

**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
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- 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
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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