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# AN INTRODUCTION TO NATURAL GAS AND LNG

A INTRODUCTORY COURSE INTO THE NATURAL GAS AND LNG INDUSTRIES



## About the Course

A Marine LNG Institute 'Flagship' course that will equip you with a practical grounding in the fundamentals of NATURAL GAS, AND LNG. You will learn the practical tools and techniques that can be utilized to manage risk more effectively and make better practical operational decisions while handling. A basic introductory course that will;

1. Reinforce knowledge about operations that are carried out in accordance with all relevant national and international maritime legislation, local regulations, and industry best practices.
2. Evaluate the different procedures and factors affecting cost of the operation
3. Ensure overall safety for any NATURAL GAS AND LNG operation.
4. Become familiar with LNG vessels, operations and NATURAL GAS AND LNG and equipment
5. Enhance understanding of equipment, design, maintenance - and training methods for NATURAL GAS AND LNG and NATURAL GAS AND LNG.
6. Establish a useful methodology in reducing risk
7. Understanding environmental challenges
8. Recognize and understand differences in operations and hazards between oil and gas vessels.
9. Understand requirements for NATURAL GAS AND LNG vessel compatibility and Optimoor studies and follow an LNG spill response case study
10. What Regulations and Guidelines Govern NATURAL GAS AND LNG?

There is nearly unprecedented record for growth of Natural Gas and the LNG Transportation Sector towards 2035 and beyond. Spot Charters, Emergency Charters, and alternatives to crude oil from sanctioned countries have been some of the drivers for surge in demand. However, the interim factors may appear to be of some significance, but the key drivers are global movement towards clean energy and reduction of GHG Emissions. The surge in Floating LNG Terminals (FSRUs and FSUs) by conversion and new building projects has created more destinations for LNG Shipping.

## Objectives of this Training Course:

After the completion of this course, the participants will be able to: **Key Topics Covered.**

1. Gain world leading advance techniques concerning the entire Liquid/Gas and LNG SHIPPING and terminal process chain
2. Understand the leading advances in NATURAL GAS AND LNG cargo transfer operations from both a Liquid and Gas ship management and terminal/Facility perspective.
3. Make accurate measurements and calculations of all liquid and Gas transfers, and product quality accuracy. Including the advanced systems available on the market today and in the future from around the globe
4. Examine the impact of various design codes and guidelines on Liquid and Gas ship and shore transfer management
5. Better select, understand and manage supply chain transportation contracts in the Liquid and Gas industry from around the world
6. Examine many real Case Studies from around the Globe concerning Liquid and Gas incidents and evaluate tanker/terminal safety, commercial liability, associated risks and requirements to better manage and safe guard your liquid and Gas operations
7. Learn in detail about the liquid and Gas business and operations from one of the world's leading industry
8. What Regulations and Guidelines are Governing NATURAL GAS AND LNG Operations?
9. Master the Parties Involved in the NATURAL GAS AND LNG Transfers and their Relationship to One Another
10. Emergency Response and Contingency Planning
11. NATURAL GAS AND LNG Industry and Future LNG Developments
12. Case Study: Liquefied Natural Gas Ship to Ship Transfer Operations to Floating Structure regasification Unit
13. Case Study: LNG Spill Response during Cargo operations
14. Case Study: LNG Fuel spill failures from around the Globe

## Course Duration

This 3 full-day instructor led Online or In House course and workshop are exclusively developed for professionals seeking entry into the natural gas and LNG industries. **Exclusive opportunity for Consultative Session** with industry expert.

## About your course Director:

One of the world's leading Marine Engineering University Lecturers and Liquid and Gas/Petrochemical Experts with 30 years of experience Engaged as an IMO expert on Marine Engineering, Liquid and Gas Cargo's, terminal, vessel and offshore platforms, STS – ports and harbor infrastructure, safety; LNG Cargo and propulsion and vessel component integrity and failure. A former Chief Engineer, Flag State Surveyor, Classification and PMA Inspector, IMO Representative and Oil/Gas LNG Technical Expert. An experienced University Marine Engineering Lecturer. He lectures in the field of Advanced Marine Engineering, LNG Ship and Terminal survey engineering, LNG auditing and safety throughout Qatar, UK, China, Korea, Europe and the USA.

## Who should attend this Training Course?

This course is intended for the following LNG professionals:

- ❖ Maritime Lawyers and consultants to the LNG industry
- ❖ Ship owners, operators, surveyors and LNG managers
- ❖ Marine engineers and technical superintendents
- ❖ Bunkering companies and fuel suppliers
- ❖ Port and terminal operators
- ❖ Classification societies and regulatory bodies
- ❖ Maritime consultants and surveyors
- ❖ Equipment manufacturers for marine fuel systems
- ❖ Energy and shipping traders
- ❖ Environmental compliance officers
- ❖ Ship Owners and Managers
- ❖ Offshore Vessel and FPSO Owners and Operators
- ❖ Oil Majors, NOCs and Independents
- ❖ Ship Superintendents and Safety Officers
- ❖ Ship Officers and Crews (Master, Chief Officers, Chief Engineers etc)
- ❖ Bunkering industry Personnel including Loading and Mooring Masters
- ❖ NATURAL GAS AND LNG Service Providers
- ❖ Liquid Cargo and Bunker Surveyors
- ❖ Ports and Terminal Operators
- ❖ P&I Inspectors and Executives
- ❖ LNG FSU Owners, Managers, Operators
- ❖ Company Assurance Managers and Superintendents
- ❖ Project Directors
- ❖ Asset Managers
- ❖ Project Managers
- ❖ Project Planners
- ❖ Cost Estimators
- ❖ Quality Assurance Managers
- ❖ Contract Managers
- ❖ Procurement Managers
- ❖ Project Engineers
- ❖ Discipline Engineers

Other useful information at a glance:

Course level:	Basic to Intermediate
Maximum number of participants:	10

### More testimonials from past participants about the Marine LNG Institute Courses:

*Great expert, very professional and a key speaker. I attended the PSC LNG and Offshore Technical Operations course. Really good 3 days and got a lot out of it. It will help us develop in the future”, **Senior Base Manager, Chevron Offshore***

*“We have utilised this training for our crew and LNG Tech Superintendent’s for several years. There are a lot of benefits,” **China Shipping Lines (CSL)***

*“I got so much out of it. I have never been or listen to an expert speaker in this technical LNG Maritime field. He is now going to assist us as we proceed with our ventures in the future,” **Senior Manager, Shell Singapore***

*“I have been to several Online Seminars and this one was the best I have attended so far. Very technical and informative, very approachable and professional. We have since engaged the trainer for further projects and oversight,” **Technical Superintendent, Qatar (LNG Projects)***

*“The offshore technical aspects to the trainer’s seminars are excellent. I will do again in LNG,” **Offshore Strategic Manager, BP Marine Ltd***

### FULL COURSE AGENDA BELOW.

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## Course Syllabus

### DAY 1

#### Introduction to Course

Introduction of Lecturer and student attendees  
Basic outlines of course contents and schedule

#### Introduction to LNG and Natural Gas TRADE, ROUTES, EXPLORATION AND PRODUCTION

Onshore and offshore

- Upstream
- Downstream
- Midstream
- New Trends
- FPSO, FSRU, FLNG and STS Hose designs

#### LIQUIDEFACTIONS, STORAGE AND TRANSPORTATION

- Pipeline
- Marine transportation
- Distribution to energy grids
- LNG and Gas storage containment capability and redundancies
- Classification of storage tanks and design developments
- Introduction to LNG and Natural Gas Quality and quantity calculations, calibrations OEM's, tools and measurement's

#### INTRODUCTION TO OFFSHORE AND ONSHORE TECHNOLOGIES

- LNG and Natural Gas terminal and vessel - main types
- Vessel design - Moss Rosenberg, Membrane, Steamships
- Storage design and Gas detections systems
- The science of LNG -.as an energy and power source
- The IMO involvement
- Advantages of LNG as an energy source
- Co2 and Emission Control Technology [E.C.T]
- Carbon Capture and Storage and LNF designs for the future. Are we there yet?
- Boil Off Gas characteristics and dual fuel options
- Diesel, Electric, Hydrogen, methane and LNG powered vessel systems on the market
- LNG Technical comparisons and containment systems

#### Regulations and Guidelines Governing NATURAL GAS AND LNG and Transfer Operations

- MARPOL Annex 1, Section 8 about Oil Tanker
- Latest on transfer Guides for Crude, Products and Liquid Gasses
- International Safety Guide for Oil Tankers and Terminals (ISGOTT)
- Oil Companies International Marine Forum (OCIMF) Guidelines
- LNG Vessel operations in port guidance and NATURAL GAS AND LNG configurations
- LNG Bunkering guidelines (SGMF)

#### Introduction to Methanol, Hydrogen, LNG and gaseous fuels

- Definitions and abbreviations - Introduction to maritime systems
- Safety-related properties and Risk comparison for gaseous hydrogen and methanol
- Comparison of safety-related properties for hydrogen and methanol and Hydrogen in liquid (cryogenic) form Outdoor/ Enclosed-room releases

#### Introduction to Natural Gas alternatives - Fuel Cell Technologies

- Summary of Fuel Cell technologies
- The 3 most promising fuel cell technologies
- Alkaline fuel cell (AFC)
- Proton Exchange Membrane fuel cell (PEMFC)
- High Temperature PEM
- Direct methanol fuel cell (DMFC)
- Phosphoric acid fuel cell (PAFC)
- Molten carbonate fuel cell (MCFC)
- Solid oxide fuel cell (SOFC)

#### Introduction to the Parties involved in NATURAL GAS AND LNG and their Relationship to One Another

• How Parties involved (Oil/Gas Majors, Charterers, Service Provider, Cargo Surveyors, POAC, Ships' masters and Mooring Master) work harmoniously to attain operational efficiency and safety

#### Introduction to Ship Management and receiving terminal

Preparation of Cargo Cycle – LNG and Liquid/Gas Terminal Compatibility Studies

Codes applicable to bunkering of both ocean-going vessels and harbour craft

- Technical reference covers LNG delivery from NATURAL GAS AND LNG and bunkering facilities (i.e., trucking, shore, terminal, shipping and ISO tankers lifting facilities) to receiving ships through four modes of transfer (NATURAL GAS AND LNG, truck-to-ship, shore-to-ship, ship-to-ship and cassette bunkering)
- Roles and responsibility of terminal in NATURAL GAS AND LNG cargo transfer
- NATURAL GAS AND LNG Terminal loading and discharging

- Ship-to-Shore operations interfaces

## **Introduction to Liquid/Gas Operations -Tanker Loading and Discharging Operations and Preparations**

- Arrival preparations and checklist NATURAL GAS AND LNG
- Loading Arms – Technology, vendors and designs
- Cryogenic Hoses, testing and type 8 inch and 6 Inch
- Dynamic Positioning
- Manoeuvring with and without tug assistance or DP
- Jetty Approaches: Finger or Face Terminal Design Interface Pre-loading procedures alongside. Ramp up, loading and ramp down, actions and precautions

## **Introduction to Pre-planning and Risk Assessment Considerations – FSRU/FLNG NATURAL GAS AND LNG**

- What is LNG? Hazards and Risks vs. Oil
- Screening / Compatibility Studies of participating vessels
- Ship compatibility, and OPTIMOOR
- Criteria in selecting transfer area and Approval from the authorities
- Security issues
- Preparations
- Risk Assessments and Management, Helicopter operations, Cargo Hazards, weather conditions, personnel injury, mooring unmooring operations
- Oil v/s LNG any differences? LNG and Liquid/Gas Transfer System Architectures and available technologies
  - Ship to Ship to shore
  - Ship to Platform
  - Ship to Ship
  - Barge to Ship
  - NATURAL GAS AND LNG and FSRU
  - Ship connected transfer systems and tandem configurations
  - System Uptime considerations of effective operations

## **Plan and Review NATURAL GAS AND LNG Exercise**

- Plan review and discuss NATURAL GAS AND LNG and equipment items required
- Confirm any training requirements
- Simulation training and bridge team resources management

## **Day 2**

### **Introduction to NATURAL GAS AND LNG Mooring Operations Manoeuvring and Risks**

- Underway and Anchored operations
- Navigation signals
- Tug and Tender assistance
- Carriage and Delivery of Fenders and Equipment
- Communications
- Mooring operations, weather limitations for operations.

### **NATURAL GAS AND LNG Safety and Risk Management**

Recent industry incidents highlighted

- Common causes of these incidents
- ESD 1 and 2 Design Codes and Operations Alarm settings ESD Actions
- Required crew training and preparations
- Hazards and Risks moving forward
  - Geographical hazards
  - Crew factor
- Water Curtain Operations
- Theory and Potential Damages

### **Introduction to Ship and Shore requirements**

- Preparing for the future incidents
- Contingency planning
- Salvage of an LNG vessel
- Considerations for cargo recovery
- Environmental impact
- Technical equipment development
- Risk profiling of your operations
- What response is required?

### **Case Study - Spill Responses**

### **NATURAL GAS AND LNG and Cargo Transfer Operations**

Introduction to LNG vessel types

- Personnel transfer
- Pre- Cargo Transfer meeting
- Checklist and communications confirmation
- Custody Transfer measurement
- Emergency Shut Down NATURAL GAS AND LNG, Shore ESD 2 and NATURAL GAS AND LNG ESD 2 difference
- Cargo operations and monitoring
- Differences for operations between oil and LNG

## **CASE STUDY - NATURAL GAS AND LNG**

- Compatibility study and meeting
- OPTIMOOR study
- Simulator training and NATURAL GAS AND LNG equipment
- Cargo discharge considerations

## **NATURAL GAS AND LNG - Best Practices Oil and LNG comparisons**

- Discuss main considerations
- Best practice any real differences between oil and gas?

## **Introduction to Emergency Response and Contingency Planning - NATURAL GAS AND LNG**

- Things to do in case of emergency
- General Emergency Response Management
- Contingency equipment
- Oil spill and LNG leak,
- SOPEP use
- Fire or Structural damage
- Poor weather and mooring failures
- Precautions against piracy
- Media management and communications, parties involved.

## **CASE STUDY LNG Spill Response during Cargo Transfer Operations**

- Immediate response and notifications
- Effects and consequences of the spill
- Contingency considerations after spill
- Investigation and Cause

## **Industry and Future of NATURAL GAS AND LNG and LNG Developments**

- New Technologies and Future Developments

## **Vessel Design, Technology and Operations - NATURAL GAS AND LNG**

Fuel systems for LNG powered Vessels

- Measures to reduce energy consumption in ship-to-ship applications
- Cut operating costs in NATURAL GAS AND LNG while, at the same time, reducing emissions
- Ship design efficiencies
- Technological efficiencies to reduce energy Consumption in all ship application
- Tankers and Bulker
- Containership
- RORO
- Ferries
- OSV

## **NATURAL GAS AND LNG Failures Investigation and Root Cause Analysis - Case Study & Delegate Exercise – LNG Failure and Diagnosis, Analysis and Planning**

### **Introduction to LNG Operations**

- LNG Loading Arms – Technology, vendors and designs
- Cryogenic Hoses, testing and type 8 inch and 6 Inch
- Dynamic Positioning
- Manoeuvring with and without tug assistance or DP
- Jetty Approaches – Finger or Face Terminal Design Interface
- Pre-loading procedures alongside
- Ramp up, loading and ramp down, actions and precautions
- Ramp up, increasing loading rate
- Tank loading procedures
- Ramp down and the topping off tanks process
- Vapour pressure control
- Post loading operations
- Commencement of gas burning and line disconnection
- Pre-arrival preparations, terminal requirements and ship line cool down
- Discharging and ramp down, heel options
- Overview of standard discharge operations
- Ramp down for heel distribution

### **LNG Large and Small Scale 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 bunkering 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 bunkering project

## LNG Facilities 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

## Introduction to SIMOPS – Simultaneous Operations (Transfers and Operations) during Operations

- Considerations when performing SIMPOS
- HAZARD and Risk when performing LNG SIMOPS
- Ship to Ship operations
- 24 Hr LNG operations
- Where do SIMPOS operations occur?
- Why are SIMPOS performed?

## DAY 3

### Introduction to NATURAL GAS AND LNG and an Examination of all Custody Transfer Measurement and Calculations

- System setup parameters
- Sampling and Certification Custody
- LNG Quality controlled transfers – Forensic and laboratory analysis
- Quality Management systems for LNG transfer and analysis
- LNG probes, equipment and software infrastructure to ensure quality control between vendors and buyers
- Ship and Terminal LNG Quality Control
- Transfer Guidelines of Terminals Ship and surveyor roles
- Certificate of Loading
- Types of Custody Transfer Measurement
  - Liquid/Gas Quality and Management during transfers
  - Quality Management Systems for Liquid/Gas
  - Terminal and ship systems and Equipment
- Inerting
- Aerating
- (CTMs) testing and checks

### Introduction to Flow Metering and design for NATURAL GAS AND LNG by system and type

- OEM Studies - Technological developments in CT
- Flow measurement and custody transfer flow metering, types
- Coriolis Flow mechanisms, design, metering and performance
- Thermal Flow mechanisms, design, metering and performance
- Differential Flow mechanisms, design, metering and performance
- Ultrasonic Flow mechanisms, design, metering and performance
- Vortex Flow mechanisms, design, metering and performance
- Applications of flow meters, calibration, calculations, transfer principles Safety

### Case Study - Liquid and Gas CARGO SPILLS/ESDAND RELEASES - Protocols and how the systems are used

#### Introduction to LNG and Natural Gas Trends and Demand

- Green LNG and Hydrogen
- Blue LNG and Hydrogen
- Gray LNG and Hydrogen
- Hydrogen
- Government Incentives
- Commercial perspectives Long term and Short term 'Spot'
- Market Realities and global demand

#### Introduction to the Allocation of Risk in the Carriage, transfer and Bunkering of LNG

- Claims for Shortage of Oil/LNG Cargo – Statistics
- Overview of LNG Supply Chain
- 'Boil-Off' During the Voyage and Bunkering
- Owners' Warranted Performance
- Charterparties for the Carriage of LNG Cargo
- Examination of the Contractual Allocation of Risk under LNGVOY

- Controls to Prevent LNG Cargo and Bunkering Shortage

## **Commercial and Insurance aspects of NATURAL GAS AND LNG Carrier General Average and how it affects all participants in the NATURAL GAS AND LNG Shipping Industry**

- What is G.A – why does it affect all participants commercially?
- G.A – LNG Carriers concerns
- G.A – LNG Charterer concerns
- G.A – LNG Facilities and Operators concerns
- G.A – NATURAL GAS AND LNG, Bunker Handlers & Bunker Operators concerns
- Commercial Contracts and the effects on all parties
- Technical nature of NG G.A
- Rights and Obligations of all participants in the event of LNG G.A

## **Introduction to NATURAL GAS AND LNG Safety and Planning**

- SWP/JSA Delegate Exercise - HSE Health and Safety Workplace Practices SWP/JSA for end-to-end Bunkering
- Bunkering Safety and Risk Management
- LNG 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 – Guidelines examples for JSA
- NATURAL GAS AND LNG Approach to Installations
- NATURAL GAS AND LNG Hose construction and length
- Hose quality and identification
- The 'Golden' Safety NATURAL GAS AND LNG Rules Operations
- Confined space entry
- LNG Process and Mechanical isolations
- Electrical isolation
- Lifting Operations

## **Introduction to NATURAL GAS AND LNG and Offshore Liquid transfer Inspections**

- In Service LNG Inspections
- NATURAL GAS AND LNG Service Leak Testing
- NATURAL GAS AND LNG Hose Ops and Vessels Procedures
- COLOUR COUPLINGS INDEXES
- Operational risk profiles in Bunkering
- NATURAL GAS AND LNG Inspections and Audit – Rigging

## **Case Studies and Delegate Exercise - Spill Response during LNG Operations**

### Immediate LNG response and notifications

- Effects and consequences of the LNG spill
- Contingency considerations after LNG spill
- Investigation and Cause

## **Introduction to Crisis Response and Emergency Management systems [Natural Gas]**

- LNG Crisis response procedures. Step-by-step procedures for LNG crisis response for category of situation for which an organization wishes to be prepared.
- The three Phases; Pre-Crisis, Crisis Response and Post Crisis planning
- Initial LNG crisis response. Define a LNG Crisis?
- Company Reputational Repair and Behavioural intentions
- LNG Crisis management-related policies. For example, who is an authorized spokesperson? What is required in terms of information security? What are employees allowed to share on social media?
- Development of Holding statements – LNG Crisis
- Notification and response protocols for the LNG Crisis Response Team. Who does what in a crisis, and when should they be informed/brought in?
- LNG Emergency notification procedures. How will we talk to our stakeholders, both internal and external, during a crisis?
- Spokesperson and Communication resources. What should spokespeople be doing from minute one of a crisis event?
- Key messaging for internal and external audiences. A framework and fill-in-the-blank messaging to allow almost-instant response to breaking issues.
- Company-specific LNG scenario planning.
- Additional crisis-response support tools. Helpful checklists and other time-saving resources that are built to help in the midst of the panic that often arises when a crises emerge.
- Crisis Stakeholder identification

## **LNG Operations and the core crisis management team**

- Ensuring their organization has proper planning and training in place.
- Monitoring for potential crises before they create lasting damage.
- Overall organization and execution of crisis response.
- Protecting the safety of all employees.
- Protecting the reputation of the company and its leadership.
- Assisting legal counsel in litigation prevention measures.

Note:

- (1) There will be a Question and Answer throughout the duration of the sessions and after each module.



## About the Marine LNG Institute - Course Director [NATURAL GAS AND LNG]

- One of the world's leading Liquid and Gas NATURAL GAS AND LNG Experts with 30 years of experience
- Engaged as an IMO expert on Liquid and Gas NATURAL GAS AND LNG, Cargo's, terminal, vessel and offshore platforms, NATURAL GAS AND LNG – ports and harbour infrastructure, safety; LNG Cargo and propulsion and vessel component integrity and failure

## Marine LNG Institute - Alumni Testimonials:

*'Lecturer is very knowledgeable and conduct himself and the course very well. A very interactive communication with clear and easy to understand.*

**Daewoo Technologies – South Korea**

*'Hybrid technology and regulations and current topics in marine industry such as renewable energy...great. Lecturer really expanded on technologies also very good.'*

**Ship management and Procurement – Wilhelmsen Vessel Management**

*'Great expert, very professional and a key Lecturer. Only 10 students on the course allowed is great for asking questions in small groups of the Lecturer.'*

**Senior Base Manager – Icon offshore Malaysia**

*'I'm going to go to do another of the informative courses. Very interesting and is well and truly a great Lecturer. Very informative.'*

**~ Business Manager, Chevron USA/International**

*'I got so much out of it. From an Oil and Gas perspective, I have never been or listen to a world leading expert in this technical Oil and Gas - Maritime field.'*

**~ Senior Manager, ConocoPhillips**

*'I have done several courses and this one was the best I have attended so far. Technical and informative, approachable and professional.'*

**~ Woodside Australia (Oil and Gas - Gorgon Project)**

*'Excellent Speaker and held in high regard in the Oil and Gas industry. All the executive management got a great presentation and seminar over the 4 days, terrific.'*

**~ KSDC Oil/Gas Brokers Malaysia**

*'We learnt a lot about the current marketplace and forecast LNG VALUE CHAIN AND OPERATIONS in USA, Asia, Qatar and the Middle East. The need for this course is essential if you are engaged in the industry.'*

**Chevron Gas and Oil [USA]**

*'Useful and interesting. Topic related to my job scope.'*

**~ Inter-Continental Oils & Fats Pte Ltd**

*'Instructor was good at presentation of the material. Topics are directly related to my current job scope. Case studies ensured equal and sufficient interaction and tested our understanding of the topics'*

**~ Dutch Shell Pte Ltd**

*'Good case studies and knowledge perspective.'*

**~ PT Chandra Petrochemical Tbk**

*'Lots of interaction between trainer & delegates. Informative on all topics.'*

**~ Nova Carriers (Singapore) Pte Ltd**

*'Trainer is very experienced and knowledgeable. Coursework/material were great.'*

**~ Total Oil Middle East Pte Ltd**

*'Speaker able to deliver clearly. Lots of case studies covered.'*

**~ Eni Pte Ltd**

**Partial list of clients includes: Qatar Energy, IMO, US NAVY, Samsung Heavy Industry – Korea, Royal Dutch - Shell (NATURAL GAS AND LNG) Construction, Singapore LNG, KOGAS - Korea, TOTE USA, Total Oil Asia, Chevron Gorgon, Shell - (Prelude), PETRONAS - Malaysia, Offshore Marine Service Alliance (Malaysia), Hans Ship Management (Singapore), Chevron Oil and Gas (U.S.A - GULF)**