

CHAPTER 18

VENTILATION

CONTENTS

Para

- 1801. General
- 1802. Methods of Ventilation (not including Air Conditioning)
- 1803. CBRN Uses of the Ventilation System
- 1804. Zoning
- 1805. Galley Ventilation Systems
- 1806. Sources of Information on Ship Ventilation

CHAPTER 18**VENTILATION****1801. General**

Ventilation is needed in ships for three principal reasons:

- a. To provide sufficient oxygen to ensure the health and alertness of the ships company, in all climates and conditions of service.
- b. To maintain tolerable temperatures.
- c. Remove foul air, noxious and toxic fumes, smoke and combustible or explosive vapours.

1802. Methods of Ventilation (not including Air Conditioning)

- a. **Fan Supply - Natural Exhaust.** The fan supply is trunked to manned positions and exhausted naturally to the open air either by trunking or through doors and hatches.
- b. **Fan Exhaust - Natural Supply.** This is used for the removal of fumes, vapours, odours, wild heat and, for Damage Control purposes, smoke from compartments. Some ships have dedicated smoke clearance fans.
- c. **Fan Supply - Fan Exhaust.** Compartments such as machinery compartments, galleys, bathrooms and laundries, where maximum ventilation and heat dissipation are the prime requirements, are ventilated by this method.

1803. CBRN Uses of the Ventilation System

- a. **CBRN Collective Protection.** Ships ventilation systems, in conjunction with air filtration units (AFUs), are used by the CBRN organisation to achieve Condition Alfa and additionally in some ships to be able to achieve gastight sub-citadels (see BRd 2170(2) and CB 4538 Series - Ships Class Book).
- b. **Re-Circulation Systems.** Most ships are fitted with Air Treatment Units (ATUs) that form an important and integral part of the ventilation system. This system incorporates a continuous 'make up' supply of fresh air that is led into the recirculation system and air conditioned by the ATUs. The recirculation system uses trunking, hatches, doors, grilles and passageways to allow the air to flow around the system. In the event of a fire the smoke would quickly be circulated around the system and soon render the atmosphere irrespirable. To prevent this from happening and to restrict the supply of oxygen to a fire all ventilation systems are stopped on the report of an outbreak.
- c. **Smoke Containment or Removal of Smoke from a Fire.** Information regarding this problem is to be found in [Annex 21C](#), Ships CBRNDC Orders and the Smoke Clearance Plans associated with Form S 3021 (Kill Card)(see [Annex 21J](#)). Details of the Ramfan portable smoke clearance fan are in [Para 2228](#).

1804. Zoning

To minimise the areas affected by damage or fire modern surface ships are divided into zones that are able to operate independently (see [Chapter 28](#)). To align with this policy each zone is provided with its own air conditioning and ventilation systems that do not penetrate zone boundaries. AFUs, of the required capacity, are also provided for each zone.

1805. Galley Ventilation Systems

a. Galley exhaust ventilation systems are fitted with fire baffles in the trunking. The levers that operate them should be:

(1) A simple single-action lever directly controlling the baffle and located within 1.8 to 3 m of the deep fat fryer or range canopy, and between the canopy and galley access.

(2) Easily operated by a person standing on the deck.

(3) Clearly marked in red lettering '**SHUT IN THE EVENT OF FIRE**'.

b. A second operating position for the baffle should be located just outside the main galley entrance, adjacent to the ventilation and galley master switches. If a galley is fitted with two or more doors, and the fire baffle control lever is sited remotely at one of them, the door(s) not having the fire baffle control lever adjacent should be clearly marked '**FIRE BAFFLE OPERATING LEVER AT**'.

1806. Sources of Information on Ship Ventilation

More detailed information regarding the design, construction and usage of ventilation systems is to be found in the following:

a. **Naval Engineering Standards (NES)**

(1) NES 102, Part 1 - Requirements for Air conditioning and Ventilation - HM Surface Ships and Royal Fleet Auxiliaries.

(2) NES 118 - Material Requirements for the CBRN Defence of Surface Ships including RFAs.

b. **Books of Reference (BR)**

(1) BR 2000(60) - Naval Marine Engineering Practice (Hull).

(2) BRd 1 - Refer to 'Air Conditioning and Ventilation' in the alphabetical index of subjects for details of specific ships and systems.

c. **Drawings**

(1) Ships ventilation drawings.

(2) Ships ventilation board in HQ1.