



Gas LNG Europe

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LNG Ship Approval Procedure

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Introduction and Executive Summary

The opening of European LNG terminals to third party access coincides with the end of the era of solely dedicated LNG fleets based on long-term Sales and Purchase Agreements, and linking one LNG liquefaction plant with one LNG terminal. This evolution is accompanied by an important growth of the LNG fleet and a booming development of the LNG spot market, characterised by short term agreements and increasing price pressures on every link of the LNG chain, in particular marine transportation. The growing fleet and diversification of LNG ships, together with the safety concerns raised by these changes, led GTE LNG Terminal Operators (TOs) to compare and streamline where possible LNG ship approval procedures.

General information on ship approval procedures

The major objective of the ship approval procedure is to check the compatibility of the ship requesting access in terms of mechanical design, communication and safety; it aims at insuring the safety of the unloading operations pro-actively and sustaining the excellent safety record of the LNG industry.

Only those ships which successfully went through the procedure will be authorised by the TO to unload their LNG cargo at the terminal. Thus any Shipper requesting access shall either make use of LNG vessels already authorised or submit the “new” vessel(s) to the approval procedure.

The approval procedures set by the LNG operator mostly rely on the existing international rules and regulations, implemented either by the Flag State of the vessel or by the Port State of the terminal, and on professional societies recommendations such as OCIMF (Oil Company International Marine Forum) or SIGTTO (Society of International Gas Tankers and Terminal Operators) or GIIGNL (Groupe International des Importateurs de Gaz Naturel Liquefié). These approval procedures, including inspections also address some specific aspects pertaining to safety and security at berth, LNG particularities and ship performance during unloading operation, crew qualification specifically for LNG and good understanding of TO, safety and operational procedures.

GTE initiative and objective of the work

In order to improve safe and effective interoperability between different European LNG terminals, members of the GTE LNG Working Group undertook to examine the possibility to harmonise the procedural and operative rules attached to their respective LNG terminal access contracts.

Having in mind that the harmonisation process can't apply to all aspects concerning the LNG business, since the Terminals might have different technical and regulatory requirements in order to satisfy their productivity needs, GTE members decided to collect these procedures and rules in a common database, to analyse them and to prepare a common ship approval procedure containing the rules applicable to all GTE members to be considered as minimum requirement by the Shipper. Complementarily GTE members decided to publish on the GTE web site a LNG map including a link to the currently TO's Accepted Ship List.

Structure of the procedure

Shippers proposing LNG tankers to unload at a LNG receiving Terminal belonging to a TO shall undergo the following chronological steps for proposed ships:

- Step 1 : Preparatory information exchange;
- Step 2 : Ship-Shore Interface Study;
- Step 3 : Ship Safety Inspections;
- Step 4 : Unloading¹ Test and Ship Approval;
- Step 5 : Ship Approval Follow Up.

¹ Basically the principles developed in this procedure focuses at guarantying safety of unloading operations; considering that some TOs require occasionally to load and transfer cargos from one terminal to an other, it may be noted that those principles apply indistinctly to secure loading operations.

Step 1 – Preparatory information exchange

The main objective of this first step is to gather all necessary material (information, data, drawings...) to study the good matching of ship to berth.

One of the most important steps of this standard is the information exchange between:

- TO to the Shipper;
- Shipper to the TO.

The documents listed hereunder form the exhaustive list of minimum required documents to be submitted by each party before final approval of the ship; these documents may be circulated either in one batch at the beginning of the procedure or progressively along the progress of the ship approval procedure. The listing follows the priority order of the requested documents.

Step 1.1 - Information to be submitted by TO to the Shipper

The TO, after receiving the request from the Shipper who wishes to import LNG using a ship not listed in the TO's Accepted Ship List, shall send to the Shipper the following documents:

- Terminal information for LNG Carriers (mooring, connection and LNG cargo aspects);
- Generic Ship Shore Safety Plan (SSSP) completed with information and procedures (shore part) necessary to fill out the IMO Check List of the receiving Port.

Remark: Shipper should retrieve port information related to marine aspects for port access and berthing directly from Port Authority.

Step 1.2 Information to be submitted by Shipper to TO

Listed below is the information that the Shipper shall send before the preliminary meeting to the TO during the approval procedure application:

- Ship / Shore Interface Plan according to SIGTTO paper No5 “Communication necessary for matching ship to berth” if available (new ships), otherwise general arrangement drawing plus manifold drawing (connecting) and fore and aft deck drawing (mooring equipment);
- Ship questionnaire duly filled according to SIGTTO form “Ship Information questionnaire for gas Carrier” 1998, 2nd edition;
- Certified Custody Transfer Monitoring System description and approved tables;
- Ship Operational and Safety Procedures while alongside: These procedures concerning mooring, cargo transfer and fire fighting pertain to ISM code. They complete the SSSP for the ship part according to IMO Check List;
- List of survey status issued by the Classification Society for a ship over 20 years old;
- Copy of latest inspection report of Classification Society, Vetting, and Port State Control;
- Ship’s Insurance documents (P&I Club membership).

Step 2 – Ship / Shore Interface Study

In order to verify not only the technical compatibility, but also operational aspects it is important to make sure that ship and terminal know each other’s Ship / Shore Safety Working Procedures to work on the safety way. This is possible by a careful scrutiny of all documents exchanged during step 1.

Step 2.1 Document Analysis

After having closely examined the aforementioned information, TO performs an interface study to establish a technical ship acceptability. Conclusions of this interface study are then transmitted to the Shipper. In particular the following minimum criteria are checked:

- Physical and technical compliance with terminal dimension;
- Nautical and Safety Aspects;
- Compliance with Terminal communication and ESD system;
- Certification of gauge tables¹ and Custody Transfer Measurement ².

¹ Certification of gauge tables shall be approved by national authorities (i.e. custom authority) and by TO before the first unloading. This certification shall be carried out by a qualified organism (for instance the Japanese NKKK).

² Custody Transfer Measurement system specifications and methods shall comply with the GIIGNL LNG custody transfer handbook recommendations.

Step 2.2 Preliminary Ship / Shore Interface Meeting

Pursuing the document analysis a Preliminary Ship/Shore Interface Meeting, attended by at least representatives of the Ship Owner, Shipper and TO, is called in order to examine berth, Ship-Shore Interfaces, safety and communications items. If there are different Shippers, the Shippers are represented by the Charterer.

The minimum agenda of the Preliminary Meeting is as follows:

- Interface Study conclusions;
- Review of all parameters of the Call Ship Shore Safety Plan completion: the documents dealing with fire fighting, cargo transfer and mooring are checked and adapted if necessary;
- cargo tank custody transfer management;
- Shipper agent assignment.

In Annex 1, an informative list of topics to be addressed during the Preliminary Meeting is provided.

Step 2.3 Mooring Pattern

A formal approval of the mooring pattern by the Port Authority may be required by the TO (according to local practices).

Step 3 – Ship Safety Inspections

TO may require a ship inspection (vetting) prior to the first berthing. This inspection is performed by a TO endorsed inspector and performed according to TO's Safety Inspection Guidelines accepted by the TO; ship acceptance by TO following such inspection being without prejudice to the responsibility of the parties as specified in the relevant contracts for the ship to comply with all applicable rules and regulations and/or for any and all consequences of any such non compliance.

These Guidelines are consistent with OCIMF inspection guidelines and SIGTTO latest recommendations for crew safety standard and training on LNG carriers.

These Safety Inspection Guidelines focus on identifying risks occurring when the LNG carrier is within the port area (particularly at berth) and intend to reduce such risks assessing both procedures (operational and safety) and equipment.

In Annex 2, an informative example of such Safety Inspection Guidelines is provided.

A list of remarks and/or deficiencies, if any, is handed over to the ship Master at an exit meeting held onboard. The list of above remarks and/or deficiencies is sent to the Shipper who shall forward them to the ship owner and/or the charterer. Upon receipt and review of the implementation schedule of the corrective actions, TO shall decide whether the ship can be received at the LNG terminal.

Shipper shall promptly notify TO or procure that TO is notified if any of its LNG ships, pre-approved or approved according to this Ship Approval Procedure, has been rejected or has failed a ship safety inspection at another LNG terminal.

Shipper shall provide TO with all relevant technical details and information in that respect.

Step 4 – Unloading Test and Ship Approval

Depending on the outcome of the previous steps, a ship may either be approved (A) for an Unloading test, or rejected (R).

Step 4.1 Unloading Test

To verify a good matching of the ship to berth and confirm or not the authorisation, the ship shall undergo the Unloading Test.

The Unloading Test primary objective is to assess the actual understanding of the Terminal interface by Ship's crew.

Before starting the LNG cargo unloading, a pre-discharge meeting is held on-board. During this meeting:

- a review and validation of the SSSP is completed in order to have a duly implemented document, including mooring, fire fighting, cargo transfer, cargo tank management, unloading communication and operational procedures;
- a finalized version of the SSSP is signed by the ship master and TO;
- ship master and TO check the Ship and Shore Safety Interface according to IMO Ship/Shore check list.

Eventually the cargo transfer operations can take place.

Step 4.2 Conclusion of the ship approval procedure

Depending on the findings of the Unloading Test, TO decide if:

- The ship will not be accepted in future at this Terminal (R);
- The ship will be accepted in future for another Unloading Test pending to ship modifications exhaustively listed by TO (C);
- The ship will be accepted in the future without being subjected to further tests for a three year approval period (A).

Step 5 – Ship approval follow up

Before and during each call at the Terminal, Shipper shall provide instant assistance to TO, to clarify and/or solve any urgent issues that may arise before or during each call of one of the Shipper's LNG carriers. This Shipper's instant assistance can preferably be implemented by notifying TO for each call of who will be the Shipper's representative for that specific call. The Shipper shall provide TO all necessary and relevant details on how TO can reach Shipper's representative via telephone, mobile phone, e-mail, etc. This Shipper's representative shall be on continuous standby before and during the Ship's call, and be empowered to make all necessary "ad hoc" operational decisions on behalf of the Shipper, e.g. regarding any

arising safety or security issues, LNG cargo off-spec issues, ship's chandler's issues, bunkering or waste handling issues, etc.

During the approval period, TO shall be kept informed of any modifications brought to the ship related to either technical, safety and managerial issues.

Based on these modifications TO shall verify whether the ship needs a new approval.

Any additional safety inspections may be required by the TO in order to check the continued compliance of the ship with safety or operational requirement of the terminal.

These inspections may occur during the berthing time at TO's berth or at any other time and place.



Annex 1 - List of topics to be addressed during the Preliminary Meeting

- LNG Custody Transfer Checklist: Buyer / Seller obligations and rights, FOB/CIF/DES (Incoterms 2000), Risk Coverage (Insurance), Standards and units of measure, LNG quality specification (compatibility with pipeline gas quality limitations, Wobbe Index, HHV, nitrogen content (less than 1 mol % ?), contaminants : sulphur & mercury compounds, impurities), quantity determination method, boil-off gas handling, LNG measurement, , actions upon deviation;
- General Description: LNG carrier (info for LNG Terminal, e.g. general arrangement of ship's deck, clearly indicating mooring winches, bollards, ..., permanent communication channels on board, e.g. (Inmarsat + Iridium ?) tel. numbers, fax numbers, telex number, e-mail ? (indicating location on board e.g. cargo control room, bridge, master's office, etc., exact geometric volume of each cargo tank => necessary for custody transfer calculations), LNG Terminal, esp. berth (info for LNG carrier), incl. max. dimension for LNG/C;
- Port User / Operator: Port Authority, contact person(s): harbour master, mooring arrangement proposed by ship operator to LNG Terminal in accordance with port requirements, after preliminary acceptance by terminal operator: proposal to Port Authorities, assign a shipping agent well experienced with special procedures for LNG carriers, pilots, tug boats, mooring line boats;
- Pilotage / Berth approach: e.g. descriptive note issued by Port Authorities, procedure, communication, safety distances, minimum requirements for mooring arrangement (e.g. OCIMF requirements), minimum number of tugs required for port entry loaded, leaving port unloaded, etc;
- Ship / shore safety interface: emergency procedures, contingency planning (document prepared by LNG Terminal for each specific LNG Carrier): to be discussed with representative of ship operator, and to be accepted and endorsed by both parties prior to first port call, crew on board to have copies of this endorsed document prior to first port entry;
- "Instrumentation" Interfaces: location and connector specification for umbilical (Pyle National connector and/or pneumatic ESD and/or optical cable connector) for ESD systems ship to shore and shore to ship, redundant communications (e.g. via Pyle National connector, and/or pneumatic ESD and/or optical cable connector), sound power...
- "Mechanical" Interfaces (all longitudinal locations versus centre-line of vapour return arm): gangway landing platform on board ship's deck (location, size), location and size (+ flange or coupling details) for each of the following ship's connecting flanges for marine arms LNG service (conical sieves fitted, mesh), and vapour return (flange finish of mating surface (stock, polished, ...), liquid nitrogen, heavy fuel oil, gasoil, fresh water, deck area suitable for loading/unloading of ship's stores: within reach of jetty crane?)
- Ship / Shore Safety check list (IMO): checking and confirming safety interfaces, procedures, equipment, safety tests (e.g. ESD tested before start of unloading operation), Port Control radio etc.);
- Cargo Transfer Arrangements (specific and detailed, yet concise);
- Bunkers / Diesel / Fresh Water / Stores / Garbage handling / other Services;
- Any other information, safety related or other.



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Annex 2 - Example of Guidelines for Safety Inspections

See Safety Inspection Guidelines proposed by GTE (26 pages document)