

MARINE FIRE SAFETY POCKET CHECKLIST

Reducing the risk of Port State Control detentions

In conjunction with:

UK P&I CLUB 



**Lloyd's
Register**

LIFE MATTERS

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One of the world's largest P&I mutuals, the UK P&I Club currently insures over 150 million gross tons of owned and chartered ships in 60 countries.

The Club publishes loss prevention material through a wide range of media on topics such as hazardous cargo in containers, human error, personal injury and maritime security.

The full range of Club activities can be viewed at www.ukpandi.com

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UK P&I CLUB The logo for the UK P&I Club, featuring the text "UK P&I CLUB" in blue, with a stylized graphic of three overlapping shapes (blue, yellow, and black) to the right.

Marine Fire Safety

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Introduction

During the period 2006-2008, 1216 people were reported killed or missing as a result of 465 incidents of fire and explosions on board merchant seagoing ships of 100 gt and above. 988 of these deaths were from a single incident. It is essential that crew are appropriately trained to inspect, maintain and operate equipment and that the equipment is ready for use at all times.

Being prepared can mean the difference between lives lost or lives saved.

In conjunction with an industry partner, the UK P&I Club, we have analysed data relating to fire safety, including deficiencies found by Port State Control officers. The result is this re-usable checklist, which highlights the most common deficiencies and lists them by distinct areas of the ship. This means that each crew member can take responsibility for his or her own area.

As a minimum, the items on the chart on page 4 should be included as part of your final checks prior to voyage and port entry. It is strongly advised that all items in this aide memoire are checked on an ongoing basis to supplement your own operational and maintenance procedures and your flag State's requirements.

This is the fourth in a series of pocket checklists to help you comply with international convention requirements. For information about other checklists in this series please visit www.webstore.lr.org or www.ukpandi.com

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Are you prepared for a Port State Control Inspection?

PSC officers always commence their inspection in the Master's office. It is essential that certification is up-to-date and valid. All other necessary documents, records and manuals should, where required, be approved and on board.

If equipment is broken or missing, or the ship has suffered damage en route, the Master must notify the port authorities prior to port entry. If the port authorities are informed of the problem and of any permanent or temporary remedies agreed with the flag State, the vessel should not be detained.

However, if notice is not given before entry, the Port State has clear grounds for inspection, possibly leading to a detention.

If your ship is detained, or appears to be in the process of being detained, you should contact the nearest Lloyd's Register Group office immediately for assistance.

The major PSC organisations publish their criteria for targeting a ship on their web sites. Ship owners and operators should use these criteria to calculate the target rating of their ships.

Paris MOU - www.parismou.org

Tokyo MOU - www.tokyo-mou.org

USCG - <http://psix.uscg.mil/>

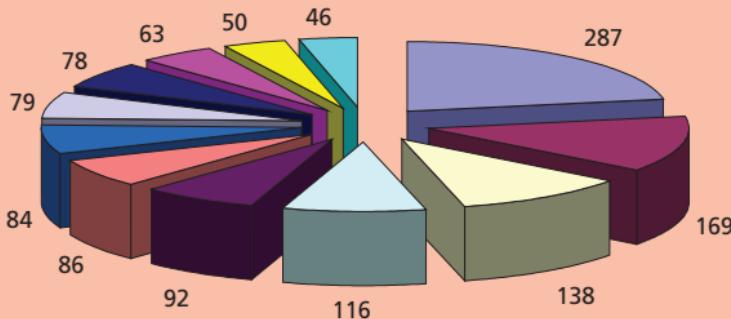
Other MOUs include Abuja, Black Sea, Caribbean, Indian Ocean, Mediterranean, Riyadh and Vina del Mar.

A ship operator may disagree with the findings of the PSC Authority, and the majority of the regional PSC organisations have guidelines on how to appeal against a detention. These can also be found on the above web sites.

IMO Procedures for Port State Control, Appendix 1, also provides guidelines on detentions [ISBN: 92-801-5099-5].

Fire Safety deficiencies

The following are the most common fire safety deficiencies (by number) found by Port State Control officers during the period 2006-2008 on ships classed by Lloyd's Register



- 0745 ventilation, fire-dampers, valves quick closing devices, means of control [287]
- 0730 fire fighting equipment and appliances [169]
- 0739 emergency fire pump [138]
- 0710 fire prevention [116]
- 0746 jacketed piping system for high pressure fuel lines [92]
- 0740 fire pumps [86]
- 0741 means of control (opening closure of skylights pumps etc. Machinery spaces) [84]
- 0715 fire detection [79]
- 0725 fixed fire extinguishing installation [78]
- 0720 ready availability of fire fighting equipment [63]
- 0714 doors within main vertical zone [50]
- 0735 personal equipment [46]

1. Certificates and documents

The following certificates and documents must be carried on board.

Certificates and attachments

1. **Cargo Ship Safety Equipment or Passenger Ship Safety Certificate**
 - including the Record of Safety Equipment (Form E or Form P) permanently attached to the Certificate
 - Record of Approved Ship Safety Equipment
2. **Cargo Ship Safety Construction Certificate**
3. **Statement of Operational Limitations and Exemptions (passenger ships only)**
4. **Fire extinguishers servicing certificates**
 - both non-portable fixed and portable extinguishers
 - where flag permits checking by ships crew, appropriate evidence must be available
5. **Fire extinguishers pressure test certificates**
6. **Fixed gas fire extinguishing system (e.g. CO₂, Halon) cylinders pressure test and servicing certificates**
7. **SCBA cylinder test and inspection certificates and, where required, EEBD**

Type approval certificates

8. **All extinguishers**
9. **All fixed fire fighting systems**
10. **Self Contained Breathing Apparatus (SCBA)**
11. **Emergency Escape Breathing Devices (EEBD)**
12. **Fire detection and alarm systems**

1. Certificates and documents, continued

Documents

- 13. Instructions for on board maintenance or a ship-board planned maintenance scheme**
- 14. Ship specific SOLAS Training Manuals and on board training aids**
- 15. Ship-specific Fire Safety Training Manual, to be kept with the SOLAS Training Manual in an accessible location**
- 16. Records of inspection, maintenance, testing and drills**
- 17. Records of crew familiarisation with fire and abandon ship drills**
- 18. Muster list and emergency instructions**
- 19. Fire control plan**
 - available in the language or languages required by the Administration. If the language is neither English nor French, a translation into one of those languages shall be included
 - in good condition, kept up-to-date and permanently exhibited in an accessible location
 - a duplicate set of fire control plans shall be permanently stored in a prominently marked weathertight enclosure outside the deckhouse for the assistance of shore-side fire fighting personnel
- 20. Damage control plan and booklet**
- 21. Servicing records**
 - available for all installations, including date of last recharge/sample test of foam, as appropriate

1. Certificates and documents, continued

Inspection and testing records

- 22. Fire mains, fire pumps and hydrants, including hoses, nozzles and international shore connections**
- 23. Fire detection, extinguishing and alarm systems**
- 24. Ventilation systems, including fire and smoke dampers, fans and their controls, remote stops**
- 25. Fuel and lubricating oil quick-closing devices shutdown**
- 26. Fire doors, including their controls**
- 27. General emergency alarm systems**
- 28. EEBD and fire fighters' outfits**
- 29. Portable and non-portable fire extinguishers, including spare charges (in accordance with requirements specified by the Administration)**
- 30. Low location lighting and public address systems (passenger ships only)**

Notes:

1. IMO MSC/Circ.850 provides guidelines for testing and inspection of fire-protection systems and appliances.
2. Manual/instructions for the maintenance and operation of all the fire fighting equipment and installations on board must be in a language understood by the crew and be readily available in an accessible location.
3. If the ship has been issued with a flag exemption certificate then it must be current.
4. A valid hot work permit must be obtained before conducting hot works.

2. Operational deficiencies

The following items are common to a number of areas around the ship and deficiencies are frequently found on these items.

1. **Fire dampers and ventilators**

- clearly marked open/close, easy to operate and seal effectively
- locking pins can be easily removed
- handles and wire are in good condition
- machinery flaps and ventilators close correctly
- skylights close from local and remote positions
- ventilator flame screens are in good condition

2. **Means of escape**

- clearly marked
- ladders and hatches are in good condition
- trunks, alleyways and stairways are unobstructed
- emergency lighting operates correctly
- exits are capable of being opened quickly from inside and outside

3. **Fire fighting equipment and appliances**

- all fire appliances are located in compliance with the fire control plan
- all fire hoses are of non-perishable material, are in good condition with no leaks and are pressure tested regularly
- fire mains and hydrants and piping for fixed systems are maintained in good condition with no leaks
- all nozzles are operable and, where required for tankers, are of dual purpose type (i.e. spray/jet type), incorporating a shut-off
- hoses, nozzles and tools are all correctly stowed and fire boxes are in good condition
- where installed, sand boxes are full and scoops are in place

2. Operational deficiencies, continued

- 4. Personal equipment**
 - SCBA and EEBD are readily available and fully charged
 - fire fighters' outfits are complete and readily available
- 5. Fire doors**
 - free of obstructions
 - self-closing and free from non-approved hold open methods such as tie-backs, hooks, wedges, or other such arrangements
- 6. Fire detection**
 - detection systems are operable on emergency power
 - test detectors regularly
 - ensure spare heads are available
 - control panels function correctly
- 7. Fire alarm**
 - audible and visual indications function correctly
- 8. Fixed fire extinguishing systems and installation**
 - clearly marked, readily accessible control stations
 - gas release alarm, including time delay for the extinguishing medium, is operating satisfactorily
 - clear instructions for operation are posted and in a language understood by the crew
 - pipework is in good condition and nozzles, hoses and valves (depending on systems) operate correctly

Note:

Hoses and their attachments are certified to a standard and supplied by a manufacturer complete. If a component of an approved system is modified by someone other than the manufacturer, then the approving body must be notified.

3. Engine room and machinery spaces

Equipment must be as per the Record of Approved Ship Safety Equipment, inspected regularly, well maintained and ready for operation at all times.

1. Cleanliness

- machinery spaces, including steering gear space, tank tops and bilges, are free of excess oil and other fire hazards, including accumulations of oily waste material and rags
- drip trays and save alls are empty

2. Fire pumps

- pumps are individually tested with two hoses supplying water to the extremities of the vessel and water pressure is checked
- fire main relief valves are checked, if fitted
- isolating valves in the fire main are tested
- pressure gauges function properly
- pipework is checked and is in good condition

3. Emergency quick-closing valves and shutdowns

- fuel shut downs and emergency quick-closing valves function correctly
- for pneumatic (air) quick-closing valves, check pressure gauges and verify that system is fully charged
- for wire type quick-closing valves, wires must have regular inspection/test records on board
- for hydraulic valves, records of regular oil level checks and leak testing must be available

4. Jacketed piping system for high pressure fuel lines

- an approved system is in place
- a leak tank is in place
- the leak tank alarm is in working order

3. Engine room and machinery spaces, continued

5. Fire prevention

- hot surfaces are adequately insulated and protected
- all lamps and fittings are in good condition – no naked lights
- insulation is in good condition and not wet through with oil
- self-closing cocks on sounding pipes and level gauges on oil tanks must not be permanently held open
- garbage is segregated in metal receptacles fitted with metal lids

6. Fire-rated divisions, including main zones

- insulation is examined for condition and satisfactory adhesion - no missing, damaged or detached portions
- all deck and bulkhead penetrations remain tight and are of the appropriate fire rating



Outer sleeve of the double skin high pressure fuel pipes not fitted correctly; end sealing arrangements are ineffective.

Note:

Do not use fire hoses for any other purposes, such as bilge cleaning.

4. Accommodation

Equipment must be as per the Record of Approved Ship Safety Equipment, inspected regularly, well maintained and ready for operation at all times.

1. Sprinkler system

- section valves and alarms are tested
- pressure gauges function correctly
- pipework is checked and in good condition
- pumps are tested

2. Ventilators

- remote stops are working and correctly marked open/close
- access is available to clean galley ventilator
- ventilator flaps are in good condition
- extractor ventilators from laundry areas are not clogged with fluff and regularly cleaned



Fire hose box tied shut using an unapproved method.



Fire door held open using an unapproved method.

5. Deck

Equipment must be as per the Record of Approved Ship Safety Equipment, inspected regularly, well maintained and ready for operation at all times.

1. **International shore connection**
 - readily available and the location clearly marked
 - correct number of nuts, bolts and washers
2. **Fire protection - cargo deck area (tankers only)**
 - annual test records and foam analysis are available for foam systems
 - foam monitors move freely
3. **Paint locker fire protection system**
 - satisfactory provision is made for extinguishing fire without entering the space, as required by the Administration
4. **Ventilators**
 - funnel ventilation dampers are easy to operate and seal effectively
 - weather deck closing appliances for inlet/outlets are easy to operate and seal effectively
 - wires, handles and guide wheels are in good condition



Fire hose end connections secured using unapproved methods.

6. Tanks and holds

Equipment must be as per the Record of Approved Ship Safety Equipment, inspected regularly, well maintained and ready for operation at all times.

1. Inert gas system (tankers only)

- inert gas generator, scrubber, valves, pipework, blowers, control system, deck seal, alarms and overboard discharge are in good condition and operate correctly
- fixed oxygen test meter is regularly calibrated and tests are recorded

2. CO₂ System

- operating instructions are in a language that the crew understands
- alarms are operational

3. Special requirements for ships carrying dangerous goods

- equipment as specified in the Document of Compliance, such as fire detection, water spray, ventilation, electrical, as applicable, to be checked and in good condition

Notes:

1. Inert gas system testing should take place before each cargo operation and all results recorded.
2. Full maintenance records to be kept of the system non-return valves and deck water seal arrangements which prevent the return of flammable vapours to the engine room/inert gas room.
3. If a fixed fire extinguishing installation system is not installed then a flag exemption is required.
4. Use dry compressed air to unblock hold fire sample lines. Do not use CO₂.

7. Fire drills

Equipment must be as per the Record of Approved Ship Safety Equipment, inspected regularly, well maintained and ready for operation at all times.

1. **Fire drills**
2. **Emergency preparedness**
3. **Crew musters for abandon ship and fire drills**
4. **Operation of fire protection systems**

Quick-closing valve held open using an unapproved method.



Notes:

1. Some PSC Authorities will require the crew to carry out abandon ship and fire drills. Crew must be able to demonstrate familiarity with the equipment and be able to carry out their duties quickly and competently.
2. It is advisable to use different scenarios when carrying out drills so that the crew is ready and prepared for different emergency situations. Ensure that these drills and scenarios are recorded in the log book.
3. Photo records with dates are a good idea as evidence of drills being regularly held.

8. Miscellaneous

Equipment must be as per the Record of Approved Ship Safety Equipment, inspected regularly, well maintained and ready for operation at all times.

1. **Emergency fire pump**
 - ship's side valves operate freely and are fitted with extended spindles where necessary
 - diesel powered pumps are well maintained with fuel and water services and the exhaust system is in good condition and free from leaks
 - electrically powered pumps can be run from the emergency supply
 - relief valves, if required, are operational
 - starting system is functioning and instructions are clearly displayed and understood by the crew
2. **Emergency generator**
 - generator is started and all methods of starting, including auto-start where fitted, are tested
 - level in fuel storage tank must be 80% capacity as a minimum
 - remote fuel shut off is clearly marked and the operating mechanism is in good condition
3. **Emergency batteries**
 - battery levels and specific gravities are correct
 - spare electrolyte and distilled water levels are correct
 - appropriate Personal Protective Equipment is available in the area
4. **Workshops**
 - all cutting and welding gases and equipment are safely and appropriately stored
5. **Cargo pump room (tankers)**
 - satisfactory provision is made for extinguishing fire without entering the space, as required by the Administration

8. Miscellaneous, continued



Fire damper wastage found after removing cover.



Fire extinguisher requires to be recharged.

Note:

Ships may occasionally experience extreme light draught condition in port, at anchorage or at sea. While the ship is in this condition there must not be any reduced capability to provide pressure to the fire main via the emergency fire pump or other means. Therefore a contingency plan must be in place for such situations and the plan must be documented in the Safety Management System.

For example, during periods when the ship is in port, the contingency plan could include a procedure to co-ordinate with the port to provide pressure to the fire main during that period.

Contact your local Lloyd's Register office for further advice.