



GTE position

LNG Ship Approval Procedure

Avenue des Arts 19
B – 1210 Brussels

Tel +32 2 209 0500
Fax +32 2 209 0501

gte@gte.be
www.gte.be

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Contents

Introduction and Executive Summary	page 2
Structure of the procedure	page 3
Step 1 - Preparatory information exchange	page 3
Step 2 – Ship / Shore interface study	page 4
Step 3 – Ship safety inspections	page 5
Step 4 – Unloading test and ship approval	page 6
Step 5 – Ship Approval follow up	page 6
Annex 1 – List of topics to be addressed during the Preliminary Meeting	page 8
Annex 2 – Example of Guidelines for Safety Inspections	page 9



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 another, 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 Measurement².

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.



Annex 2 - Example of Guidelines for Safety Inspections

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

**VESSEL
SAFETY
INSPECTION**

LNG TANKER INSPECTION

One of the main concerns of gas operator is to ensure throughout the transportation and distribution network a safe and efficient service with strict respect of human life and environment.

Vessel inspection is part of this policy and aims, in cooperation with Ship-owners and Managers, to improve the safety on board LNG tankers and to control efficiently the risks inherent to the maritime transportation of LNG.

The inspector should obtain the Ship-owner's permission and advise the Master prior boarding the Vessel. He should ensure that his inspection do not interfere with the ship's operation and organize it as to minimize the crew involvement.

Equipments tested should be operated by the ship's personal.

Observations or deficiencies should be documented and discussed with the Master.

Before leaving the vessel, the inspector should supply the Master with the final list of observations and deficiencies noted during the inspection.

VESSEL PARTICULARS

Name of Vessel

IMO number

Cargo capacity

Date of Inspection

Port of Inspection

Name of Inspector

Vessel operation

Flag

Name of Manager or Operator

Year vessel delivered

Classification Society

VESSEL CERTIFICATES

Class certificates

	Yes	No	N/A
• Certificate of Class
• Quarterly Status report			
Date next Special Survey due			
Date last dry-dock			
Date next dry-dock due			
No Condition of Class
• Special Survey			
Date of last survey			
Where carried out			
Ballast condition report
Thickness Measurement Report

Statutory certificates

• Load lines	.....	.....	.....
• Safety construction	.....	.....	.....
• Safety equipment	.....	.....	.....
• Safety radio	.....	.....	.....
• Minimum safe manning	.....	.....	.....
• IOPP	.....	.....	.....
• SMS Issued by .....	.....	.....	.....
• DoC Issued by .....	.....	.....	.....
• Fitness	.....	.....	.....

Other certificates

	Yes	No	N/A
• Foam analysis
Date last analysis			
• Dry Powder
Date last test			
• CO2 or Halon
Date last inspection			
• Breathing apparatuses
Date last inspection			
• Fire extinguishers
• Winch brake test
Date last test			
Holding capacity			
• Cargo tanks safety valves
Date last test			
• Tanks gauging tables
Expiring date			
• CTMS
Date & authority			
• Stress & stability computer (Class approved)
• Port state Control			
Date of last inspection			
Port of inspection			

PROCEDURES AND DOCUMENTATION

ISM Procedures

	Yes	No	N/A
• Safety organization
• Safety procedures
• Operational procedures			
Navigation
Propulsion
Cargo	
.....			
• Emergency organization			
Management
Shipboard
Reporting
• Emergency procedures			
Navigation
Propulsion
Cargo

SOPEP / MARPOL

• Organization and procedures	.....	.....	.....
• Pollution drills
Date last drill		
• Oil record book
• Garbage management

Yes	No	N/A
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Drug and Alcohol policy

• Policy defined
• and applied
Date of last drug test		

Date of last alcool test

Publications

- IMO gas Code for the vessel
-
- Tanker Safety Guide (Liquefied Gas)
- SOLAS
- MARPOL
- STCW
- Liquefied Gas Handling Principles
- Bridge Procedures Guide
- COLREGS
- Peril at Sea and Salvage
- Mooring Equipment Guidelines
- Effective Mooring
- Guide to Helicopter Ship Operation

STCW

- Crew on board complies with minimum manning certificate
- Qualifications of officers
 - Certificate of competency
 - Gas endorsement
 - Adequate training
 - Suitable experience
- Crew coherence
-

BRIDGE

COLLISION RISKS

	Yes	No	N/A
<u>Equipments</u>			
• Radars X and S bands	
• ARPA
• Speed log (interfaced with ARPA)
• 2 steering motors
• Steering gears alarms
• Auto pilot (with easy change over)
• Steering alarms
• VHF (3)
• Gyro compass(es)
• Magnetic compass
• Deviation curve
• Compass error log book
 <u>Procedures</u>			
• ISM procedures implemented
Watch procedures
high seas			
congested waters			
with pilot on board ...			
Changing over the watch
Test of equipment
Maintenance of equipment
Master permanent orders
Night orders book

GROUNDING RISKS

	Yes	No	N/A
<u>Equipments</u>			
• Echo sounder (Check use)
• Electronic aid (with back-up)
• Charts and publications adequate for trading zone
<u>Procedures</u>			
• Pre-arrival/departure check-lists
• Passage planning (berth to berth)
• Manoeuvring characteristics
• Squat curves
• Charts and publications Correction procedure N to M
Follow-up by Master

FIRE RISKS

<u>Equipment</u>			
• Fire detection areas covered :			
in operation	.....	.....	.....
alarms transferred	.....	.....	.....
• Fire extinguisher(s)	.....	.....	.....
• Gas exhaust valve operation	.....	.....	.....
<u>Procedures</u>			
• Fire patrols (in force and recorded)	.....	.....	.....

ACCOMODATIONS

FIRE RISKS

	Yes	No	N/A
<u>Equipments</u>			
• Fire detection
• General alarm Klaxons
Push buttons
• Fire fighting equipment			
Fire extinguishers
Fire hoses
• Fire stations Number
Fireman's outfit (ready for use)
SCBA's
Spare equipment
• Galley			
Fire detection
Exhaust ventilation
Condition of fryer (if any)
Fire extinguisher and blanket
<u>Procedures</u>			
• Doors to accommodations closed
• Smoking rooms designated
• Muster lists displayed
• IMO signs

CARGO CONTROL ROOM

FIRE RISKS

Yes	No	N/A
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IF SITUATED AMIDSHIPS

- | | | | |
|---------------------------------------|-------|-------|-------|
| • Air locks with door switches alarms | | | |
| • Fire detection | | | |
| • General alarm switch | ..... | ..... | ..... |

FOR ANY SITUATION

Equipments

- | | | | |
|---|-------|-------|-------|
| • Fixed gas detection | | | |
| Continuous detection | | | |
| List of detection points : | | | |
| | | | |
| Sequential detection | | | |
| List of detection points : | | | |
| | | | |
| Span gas available | ..... | ..... | ..... |
| Satisfactory test | ..... | ..... | ..... |
| • Portable analysers | | | |
| Explosimeters Number ..... | ..... | ..... | ..... |
| Oxygen analysers Number ..... | ..... | ..... | ..... |
| Tankscopes Number ..... | ..... | ..... | ..... |
| Calibration equipment | ..... | ..... | ..... |
| • ESD Number of switches : ..... | ..... | ..... | ..... |
| • Void/interbarrier spaces pressure transmitters and alarms | ..... | ..... | ..... |
| • Pressure regulators | | | |
| • Fire detection repeater or transfered to general alarm | | | |

Yes	No	N/A
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Procedures

- In case of gas detection
- In case of pressure drop
in protected areas (air-lock, EMR ...)
- In case of electrical storm
- Ship operational limits known
- Tests and calibrations
- Fire detection
- Gas detection
- ESD
- Manifold closing time

CARGO RISKS

Equipments

- Remote operation of :
- Cargo valves
- Compressors
- Pumps
- Instruments :
- Level gauges
- Temperature gauges
- Pressure gauges
- Pumps amps indicators
- Alarms :
- Cargo tanks high/low pressure
- High level / High shutdown
 independent of level gauges ?
- Inter-barriers bilge level
 and pumping device
- Bilge level in EMR

Yes	No	N/A
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Procedures

• Pre-arrival checks for cargo
• Ship / shore communication
• Ship / shore safety check-list
Periodical recheck	.....	.....	.....
• Cargo planning	.....	.....	.....
• Stress and stability calculation			
on arrival	.....	.....	.....
on departure	.....	.....	.....
intermediate	.....	.....	.....
follow-up during operations	.....	.....	.....
• Cargo log book	.....	.....	.....
• Nitrogen consumption	.....	.....	.....

Tests of equipment and alarms

• Tanks high/low pressure (Date: )	.....	.....	.....
• I/B high low pressure (Date: )	.....	.....	.....
• I/B bilge level (Date: )	.....	.....	.....
• High level alarm (Date )	.....	.....	.....
• High level shut down (Date:)
• Test of loadmaster (Date:)

DECK

MOORING

Equipment

Yes	No	N/A
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• Good condition of winlasses
• Good condition of anchor lines
• Good condition of winches
• Good condition of mooring lines	.....	.....
• Enough spare mooring lines	.....	.....
• Good condition of fairleads	.....	.....
• Condition of hydraulic pipes	.....	.....
• Condition of steam pipes	.....	.....
• Emergency towing equipment in good condition readily available	.....	.....

Procedures

• Equipment properly used	.....	.....
No clutch engaged	.....	.....
No single bit mooring	.....	.....
Split drums properly used	.....	.....
• No mixed mooring	.....	.....
• Follow-up of mooring	.....	.....

FIRE RISKS

<u>Equipment</u>	Yes	No	N/A
• Dry-powder system :			
Dry powder rooms
Dry powder stations
Monitors
• Fire line and hoses
• Spray line and nozzles
• Fire equipment at manifold
• Fusible elements :			
on tank domes
at manifolds
• Electrical equipment
• Electrical cable glands
• Earth connection
• Deck lighting equipment
• Electrical trunks
• Vent stack fitted with fixed extinction
• Emergency towing off wires
 <u>Procedures</u>			
• Interbarrier spaces under N2
• or cargo holds dried
• Dry powder instructions displayed
• Work permit.
• Safe behaviour of crew on deck

CRYOGENIC RISKS

	Yes	No	N/A
<u>Equipment</u> : in good condition			
• Tank domes and associated piping
• Dome skirts
• Local gauges
• Tanks safety valves and exhaust
• Safety valves exhaust self draining
• Cargo valves
• Liquid line non return valves
• Cargo piping without risk of leaks
• Pipe connections
• Pipe supports
• Pipe bellows
• Condition of insulation
• Cargo pipes safety valves
• Liquid lines safety valves discharging into tanks or alarm fitted vaporising tank
• Manifold connection free of leaks
• Manifold supports
• Unused manifold properly blanked
• Leak trays under manifold
• Manifolds fitted with filters
• Pool or water spray protection
<u>Procedures</u>			
• Cargo tanks pre-cooling (B type)
• Liquid pipes cooling
• Entry in enclosed spaces

COMPRESSOR ROOM

FIRE RISKS

	Yes	No	N/A
<u>Equipment</u> : in good condition			
• Compressor room free of gas leaks	
.....			
• Bilge dry and clean
• No combustibile material
• No bench vice
• Exhaust ventilation in operation
• Ventilation ducts
• Fire dampers
• Ex proof lighting equipment
• Gas detection
including water return to E/R
• Fire detection
• Fixed fire extinction
• Fire extinguishers
• Compressors and associated equipment
• Bulkhead seals
• Heat exchangers
• Instrumentation
• Emergency shutdowns
 <u>Procedures</u>			
• Synoptic diagram posted
or valves numbered

ELECTRIC MOTOR ROOM

FIRE RISKS

	Yes	No	N/A
<u>Equipment</u> : in good condition			
• Air lock with alarm
gas detection
interlocking switch
timer reset
• Motor room clean and free of combustibile material
• Supply ventilation with differential pressure alarm or flow switch
• Ventilation ducts
• Fire dampers
• Ex proof lighting
• Gas detection
• Fire detection
• Fixed fire extinction
• Fire extinguishers
• Bilge level alarm (if sea water pipes)
• Electric motors
• Switch boards and panels
• Emergency shutdowns

MISCELLANEOUS

FIRE RISKS

	Yes	No	N/A
<u>Paint locker</u>			
• Good location
• Ex proof lighting
• No dangerous equipment
• Fixed fire extinction
 <u>Forecastle</u>			
• Access door gas tight
• No flammable material
• Hydraulic pumps (risk of spray)
• Electrical equipment
• Fire detection (bow thruster space)
• Fire extinguishers
 <u>Emergency Fire Pump</u>			
Location :			
Type of driving :			
• Good condition
• Ready to operate
• Flooding risks controlled
• Remote operation
• If diesel, fuel tank full
• Instructions displayed
• Satisfactory test

SAFETY HEAD QUARTERS

Location :

FIRE RISKS

	Yes	No	N/A
<u>Equipment</u>			
• Easy access
• Fireman's outfit quantity readily available
• Breathing apparatuses
• Charging compressor or enough spare bottles
• Protecting suits
• Spare parts for safety equipment
• Quick closing valves
• Emergency shut-offs
• Fire lockers location
.....
good condition
• CO2 or Halon ready for use
remote operation
instructions displayed
<u>Procedures</u>			
• Inventory for safety equipment
• Monthly inspections

ENGINE ROOM

PROPULSION RISKS

Yes	No	N/A
-----	----	-----

Electrical equipment

- Number of turbo alternators :
Power :
- Number of Diesel Generators :
Power :
- Usual electrical load at sea :
- Switch board with split distribution
- Equipment protected from spray
- No insulation fault

Main engine

- Main boilers : Number :
with alarms/stops fitted and operational
for Water levels high and low
low fuel pressure
low gas pressure
ignition failure
high and low steam pressure
Warning indicator if boiler
flame cell by-passed
- Good condition of steam pipes
- Good condition of steam valves
- Dumping system
- Bilge level alarms
- Emergency bilge suction valve

Yes	No	N/A
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Procedures

• Lighting up of boilers:
• Communication
• Extinction of first boiler
• Extinction of second boiler	.....	.....	.....
• Vacuum to the condenseur	.....	.....	.....
• Harbour generator supply	.....	.....	.....
• Turbo alternators operation	.....	.....	.....
• Couplage / découplage	.....	.....	.....
• Black-out procedure posted or readily available available	.....	.....	.....
• Auxiliairies : regular change over (monthly)	.....	.....	.....

ENGINE ROOM

FIRE RISKS

	Yes	No	N/A
<u>Electrical equipment</u>			
• Generators, switch boards ... Protected against fuel spray
• Fire extinguishers suitable and in GWC
<u>Main engine</u>			
• Fixed fire detection
• Fixed fire extinction
• Bilges clean
• Alarms/stops fitted and operational :			
gas detection in boiler area
low N2 pressure for gas supply line
Fire in boiler air duct
Fire in economiser
• Good condition of boilers exhaust pipes
• Purifiers and heaters
• Remote emergency shut off fuel tanks
<u>Diesel generators</u>			
• Free of fuel/L.O. leaks
• In good condition
• Fitted with fuel leak detection
<u>Inert Gas Generator</u>			
• In good condition

STEERING GEAR

NAVIGATION RISKS

<u>Equipment</u>	Yes	No	N/A
• No risk of water spray
• Risks of flooding controlled
• Oil service tank level
• Alarms fitted and operational
• Oil reserve tank level
• Compass repeater
• Rudder angle visible
• Communication equipment
 <u>Procedures</u>			
• Emergency steering instructions
• Regular emergency steering drills

FIRE RISKS

<u>Equipment</u>	Yes	No	N/A
• Free of oil leaks
• No storage of flammable goods
• Fixed fire detection
• Fire extinguishers suitable and in GWC

EMERGENCY GENERATOR

NAVIGATION RISKS

	Yes	No	N/A
<u>Equipment</u>			
• Location safe
• Good condition
• No risk of water spay
• Two independent starting sources
• Fuel tank full
• Emergency switch board
• Satisfactory test
 <u>Procedures</u>			
• Instructions posted
• Weekly starting test
• Under load tests	
.....			

FIRE RISKS

<u>Equipment</u>			
• No risk of fuel spray	.....	.....	.....
• Fixed fire detection	.....	.....	.....
• Fixed fire extinction	.....	.....	.....
• Fire extinguisher	.....	.....	.....

MAINTENANCE / TESTS

	Yes	No	N/A
• List of critical equipment (ISM)
• Planned maintenance
for cargo equipment
for safety equipment
for engine department
• Inventory for spare parts
• Maintenance / tests of D.A.			
particularly if only one T.A.
• Boilers feed water analysis			
by whom :			
periodicity :			
Record file
• Tests of cargo equipt before arrival
• Tests of securities and alarms			
for cargo equipment
for engine room
periodicity (monthly required) :			
list of sensors with set point
• Thermographic report main switchboard
• Pressure test of cargo lines
• Pressure tests of heat exchangers
• Tests of fixed fire detection
• Ex proof lighting inspection
• Tests of stress and stability software