ISO standard for supply of LNG as ship fuel

Presentation to the EMSA 3rd LNG as Bunker Fuel Experts Meeting
ISO TC67WG10PT1 on behalf of OGP

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MANAGING RISK DNV

The regulatory basis for LNG as fuel

IMO - IGC Code
Rules for the bunker boat,

IMO - IGF Code
Rules for the receiving ship, the ship using LNG as fuel

SIGGTO and OCIMF
Guidelines for LNG transfer and Port Operation

Port regulations
USCG, local authorities

Onshore regulations
EU , NFPA, FERC…..

Fuel supply infrastructure
?????

Proposal to ISO TC67WG10

- Establish a new project team (PT1) with the aim to develop a new ISO document addressing:

  Guidelines for systems and installations for supply of LNG as fuel to ships.

Status

- ISO TC67 approved the proposal
- It was concluded in March 2011 that sufficient numbers of participants had signed up and that the work should be started.
- The Kick off meeting was arranged in June 15-16 in Total's offices in Paris with 14 participants.
- Till now the group has met in Paris, Oslo, Dubai, Portsmouth, Washington DC, London and this week in Brussels.
- Today the work group comprise 35+ participants representing
  - 15 countries.
  - 8 oil, gas and energy companies
  - 2 regulators(NMD and USCG)
  - 3 shipping companies
  - 7 equipment providers
  - Sigtto and 3 class societies

Document philosophy

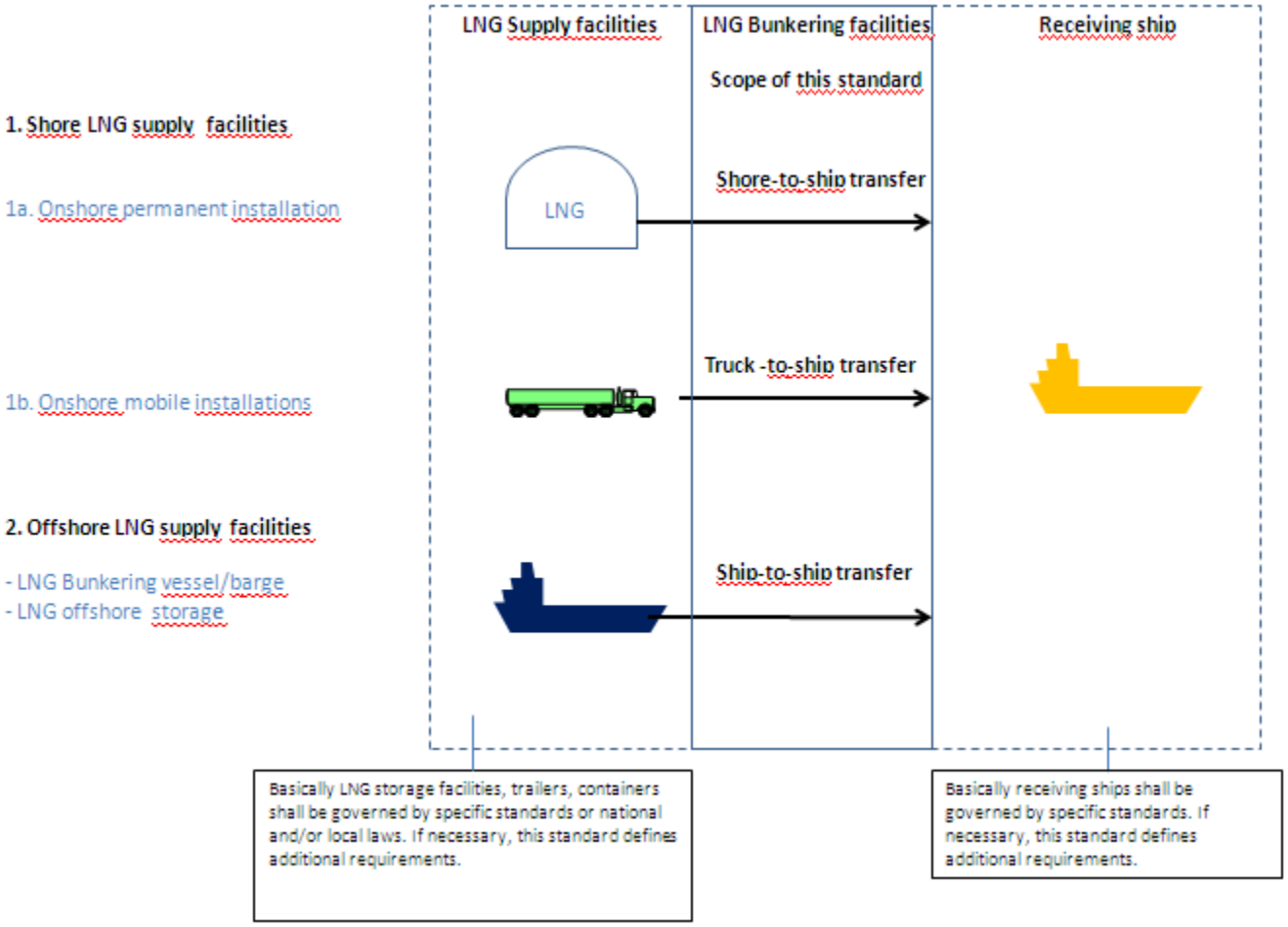
- The guideline will be a high level document outlining main principles and functional requirements.
- The document will define the procedures to design, to install, to operate and to maintain the bunkering loading facility with regard to safety aspects and environmental conditions
- The document shall promote standardisation of the interface between the LNG supplier and the ship both with regard to operations and hardware as an effective safety measure
- The document will give guidance for the use of risk assessment as part of the design and planning process.

- It is anticipated that the document will be supplemented with more detailed documents as the industry develops

Tentative Table of Content

- 1 Scope
- 2 Normative references
- 3 Terms and definitions.
- 4 General Safety Principles
- 5 Bunkering Scenarios
- 6 Properties and behavior of LNG
- 7 Risk Assessment Approach for alternate approaches
- 8 Functional requirements for LNG Bunkering system
- 9 Requirements to components and systems
- 10 Training
- 11 Requirements for documentation

General principles and bunkering scenarios



General Safety Principles

- Safety and elimination of releases first priority
  - Normal approach to meet specified conservative requirements
  - Alternate approach based on risk assessment to enable novel and improved technology, and enhanced experience

Properties of LNG

- Properties and behavior of LNG
  - Description and Hazards of LNG
  - Potential Hazardous situations associated with LNG Transfer
  - Specification of LNG as a bunker fuel

Functional requirements for the LNG Bunkering system

- Capabilities to transfer the required amount of fuel
- Minimise operational releases to environment
- Safety
  - Prevent releases of HC.
  - Contain a hazardous situation
  - Minimise consequences
- *Some examples:*
  - *Components and systems to be in accordance with recognised standards.*
  - *Electrical isolation*
  - *Rapid ESD and disconnect*
  - *Organisation, communication and procedures to be documented.*
  - *Emergency plan to be established and communicated*
- *Discussion issues*
  - *Passengers and cargo operations*
  - *Purging and inerting prior to connection*

Training

- The depth of training should be commensurate on the roles and responsibilities of the personnel and the complexity of the operation and facilities.
- Bunkering personnel need to know:
  - LNG properties and basics of LNG Handling
  - Use of Equipment
  - Port specific operations
  - Emergency plans
- For the ship crew will be in agreement with the IGF code and aligned with STCW..
- The qualification requirements for the shore personnel will be regulated by the national/ port authorities (EN1473).

Documentation

- Requirements to documentation
  - Design documentation (design basis, safety philosophy,….
  - Operational plan
  - Emergency preparedness
  - Checklists /procedures to
    - ensure safe hook-up
    - safe transfer
    - safe completion
  - Training records
  - Maintenance records

  - *Certification of delivered quantity and quality.*
  - *Bunker supplier should provide certification of delivered amount and quality*.

Comments to the EMSA report.

- ►Gap 1 - The LNG bunkering procedure is not regulated by IMO requirements and standards.
  - *Should bunkering be part of IMO mandate, Shore and Port regulations must be met*

- ►Gap 2 - The future status of the ISO Technical Report on LNG bunkering within the international rule framework will have to be reinforced through references in another common standards and/or legal texts
  - *Immediate need is guidance. The work with ISO Documents will continue as experience builds up*

- ►Gap 3 - The definition of the bunkering process and the division of responsibilities for bunkering LNG as fuel is not covered by the Technical Report of the ISO TC 67 WG 10 (and the IGF Code) currently under development
  - *The definition of the bunkering process is part of the system design. The ISO TC67WG10PT1 document requires that the process is defined and documented. Reference will be given to appropriate guidelines*

Comments to the EMSA report.

- ►Gap 5 - The connection and disconnection process of portable LNG fuel tanks is not defined in the current draft of the IGF code and the Technical Report of the ISO TC 67 WG 10
  - *The ISO TC67WG10PT1 group concluded that this is under the mandate of the IGF*

- ► Gap 8 – Despite the large varieties in terms of national legislation, further guidance or standard for small scale LNG bunkering stations could be developed looking into current best practices
  - *ISO development ongoing for roadfueling*

- ►Gap 9 – Despite various industry driven initiatives common guidelines for port rules on LNG bunkering procedures are not yet available
  - *The aim of the ISO TC67WG10PT1 work will be to address this*

Comments to the EMSA report.

- ►Gap 9.1 - Common criteria for the risk assessment approach and risk acceptance criteria for LNG bunker procedures are missing which requires each port to develop its own standards with potential differentiations as a result.
  - *ISO TC67WG10PT1 will propose a set of acceptance criteria. This will be the minimum. Higher safety level may be required by national requirements*

- ►Gap 9.2 – Indicators for determining common safety distances and identification of LNG bunkering processes are currently missing
  - *This needs to be defined based on risk assessment*

- ►Gap 9.3 - Common safety accreditation criteria for LNG bunker companies are missing
  - *Agree*

Comments to the EMSA report

- ►Gap 9.4 – Additional measures for LNG bunker operations within emergency plans should be considered
  - *ISO TC67WG10PT1 will require that an emergency plans are established, documented and communicated*
- ►Gap 10 – Crew training requirements for LNG carrying or fuelled inland vessels and barges are not existing and have to be developed especially with a view on using inland barges as bunker barges
  - *ISO TC67WG10PT1 will list training requirements*
- ►Gap 11 - No international standards for the specification of LNG as marine fuel are available
  - *ISO TC67WG10PT1 have raised this with ISO TC28 W6. who will initiate this. Status not known*

Comments to the EMSA report

- ►Gap 12 - For the measurement of the sulphur content of LNG as fuel no requirements and guidelines are available.
  - *Is this relevant? H2S and other sulphur compounds will be removed below 5 ppm before liquefaction*

- ►Gap 13 - A standard for the safe sampling of LNG as fuel is missing
  - *Agree. Should be addressed by ISO TC28 W6*

- ►Gap 14 - For the standardization of the equipment for the connection of communication devices and process monitoring including Emergency shut down (ESD) between the LNG delivering facility and the receiving gas fuelled vessel no standard is available**.**
  - *ISO TC67WG10PT1 will address this. Needs and complexity will vary significantly and no single description will fit.*

Comments to the EMSA report

- ►Gap 15 - Procedures and equipment for gas measurement are missing
  - *Should be addressed by ISO TC28 W6*

- ►Gap 16 – To reduce potential negative environmental impacts related to the possible methane spills, operational guidelines need to be developed
  - *ISO TC67WG10PT1 will require that bunkering shall be conducted with closed systems and that operational releases during connection and disconnection shall be minimised. This will be reflected in design and operational plans.*

Status

- The needs of the industry are urgent and driven by project commitments and ECA deadlines.
- The urgent need has triggered numerous parallel activities:
- It is crucial that ongoing activities are coordinated and aligned to provide industry guidance as soon as possible with a minimum of confusion.

Way ahead

- Align with ISO committees for marine fuel, road fuel and EMSA
- Investigate how a draft document can be shared with industry without formal approval
- Finalise high level document based on committee consensus early 2013

Thank you for your attention