

Rule Clarification –

Standard of survey for heating and cooking installations

Interim Technical Note (ITN-001-19)

June 2019

General Purpose

Interim Technical Notes (ITNs) provide supporting information on specific technical issues or areas related to maritime rules or marine protection rules. The material in this ITN should not be treated as a substitute for the rules, which are the law. This ITN may be replaced with or clarified by operational guidance or an advisory circular at a later date.

The intent of this ITN is to provide clarification on the application of the rule in relation to the applicable standard of survey for gas heating and cooking installations.

Application

This ITN aims to provide clarification on the application of Maritime Rule Part 40A.53, 40C.49, 40D.48, 40D.50, 40D.54, 40D.56 and 40D.60 to ensure that the standard of survey of gas installations on ships is consistently applied to ensure a high level of safety is achieved.

Background

- Maritime rule Part 40A.53 specifies the requirements for heating and cooking installations on passenger ships.

Maritime Rules Part 40A.53 - Heating and cooking installations

- 1) Electric radiators must be fixed in position and so constructed as to reduce fire risks to a minimum.
- 2) Open gas flame appliances, except cooking stoves, domestic refrigerators and water heaters, are not permitted. Spaces containing any such stoves or water heaters must have adequate ventilation to remove fumes and possible gas leakage to a safe space. All pipes conveying gas from a container to a stove or water heater must be of steel or other material approved by a surveyor. Automatic safety gas shut-off devices must be fitted to operate on loss of pressure in the gas main pipe or flame failure on any appliance.
- 3) Cooking appliances must be installed to reduce the risks of fire caused by heat radiating from the cooking element or flame or from cooking fats and oils catching alight. The bulkheads and linings in way of, and decks and ceilings above, the cooking appliance must be of non-combustible or fire-restricting materials.

- 4) Cylinders for compressed, liquefied or dissolved gases must—
 - a) be clearly marked by means of identifying colours in accordance with NZS 5807:1980 *Code of Practice for Industrial Identification by Colour, Wording or Other Coding*; and
 - b) have a clearly legible identification of the name and chemical formula of their contents; and
 - c) be properly secured.
- 5) Cylinders containing flammable or other dangerous gases and expended cylinders must be—
 - a) stored and properly secured on open decks and all valves, pressure regulators and pipes leading from such cylinders must be protected against damage; and
 - b) protected against excessive variations in temperature, direct rays of the sun, and accumulation of snow. A surveyor may permit cylinders to be stored in a compartment or compartments that comply with the requirements of rules 40D.56(3) to 40D.56(5) inclusive.

- Maritime rule Part 40C.49 specifies the requirements for heating and cooking installations on non-passenger vessels.

Maritime Rules Part 40C.49 Heating and cooking installations

The following requirements apply to all ships:

- a) electric radiators must be fixed in position and so constructed as to reduce fire risks to a minimum:
- b) open flame appliances, except cooking stoves, domestic refrigerators and water heaters, are not permitted. Spaces containing any such stoves or water heaters must have adequate ventilation to remove fumes and possible gas leakage to a safe space. All pipes conveying gas from a container to a stove or water heater must be of steel or other material approved by a surveyor. Automatic safety gas shut-off devices must be fitted to operate on loss of pressure in the gas main pipe or flame failure on any appliance:
- c) cooking appliances must be installed to reduce the risks of fire caused by heat radiating from the cooking element or flame or from cooking fats and oils catching alight. The bulkheads and linings in way of, and decks and ceilings above, the cooking appliance must be of non-combustible or fire-restricting materials:
- d) cylinders for compressed, liquefied or dissolved gases must—
 - i. be clearly marked by means of identifying colours;²³ and
 - ii. have a clearly legible identification of the name and chemical formula of their contents; and
 - iii. be properly secured:
- e) cylinders containing flammable or other dangerous gases and expended cylinders must be—
 - i. stored and properly secured on open decks and all valves, pressure regulators and pipes leading from such cylinders must be protected against damage; and

- ii. protected against excessive variations in temperature, direct rays of the sun and accumulation of snow. A surveyor may permit cylinders to be stored in a compartment or compartments that comply with rules 40D.56(3) to 40D.56(5) inclusive.

- Maritime rule Part 40D.48 specifies the requirements for heating installations on fishing vessels.

Maritime Rules Part 40D.48 Heating installations

- 1) Electric radiators must be fixed in position and so constructed as to minimise fire risks¹⁸.
- 2) Heating by means of open fires is not permitted. Heating stoves and other similar devices must be firmly secured and adequate protection and insulation against fire must be provided beneath and around such appliances and in way of the uptakes. Uptakes of stoves that burn solid fuel must be arranged and designed so as to minimise the possibility of becoming blocked by combustion products and must have a ready means for cleaning. Dampers for limiting draughts in uptakes are, when in the closed position, still to leave an adequate area open. Spaces in which stoves are installed must be provided with ventilators of sufficient area to provide adequate combustion air for the stove. Such ventilators must have no means of closure and the position of any opening in such ventilators must be at the height above the deck given in Table 4 in rule 40D.17(2).
- 3) Open gas flame appliances, except cooking stoves, domestic refrigerators and water heaters, are not permitted. Spaces containing any such stoves, refrigerators or water heaters must have adequate ventilation to remove fumes and possible gas leakage to a safe space. All pipes conveying gas from container to stove, refrigerator or water heater must be of steel or other material approved by the surveyor. Automatic safety gas shut-off devices must be fitted to operate on loss of pressure in the gas main pipe or flame failure on any appliance.
- 4) Where gaseous fuel is used for domestic purposes, the arrangements, storage, distribution and use of the fuel must be—
 - a. acceptable to the surveyor; and
 - b. in accordance with rule 40D.50.

- Maritime rule Part 40D.50 specifies the requirements for Storage of gas cylinders and dangerous materials on fishing vessels.

Maritime Rules Part 40D.50 Storage of gas cylinders and dangerous materials

- 1) Cylinders for compressed, liquefied or dissolved gases must—
 - a) be clearly marked by means of identifying colours in accordance with NZS 5807:1980 *Code of Practice for Industrial Identification by Colour, Wording or other Coding*; and
 - b) have a clearly legible identification of the name and chemical formula of their contents; and
 - c) be properly secured.
- 2) Cylinders containing flammable or other dangerous gases and expended cylinders must

be—

- a) stored and properly secured on open decks, and all valves, pressure regulators, and pipes leading from such cylinders must be protected against damage; and
 - b) protected against excessive variations in temperature, direct rays of the sun, and accumulation of snow. However, the surveyor may permit such cylinders to be stored in compartments that comply with the requirements of rule 40D.50(3) to (5).
- 3) Spaces containing highly flammable liquids and where permitted, liquefied gas, must have direct access from open decks only. Pressure-adjusting devices and relief valves must exhaust within the compartment. Where boundary bulkheads of such compartments adjoin other enclosed spaces they must be gastight.
 - 4) Except as necessary for service within the space, electrical wiring and fittings are not permitted within compartments used for the storage of highly flammable liquids or liquefied gases. Where such electrical fittings are installed, they must be acceptable to the surveyor for use in a flammable atmosphere. Sources of heat must be kept clear of such spaces and "No Smoking" and "No naked light" notices must be displayed in a prominent position.
 - 5) Separate storage must be provided for each type of compressed gas. Compartments used for the storage of such gases must not be used for storage of other combustible products nor for tools or objects not part of the gas distribution system. The surveyor may relax these requirements after taking into consideration the characteristics, volume and intended use of such compressed gases.

- Maritime rule Part 40D.54 specifies the requirements for heating installations on fishing vessels, which are Post-27 May 2004 ships of 45 metres or more in length but less than 60 metres and post-27 May 2004 ships of 24 metres or more in length but less than 45 metres that proceed beyond the coastal limit.

Maritime Rules Part 40D.54 Heating installations

- 1) Electric radiators must be fixed in position and so constructed as to minimise fire risks ¹⁹
- 2) Heating by means of open fires is not permitted. Heating stoves and other similar devices must be firmly secured and adequate protection and insulation against fire must be provided beneath and around such appliances and in way of the uptakes. Uptakes of stoves that burn solid fuel must be arranged and designed so as to minimise the possibility of becoming blocked by combustion products and must have a ready means for cleaning. Dampers for limiting draughts in uptakes are, when in the closed position, still to leave an adequate area open. Spaces in which stoves are installed must be provided with ventilators of sufficient area to provide adequate combustion air for the stove. Such ventilators must have no means of closure and their position must be such that closing appliances in accordance with rule 40D.17 are not required.
- 3) Open gas flame appliances, except cooking stoves, domestic refrigerators and water heaters, are not permitted. Spaces containing any such stoves, refrigerators or water heaters must have adequate ventilation to remove fumes and possible gas leakage to a safe space. All pipes conveying gas from container to stove, refrigerator or water heater must be of steel or other material approved by the surveyor. Automatic safety gas shut-off devices must be fitted to operate on loss of pressure in the gas main pipe or flame failure on any

appliance.

- Maritime rule Part 40D.56 specifies the requirements for storage of gas cylinders and dangerous materials on fishing vessels, which are Post-27 May 2004 ships of 45 metres or more in length but less than 60 metres and post-27 May 2004 ships of 24 metres or more in length but less than 45 metres that proceed beyond the coastal limit.

Maritime Rules Part 40D.56 Storage of gas cylinders and dangerous materials

- 1) Cylinders for compressed, liquefied or dissolved gases must—
 - a) be clearly marked by means of identifying colours in accordance with NZS 5807:1980 *Code of Practice for Industrial Identification by Colour, Wording or other Coding*; and
 - b) have a clearly legible identification of the name and chemical formula of their contents; and
 - c) be properly secured.
- 2) Cylinders containing flammable or other dangerous gases and expended cylinders must be—
 - a) stored and properly secured on open decks, and all valves, pressure regulators and pipes leading from such cylinders must be protected against damage; and
 - b) protected against excessive variations in temperature, direct rays of the sun, and accumulation of snow. However, the surveyor may permit such cylinders to be stored in compartments that comply with the requirements of rules 40D.56(3) to 40D.56(5) inclusive.
- 3) Spaces containing highly flammable liquids, and where permitted, liquefied gas, must have direct access from open decks only. Pressure-adjusting devices and relief valves must exhaust within the compartment. Where boundary bulkheads of such compartments adjoin other enclosed spaces, they must be gastight.
- 4) Except as necessary for service within the space, electrical wiring and fittings are not permitted within compartments used for the storage of highly flammable liquids or liquefied gases. Where such electrical fittings are installed, they must be to the satisfaction of the surveyor for use in a flammable atmosphere. Sources of heat must be kept clear of such spaces and "No Smoking" and "No naked light" notices must be displayed in a prominent position.
- 5) Separate storage must be provided for each type of compressed gas. Compartments used for the storage of such gases must not be used for storage of other combustible products nor for tools or objects not part of the gas distribution system. The surveyor may relax these requirements after taking into consideration the characteristics, volume and intended use of such compressed gases.

- Maritime rule Part 40D.60 specifies the requirements for heating and cooking installations on fishing vessels, which are post-27 May 2004 ships of less than 24 metres in length and post-27 May 2004 ships of 24 metres or more in length but less than 45 metres that do not proceed beyond the coastal limit.

Maritime Rules Part 40D.60 Heating and cooking installations

- 1) Electric radiators must be fixed in position and so constructed as to reduce fire risks to a minimum.²⁰
- 2) Heating by means of open fires is not permitted. Heating stoves and other similar devices must be firmly secured and adequate protection and insulation against fire must be provided beneath and around such appliances and in way of the uptakes. Uptakes of stoves that burn solid fuel must be arranged and designed so as to minimise the possibility of becoming blocked by combustion products and must have a ready means for cleaning. Dampers for limiting draughts in uptakes are, when in the closed position, still to leave an adequate area open. Spaces in which stoves are installed must be provided with ventilators of sufficient area to provide adequate combustion air for the stove. Such ventilators must have no means of closure and be exempt from having a closing device in accordance with rule 40D.17(2).
- 3) Open gas flame appliances, except cooking stoves, domestic refrigerators and water heaters, are not permitted. Spaces containing any such stoves, refrigerators or water heaters, must have adequate ventilation to remove fumes and possible gas leakage to a safe space. All pipes conveying gas from container to stove, refrigerator or water heater must be of steel or other material approved by the surveyor. Automatic safety gas shut-off devices must be fitted to operate on loss of pressure in the gas main pipe or flame failure on any appliance.
- 4) Cylinders for compressed, liquefied or dissolved gases must—
 - a) be clearly marked by means of identifying colours in accordance with NZS 5807:1980 *Code of Practice for Industrial Identification by Colour, Wording or other Coding*; and
 - b) have a clearly legible identification of the name and chemical formula of their contents; and
 - c) be properly secured.
- 5) Cylinders containing flammable or other dangerous gases and expended cylinders must be—
 - a) stored and properly secured on open decks, and all valves, pressure regulators and pipes leading from such cylinders must be protected against damage; and
 - b) protected against excessive variations in temperature, direct rays of the sun, and accumulation of snow. The surveyor may permit such cylinders to be stored in compartments that comply with the requirements of rules 40D.50(3) to 40D.50(5) inclusive.
- 6) All cooking stoves must be well secured and installed clear from all woodwork and other combustible materials and all such adjacent woodwork must be protected by heat resistant material, so arranged as to provide an air space between the material and the woodwork it protects. Such insulating material must be impervious to fat or faced with a material impervious to fat.
- 7) Petrol, white spirit, or liquids having a flash point below 23°C must not be used for cooking.

Clarification

- Heating and cooking installations on board ships can pose a grave danger if these are not installed, ventilated, maintained and surveyed in accordance to industry best practices and standards.
- The Gas Act 1992 does not apply to ships however HSWA legislation does apply to such installations.
- Installation of cooking devices must be such as to minimise the risk of fire and explosion. It is also highly recommended that all new gas fittings, heating and cooking installations comply with and be installed in accordance with the latest standards that are in force at the time of installation by a licensed gas fitter and installer.
- Maritime New Zealand highly recommends that a licensed gas fitter and installer undertake a safety verification of existing gas fittings, heating and cooking installations to ensure that these are safe and meet the minimum standards and safety objectives as set out within the maritime rules and / or industry standards.
- The current reference to standard *NZS 5428 'Installation and Use of LPG for Non-Propulsion Purposes in Caravans and Boats'* within the Maritime rule has now been superseded by
 - AS/NZS 5601.1:2013 *Gas installations – Part 1: General installations*
 - AS/NZS 5601.2:2013 *Gas installations – LP Gas installations in caravans and boats for non-propulsive purposes*
- For **existing installations**, safety verifications were required to be undertaken and these were referenced in - NZS 5255(Int):2014 *Safety verification of existing gas installations*

Conclusion

- Maritime New Zealand highly recommends that a licensed gas fitter and installer undertake a safety verification of existing gas fittings, heating and cooking installations to ensure that these are safe and meet the minimum standards and safety objectives as set out within the maritime rules and / or industry standards.
- It is also highly recommended that all new gas fittings, heating and cooking installations comply with and be installed in accordance with the latest standards that are in force at the time of installation by a licensed gas fitter and installer.
- The maritime recognised surveyor should at the time of conducting their surveys endeavour to sight copies of valid gas certificate issued by a licenced installer. Any safety related deficiencies identified should be rectified to the satisfaction of the surveyor.

Reference Material(s)

No.	Title	Author / Publisher	Year
1	Maritime Rules Part 40A: Design, Construction and Equipment –Passenger Ships which are not SOLAS Ships	<i>Maritime New Zealand</i>	2016
2	Maritime Rules Part 40C: Design, Construction and Equipment – Non-passenger Ships that are not SOLAS Ships	<i>Maritime New Zealand</i>	2018
3	Maritime Rules Part 40D: Design, Construction and Equipment – Fishing ships	<i>Maritime New Zealand</i>	2019
4	https://shop.standards.govt.nz/catalog/ce92c7c0-81e4-3024-8a14-6b94939a566c/view	<i>Standards New Zealand</i>	2013
5	Safety verification of existing gas installations – NZS 5255:2014	<i>Standards New Zealand</i>	2014
6	Gas Act 1992	<i>New Zealand Legislation</i>	2017

Further information on this note may be obtained from:

Maritime Systems Assurance

Maritime New Zealand

Level 11,

1 Grey Street

Wellington 6011

New Zealand (toll free): **0508 225 522**

Calling from outside New Zealand: **+64 4 473 0111**

Email: domestic.operations@maritimenz.govt.nz
