student is received in USD.

We do not accept By Credit Card.

As Payment through credit card incurs a 3.5% admin fee payable by the payer. Payment through credit card is not applicable.

PAYMENT POLICY

Payment is due in full at the time of registration and enrolment. Full payment is mandatory for event attendance. By submitting this registration form, you have agreed to payment terms.

CANCELLATIONS & SUBSTITUTIONS

You may substitute delegates at any time. For cancellations received in writing more than seven (7) days prior to the training course, delegates will receive a 100% credit on the amount paid which can be used in another training course for up to one year from the date of issuance. The credit is transferable to other persons in the same company and applicable against any future public course. For cancellations received seven (7) days or less prior to an event (including day 7), no credit will be issued. In addition, a cancellation fee equivalent to 15% of the course fee will be charged. In the event that we postpone or cancels a course, delegate payments at the date of cancellation or postponement will be refunded in full. MLNGI does not provide refunds for cancellations and postponements or waive fees for unpaid invoices upon receipt of registration

Delegate 2

Mr Ms Mrs Dr Others: _____

Name : _____

Job Title : _____

Department : _____

Telephone No. : _____

Email : _____

Company : _____

Address : _____

Country : _____ Postcode: _____

Attention : _____

Invoice to : _____

Telephone No. : _____

Fax No. : _____

3 EASY WAYS TO REGISTER

Please note

- Indicate if you have already registered and made payment by Email + or Web.
- If you have not received an acknowledgement by email before the training course, please contact us to confirm your booking.
- Photocopy this form to register multiple delegates.

3 EASY WAYS TO REGISTER

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