GUIDANCE NOTES
GD 19-2020

INTERNATIONAL SHIP CLASSIFICATION

GUIDELINES FOR EPIDEMIC PREVENTION AND CONTROL OF SHIPS

2020

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CONTENTS

CHAPTER 1 GENERAL

Section 1 GENERAL PROVISIONS

1.1.1 Purpose

1.1.1.1 The Guidelines are intended to provide certain sanitary guarantee conditions on ship and capabilities to cope with an epidemic, in order to reduce the risk of transmission of communicable diseases.

1.1.2 Scope of application

1.1.2.1 The Guidelines are applicable to all sea-going and inland waterway ships.

1.1.2.2 Ships satisfying the relevant requirements of the Guidelines will, upon the request, be assigned corresponding class notations in Section 2 of this Chapter.

1.1.2.3 Ships satisfying the relevant requirements of the Guidelines may, upon the request, apply for issuance of epidemic prevention and control certificate/document of compliance/report.

1.1.2.4 Ships specified in 1.1.2.1 above are, in addition to satisfying the requirements of the Guidelines, to satisfy relevant requirements of other applicable ISC rules and applicable requirements of the Administration of the flag State.

1.1.3 Definitions

1.1.3.1 Unless provided otherwise, for the purpose of the Guidelines:

(1) *Isolation room* means a cabin used for confirmed cases or suspected cases on board, including the provision of independent or designated and dedicated toilets.

(2) *Isolation zone* is a special zone used for the placement of confirmed cases or suspected cases when a cluster of communicable disease occurs.

(3) *Negative pressure isolation zone* means a zone provided with negative pressure isolation rooms, within which the static air pressure is lower than that of the adjacent ambient air outside the zone.

(4) *Living zone* means a relatively enclosed living zone of personnel (including passenger and crew cabins) provided with different levels of sanitary protection, consisting of categories I, II and III ranging from low to high. Category I living zone is only considered for placement of healthy people; Category II living zones can be used for placement of close contacts with confirmed cases/suspected cases; Category III living zones can be used for placement of confirmed cases/suspected cases, in case the isolation zone cannot meet the demand of placement.

(5) *Negative pressure isolation room* means a cabin with a static air pressure lower than that of the adjacent ambient air outside the cabin by means of ventilation and air conditioning systems.

(6) *Sanitary buffer room* means a small isolated room provided between two adjacent connecting rooms with different pressure gradient or different pollution levels that may require air purification and provided with means for air supply and return, and small doors on both sides.

(7) *Interim buffer zone* means an appropriate public space selected on board the ship which is used for transfer and placement of people with different health status after the occurrence of an epidemic event.

(8) *Preventive disinfection* means the disinfection of objects and places that may be contaminated by pathogens when no source of infection is found, e.g. disinfection of public places, drinking water and tableware, etc.

(9) *Concurrent disinfection* means disinfection treatment carried out in a timely manner to places where the source of infection (confirmed cases or close contacts with confirmed cases) exists, and to contaminated or used objects.

(10) *Terminal disinfection* means disinfection treatment carried out to environment and objects possibly contaminated by the source of infection after it leaves.

(11) *Medical waste* means the waste with direct or indirect infectivity, toxicity and other hazards generated on the ship during medical diagnosis and treatment and related activities, e.g. disposable sanitary products, disposable medical supplies, disposable medical apparatus, cotton balls, gauze, test specimens, expired drugs, sludge for treatment of medical wastewater, etc.

Section 2 FUNCTIONS AND CLASS NOTATIONS

1.2.1 Ships are to comply with epidemic prevention and control guarantee functions specified in the Guidelines. The following class notations for epidemic prevention and control may be assigned upon request.

EPCN (SVS, NPR, HIT, TAS)
Optional functional notations are included in the parenthesis.

1.2.2 Functional notations

N—ship's Epidemic Prevention and Control level (N= 1 or 2 or 3, 3 being the highest level), for which relevant requirements of Chapters 2, 3, 4 and 6 of the Guidelines are to be satisfied;

SVS—functional notation for Sanitary Ventilation System, for which the requirements of Sections 1 and 4, Chapter 4 of the Guidelines are to be satisfied;

NPR— functional notation for Negative Pressure isolation Room, for which the requirements of Chapter 5 of the Guidelines are to be satisfied;

HIT—functional notation for Health Investigation and Thermometry System, for which the requirements of Sections 1 and 2, Chapter 6 of the Guidelines are to be satisfied;

TAS—functional notation for Telemedicine Assistant System, for which the requirements of Sections 1 and 3, Chapter 6 of the Guidelines are to be satisfied.

1.2.3 The optional functional notations for NPR, SVS, HIT and TAS are assigned provided that the ships has obtained class notations for EPC. For assignment of the EPC 3 class notation, HIT and TAS class notations must be obtained.

Description of class notations **Table 1**

Function	Class notation	Description	Technical requirements to be complied with
Level 1 Epidemic Prevention and Control	EPC 1	The ship's epidemic prevention and control guarantee function, including daily management, emergency plan, food / domestic water sanitation, air ventilation / purification, environmental disinfection, medical waste treatment, provision of basic medical conditions, isolation of groups of people with different health status on board	Sections 1 and 2 of Chapter 2; Sections 1 and 2 of Chapter 3; Sections 1 and 2 of Chapter 4
Level 2 Epidemic Prevention and Control	EPC 2		Sections 1, 2 and 3 of Chapter 2; Sections 1 and 3 of Chapter 3; Sections 1 and 3 of Chapter 4
Level 3 Epidemic Prevention and Control	EPC 3		Sections 1, 2 and 3 of Chapter 2; Sections 1 and 4 of Chapter 3; Sections 1 and 4 of Chapter 4; Chapter 6
Sanitary Ventilation System	SVS	Requirements for air conditioning systems in living and isolation zones, including air pressure difference and high protection level air filter requirements, in order to control the air flow direction and provide pathogen filtering function	Sections 1 and 5 of Chapter 4
Negative Pressure Isolation Room	NPR	Technical requirements for the negative pressure isolation room to provide the highest level of capacity to isolate the disease transmission through air / aerosol, for which the EPC 3 class notation is to be obtained	Chapter 5
Health Investigation and Thermometry System	HIT	Tracking and investigating the movement routes of persons and detecting the body temperature of persons	Sections 1 and 2 of Chapter 6
Telemedicine Assistant System	TAS	Shore-based telemedicine assistant system	Sections 1 and 3 of Chapter 6

Section 3 SURVEY AND CERTIFICATION

1.3.1 General provisions

1.3.1.1 The provisions of this Section apply to the following surveys of ship’s epidemic prevention and control functions:

(1) For ships for which the Guidelines are recognized by the Administration of the flag State and ISC is authorized to conduct surveys, ISC conducts relevant surveys, and issues and endorses relevant certificates in accordance with the Guidelines based on the authorization agreement, upon the request.

(2) ISC conducts classification survey and assigns relevant class notations in Section 2, Chapter 1 of the Guidelines.

(3) Upon the request of the customer, ISC can carry out assessment of prevention and control function of communicable diseases of ships. For such ships, ISC will carry out assessment and issue corresponding documents of compliance or reports in accordance with the relevant requirements for initial surveys of the Guidelines agreed with the customer in writing. ISC does not guarantee that these documents of compliance or reports will be accepted by all parties.

1.3.1.2 Surveys specified in this Section may be carried out in conjunction with initial/initial classification surveys, annual surveys and renewal/special surveys for maintenance of the validity of ship's statutory/classification certificates.

1.3.2 Surveys of ship's epidemic prevention and control level

1.3.2.1 Scope of application

(1) The requirements of this paragraph apply to surveys of ship's epidemic prevention and control level.

(2) Classed ships satisfying the requirements of this paragraph may be assigned one of the class notations for ship's epidemic prevention and control level:

① EPC 1;
② EPC 2;
③ EPC 3.

1.3.2.2 Initial/initial classification surveys

(1) For ships intended to apply for surveys of ship's epidemic prevention and control level, plans and documents specified in 2.1.2, Section 1, Chapter 2 of the Guidelines are to be submitted for approval/ information.

(2) Confirming that the ship's compartment arrangement, air conditioning / ventilation arrangement, disinfection piping system, etc. satisfy the requirements of approved drawings.

(3) Confirming that the epidemic prevention and control plans are provided on the ship.

(4) Confirming that there is a stock of epidemic prevention materials on board that complies with the provisions of the Guidelines.

(5) Confirming that the ship is provided with full-time or part-time medical personnel, and that the ship has 24-hour medical support for communicable disease control on shore.

(6) Confirming that the ship is provided with epidemic prevention and control management manual.

(7) Confirming that crew members and staff on board have been trained in knowledge and practical operation related to communicable disease prevention, emergency treatment and disinfection. For passenger ships with a voyage time of more than 4 hours, confirming that a hygienic knowledge booklet and a hygienic and epidemic prevention knowledge video have been prepared on the ship, and that the hygienic knowledge booklet has been placed in the required space.

(8) For ships intended to apply for level 2 epidemic prevention and control, the following survey items are to be included in addition to (1) to (7) above:

① confirming that public utensils, food processing and storage utensils in the galley and restaurant are provided with disinfection facilities or measures;
② confirming that dedicated garbage cans / waste bins are provided in the galley and restaurant;
③ confirming that a display hood capable of maintaining a suitable temperature or other means are provided to protect self-service food;
④ confirming that construction materials of drinking water tanks and delivery systems such as water pipes, valves and equipment are free from the possibility of pollution of drinking water;
⑤ confirming that delivery systems such as water pipes, valves and equipment have conspicuous identification marks and are provided with means to prevent back-flow;
⑥ confirming that drinking water tanks are provided with sampling and detection devices;
⑦ confirming that the ship is provided with a covered container or a dedicated compartment that is clearly marked and specifically contains garbage, solids and medical wastes;
⑧ confirming that means are provided for the harmless treatment of domestic waste, surplus food, solid waste, and for treatment of biological medical waste, or bio-plastic bags are provided;
⑨ confirming that basic medicines and medical equipment have been provided according to the requirements of the International Medical Guide for Ship of the World Health Organization;
⑩ testing telephones or alarm devices in the isolation zone;
⑪ confirming that the isolation zone is provided with gastight washable containers or dedicated compartments for collection of garbage;
⑫ measuring the air pressure and verifying that it decreases successively from category I living zone to isolation zone, when the mechanical ventilation system and air conditioning system operate normally;
⑬ confirming that the air supply outlet and return air inlet of the air conditioning system are provided with air filters of medium and high efficiency and above, where applicable.

(9) For ships intended to apply for level 3 epidemic prevention and control, the following survey items are to be included in addition to (1) to (8) above and 1.3.5.2 and 1.3.6.2:

① confirming that the ship is provided with medical practitioners with experience of communicable disease prevention and treatment;
② confirming that all equipment surfaces in contact with food, and bulkheads, ceilings and floors of food service area are made of approved materials and are easy to clean. Confirming that vinyl and linoleum flooring materials are not used in the food area;

③ confirming that all food display areas (including food preparation display areas) (if any) are provided with effective protective measures (such as anti-sneezing baffles, display boxes, raised baffles, etc.). The baffle panel is made of durable and smooth plastic or glass that is easy to clean;
④ confirming that the inner surface of the food elevator and food delivery machine is stainless steel;
⑤ confirming that the steam used for food or food contact surface comes from drinking water, and that the steam is generated by special equipment (such as steamer, steam oven);
⑥ confirming that the food service area is provided with garbage cans, garbage shredders or food waste recycling systems;
⑦ confirming that the soap dispenser and toilet paper tube are not fitted directly above the storage of cleaning utensils, food storage, food preparation table, bar and water fountain;
⑧ confirming that decorative materials of the hand washing station are water repellent, durable and easy to clean;
⑨ confirming that the drinking water filter is easily accessible for replacement;
⑩ confirming that the outlet of the automatic water dispenser is inclined and provided with sanitary protection;
⑪ confirming that stainless steel cabinets are provided for water dispensers in the food preparation area and there is no overflow outlet;
⑫ confirming that an approved coating of drinking water tank is used, and that it is applied, dried and maintained according to the manufacturer's requirements;
⑬ confirming that welded pipes above the drinking water tank are treated for corrosion protection, and that the water piping inside the drinking water tank is seamless and non-corrosive;
⑭ confirming that the drinking water distribution piping is at least 450 mm above the deck surface or normal bilge level;
⑮ confirming that lead, cadmium or other hazardous materials are not used to manufacture pipes, fittings or welding consumables;
⑯ confirming that the drinking water tank and drinking water system are provided with means for cleaning, disinfecting and rinsing all the components;
⑰ confirming that materials of all bulkheads and decks in the garbage storage area and garbage treatment area are durable, non-corrosive and easy to clean; confirming that a sink or automatic washing machine with pressure cleaning is provided;
⑱ For ships provided with recreational water facilities, it is to be confirmed that:
a. the decorative surface and working surface of the recreational water facility use non-porous and easy-to-clean materials;
b. recreational water facilities for babies use floor materials that are approved to be durable, water repellent, non-slip, and non-toxic;
c. drainage and suction ports of recreational water facilities and their devices can prevent the human body and limbs from being trapped;
d. recreational water facilities are provided with filtering and disinfection systems;
e. the filter is stored in a location that is easily accessible for inspection, cleaning and maintenance.
⑲ For ships provided with children’s activity center, it is to be confirmed that:
a. surfaces of tables, chairs or other furniture in the children's activity center are made of materials that are easy to clean and water repellent;
b. hand washing facilities are located outside the toilet, and the height of the sink from the ground does not exceed 560 mm. Hand washing facilities include soap liquid, paper tube or hand dryer and garbage can;
c. means are provided in the toilet and if any, means for changing diapers are provided.

⑳ confirming that the isolation zone/category II and III living zones are provided with gastight washable containers or dedicated compartments for collection of garbage; where a separate compartment is provided for garbage collection, confirming that it is moderately airtight and uses negative pressure ventilation;

㉑ confirming that wastewater collection pipes of the isolation zone/category II and III living zones can prevent the backflow of wastewater, gas or odor. For the wastewater of category II and III living zones, confirming that means are provided on board to disinfect and eliminate infectious virus;

㉒ examining and testing telephones or alarm devices in the isolation zone/category II and III living zones;

㉓ measuring the air pressure and verifying that it decreases successively from category I living zone to category II living zone and then to category III living zone/ isolation zone, when the mechanical ventilation system and air conditioning system operate normally;

㉔ confirming that the air supply outlet and return air inlet of the air conditioning system are provided with air filters of medium and high efficiency and above, where applicable.

1.3.2.3 Annual surveys

(1) Confirming that the arrangement required by the ship's epidemic prevention and control level has not been subject to any unapproved change and is intact since the last survey, and that epidemic prevention materials are within the period of validity.

(2) Confirming that the epidemic prevention and control plans are provided on the ship.

(3) Checking the records about emergency exercises carried out periodically on board.

(4) Checking the records of preventive disinfection carried out regularly to cabins, public places, elevators, stairways, corridors, toilets, etc., and of regular sampling and testing of drinking water.

(5) Checking records of appropriate preventive and control measures adopted on board against pests, rats, and other animals that are prone to spread disease at ports along the route.

(6) Items listed in 1.3.2.2(4) to (7) of this Section.

(7) For ships of level 2 epidemic prevention and control, items listed in 1.3.2.2(8)①~⑬ of this Section are to be included in addition to items of (1) to (6) above.

(8) For ships of level 3 epidemic prevention and control, items listed in 1.3.2.2(9)①~㉔,1.3.5.3 and 1.3.6.3 of this Section are to be included in addition to items of (1) to (7) above.

1.3.2.4 Renewal/special surveys

(1) Items of renewal/special surveys are the same as those of annual surveys.

1.3.3 Surveys of sanitary ventilation system

1.3.3.1 Scope of application

(1) The requirements of this paragraph apply to surveys of sanitary ventilation system. Classed ships satisfying the requirements of this paragraph may be assigned the class notation SVS.

(2) Surveys of sanitary ventilation system are carried out under the condition that the ship has satisfied requirements for epidemic prevention and control level.

1.3.3.2 Initial/initial classification surveys

(1) Measuring the air pressure and verifying that the relative air pressure difference between category I living zone, category II living zone and category III living zone/ isolation zone is not less than 5Pa. The air pressure ranges from low to high from category III living zone/ isolation zone to category II living zone and then to category I living zone.

(2) Confirming that the air conditioning system of each room in category I, II and III living zones is capable of air return independently.

(3) Confirming that the provision of air filters at air supply outlet and return air inlet of the air conditioning system in different categories of zones satisfies requirements.

1.3.3.3 Requirements for annual surveys, renewal/special surveys are the same as those in 1.3.3.2.

1.3.4 Surveys of negative pressure isolation room

1.3.4.1 Scope of application

(1) The requirements of this paragraph apply to surveys of negative pressure isolation room. Classed ships satisfying the requirements of this paragraph may be assigned the class notation NPR.

(2) Surveys of negative pressure isolation room are carried out under the condition that the ship has satisfied requirements for epidemic prevention and control level.

1.3.4.2 Initial/initial classification surveys

(1) For ships intended to apply for surveys of negative pressure isolation room, plans and documents specified in 5.1.2, Section 1, Chapter 5 of the Guidelines are to be submitted for approval.

(2) Confirming that the position of air inlets and outlets, air pressure difference and air flow direction satisfy the requirements of approved drawings.

(3) Confirm if there is any height difference in the corridor of negative pressure isolation room. If any, barrier-free ramps are to be used for connection and anti-skid measures are adopted.

(4) Confirming that the doors of the negative pressure isolation room are not wooden doors. Confirming that doors leading to the outside open outwards and have obvious signs, and are provided with emergency opening devices and safe escape signs; the remaining doors open to the side with higher pressure.

(5) Examining and testing telephones or alarm devices in the negative pressure isolation room.

(6) Examining door signs in the negative pressure isolation room, examining and testing means of indicating whether doors are open or closed and audible and visual alarms.

(7) Measuring the pressure difference between all spaces, examining and testing the micro differential pressure gauge, when the air conditioning system in the negative pressure isolation zone operates normally.

(8) Examining and testing the automatic pressure difference detection system of the air conditioning system and the negative pressure failure alarm system.

(9) Confirming the air filter provided at the air supply outlet and return air inlet of the ventilation system.

(10) Confirming that a zero-leakage exhaust device that can be safely disassembled is provided for exhaust air of the negative pressure isolation room and its toilet, and conducting an on-site scanning for leakage detection of the air filter therein.

1.3.4.3 Annual surveys

(1) Confirming that the arrangement of negative pressure isolation room has not been subject to any unapproved change and is intact since the last survey.

(2) Testing telephones or alarm devices in the negative pressure isolation room.

(3) Testing means of indicating whether the doors are open or closed and audible and visual alarms in the negative pressure isolation zone.

(4) Testing the automatic pressure difference detection system of the air conditioning system and alarm system.

(5) Confirming the air filter provided at the air supply outlet and return air inlet of the ventilation system.

(6) Measuring the pressure difference between spaces, examining and testing the micro differential pressure gauge, when the air conditioning system in the negative pressure isolation zone operates normally.

1.3.4.4 Renewal/special surveys

(1) In addition to annual survey items, confirming that a zero-leakage exhaust device that can be safely disassembled is provided for exhaust air of the negative pressure isolation room and its toilet, and conducting an on-site scanning for leakage detection of the air filter therein.

1.3.5 Surveys of health investigation and thermometry system

1.3.5.1 Scope of application

(1) The requirements of this paragraph apply to surveys of health investigation and thermometry system. Classed ships satisfying the requirements of this paragraph may be assigned the class notation HIT.

(2) Surveys of health investigation and thermometry system are carried out under the condition that the ship has satisfied requirements for epidemic prevention and control level.

1.3.5.2 Initial/initial classification surveys

(1) For ships intended to apply for surveys of health investigation and thermometry system, plans and documents specified in 6.1.2.1, Section 1, Chapter 6 of the Guidelines are to be submitted for approval.

(2) Confirming that the arrangement of health investigation system and human body thermometry system satisfies the requirements of approved drawings.

(3) Verifying that the health investigation system can clearly identify the main external features of the body such as human face and hairstyle at a distance of up to 10 meters from the person.

(4) Confirming that the surveillance camera of the health investigation system can work normally and meet the protection level of the installation space, and that it is capable of storing surveillance records for last 3 months.

(5) Testing the power supply switch function of health investigation system.

(6) Confirming that means are provided to prevent passengers from accidentally entering spaces where screens of surveillance of the health investigation system are installed.

(7) Confirming that the human body thermometry system is permanently installed at the entrance of embarkation and the entrance of appropriate public spaces, and that it can detect the body temperature at a distance not exceeding 3 m from the person in not more than 10 s.

(8) Testing the alarm function of human body thermometry system.

1.3.5.3 Annual surveys

(1) Confirming that the arrangement of health investigation system has not been subject to any unapproved change and is intact since the last survey.

(2) Testing the power supply switch function of health investigation system.

(3) Testing the temperature measurement distance, time and alarm function of human body thermometry system.

1.3.5.4 Renewal/special surveys
Items of renewal/special surveys are the same as those of annual surveys.

1.3.6 Surveys of telemedicine assistant system

1.3.6.1 Scope of application

(1) The requirements of this paragraph apply to surveys of telemedicine assistant system. Classed ships satisfying the requirements of this paragraph may be assigned the class notation TAS.

(2) Surveys of telemedicine assistant system are carried out under the condition that the ship has satisfied requirements for epidemic prevention and control level.

1.3.6.2 Initial/initial classification surveys

(1) For ships intended to apply for surveys of telemedicine assistant system, plans and documents specified in 6.1.2.2, Section 1, Chapter 6 of the Guidelines are to be submitted for approval.

(2) Confirming that the arrangement of telemedicine assistant system satisfies the requirements of approved drawings.

(3) Verifying that telemedicine assistant system can establish stable communication with shore-based medical facilities at any time.

(4) Testing the power supply switch function of telemedicine assistant system.

(5) Testing the voice and video function, network delay and ready availability of telemedicine assistant system.

1.3.6.3 Annual surveys

(1) Confirming that the arrangement of telemedicine assistant system has not been subject to any unapproved change and is intact since the last survey.

(2) Items listed in 1.3.6.2(2) to (4) of this Section.

1.3.6.4 Renewal/special surveys
Items of renewal/special surveys are the same as those of annual surveys.

CHAPTER 2 GUARANTEE OF EPIDEMIC PREVENTION AND CONTROL

Section 1 GENERAL PROVISIONS

2.1.1 General requirements

2.1.1.1 In order to provide personnel on board with conditions to guarantee epidemic prevention and control, appropriate measures to prevent and cope with communicable diseases are to be adopted, including daily management, emergency plan, food / domestic water sanitation, isolation, air ventilation / purification, environmental disinfection, medical waste treatment and provision of basic medical conditions.

2.1.2 Plans and documents

2.1.2.1 The following plans and documents are to be submitted to ISC for approval:

(1) epidemic prevention and control plan, indicating ship name and:
- ① division and name of compartments of the whole ship, means of access to each compartment and deck etc.;
- ② division of living zone, isolation room/isolation zone (if any), negative pressure isolation zone (if any) and interim buffer zone;
- ③ storage compartment of epidemic prevention materials;
- ④ arrangement of the air inlet/outlet, check valve and closing device of the sanitary ventilation system and the detail of the identification number of the ventilator serving each zone (indicated by the same symbol of the fire control plan);
- ⑤ air pressure difference and air flow direction (if any);
- ⑥ air-conditioning filter grade and arrangement (if any);
- ⑦ whether the air conditioning system of compartment has independent air return capability (if any);
- ⑧ helicopter landing or hovering area and transfer route of confirmed cases/suspected cases and close contacts with confirmed cases/suspected cases (if any);
- ⑨ health investigation and thermometry probe position and control room (if any);
- ⑩ compartments provided with telemedicine assistant system (if any);
- ⑪ position of exclusive garbage collection devices used for collecting medical waste and garbage of isolation zone.

(2) arrangement plan of mechanical ventilation;

(3) schematic diagram of air conditioning system (including air-conditioning filter arrangement, if any);

(4) system diagram of collection and disinfection pipelines of sewage and other wastewater;

(5) other plans and documents as deemed necessary by ISC.

2.1.2.2 The following plans and documents are to be submitted to ISC for information:

(1) epidemic prevention and control management manual;

(2) storage plan for epidemic prevention materials (including number calculations);

(3) air conditioning room arrangement plan of the whole ship;

(4) air conditioning system design instructions (including specifications)

(5) principles of air conditioning system piping system (cooling water piping system, coolant/heating medium water piping system, heating piping system and humidification piping system, etc.);

(6) schematic diagram of air conditioning control system of the whole ship;

(7) load calculations of air conditioning system.

Section 2 REQUIREMENTS FOR LEVEL 1 EPIDEMIC PREVENTION AND CONTROL

2.2.1 Stock of epidemic prevention materials on board

2.2.1.1 The type and quantity of disinfectant, disinfection equipment and protective equipment stored on board are to ensure the needs of daily and emergency situations. The time to consider the emergency situation is to be calculated based on the voyage back to the home port after the epidemic event occurred during the voyage. The amount of reserves is to have a 10% margin. The types and quantities of stored materials are to be defined in the epidemic prevention and control management manual.

2.2.1.2 Crew members required to work in special zones used for placement of confirmed cases or close contacts with confirmed cases are to be provided with work clothes, disposable work caps, disposable gloves and long-sleeved thick rubber gloves, medical protective and insulating clothing, particulate protective masks of KN95/N95/FFP2 and above or other masks providing equivalent protective effect or medical protective masks or power supply filter respirator, protective face shields, goggles, work shoes or rubber boots, waterproof boot covers, waterproof apron or waterproof isolating clothing, etc. When using a power supply filter respirator, a filter box or a canister for the combination of dust and poison is selected according to the type of disinfectant, in conjunction with protection against disinfectant and other chemicals.

2.2.1.3 When crew members working in special zones for placement of healthy people carry out disinfection operations, personal protective materials are to be provided with reference to the requirements of 2.2.1.2.

2.2.1.4 Special protective equipment and disinfection equipment is to be provided for personnel engaged in servicing of the sanitary ventilation system and the daily service water supply and drainage system on board.

2.2.1.5 All personnel on board are to be provided with personal protective and disinfection equipment, including particulate protective masks of KN95/N95/FFP2 and above or other masks providing equivalent protective effect or medical surgical masks, protective gloves or disposable gloves, goggles, disposable sanitizer, disinfectant wipes, etc. The amount of reserves is to be able to meet the needs of normal daily operations and personal protection for the period of returning to the home port after an epidemic event occurred during the voyage, based on which a reserve margin of 15% is to be maintained. The provision of protective equipment is to consider the needs of children and infants.

2.2.1.6 An appropriate number of portable thermometers are to be provided.

2.2.1.7 An appropriate number of disposable tools and suitable containers for sampling patients' vomit, excreta, secretions, blood, and storage devices are to be provided.

2.2.1.8 Flammable, explosive and corrosive materials such as disinfectant, alcohol, etc. on board are to be stored and used in a standardized manner.

2.2.2 Provision of medical personnel

2.2.2.1 The ship is to be provided with full-time or part-time medical personnel, who are to regularly receive training and exercises for the early detection and disposal of various communicable diseases.

2.2.2.2 24-hour medical support for communicable disease control on shore is to be provided around the clock.

2.2.3 Management of epidemic prevention and control

2.2.3.1 The ship is to be provided with an onboard epidemic prevention and control management manual developed in accordance with the actual condition of the ship and public health and safety conditions of ports of call of the route, which at least is to include the following:

(1) post responsibilities, list and watchkeeping arrangement of personnel of epidemic prevention and control management system on board;

(2) contact information of medical support for shore-based communicable disease control;

(3) epidemic prevention training and exercise plan of crew members and staff on board;

(4) daily sanitary infection plan of each zone;

(5) management procedures for health investigation and testing of personnel on board (including health declaration of embarkation);

(6) management system and reserves of epidemic prevention materials;

(7) management procedures for food/domestic water sanitation;

(8) management procedures for maintenance and disinfection of sanitary ventilation system;

(9) management procedures for maintenance and disinfection of sewage system;

(10) management procedures for maintenance and of isolation room/zone and epidemic prevention facilities;

(11) procedures for disposal of wastewater of isolation room/zone (including equipment and measures);

(12) management procedures for garbage and medical waste;

(13) preventive and control measures adopted against animals prone to spread diseases;

(14) a comprehensive emergency plan for the epidemic.

2.2.3.2 Crew members and staff on board are to be trained in knowledge and practical operation related to communicable disease prevention, emergency treatment and disinfection. Exercises are to be carried out periodically in accordance with the emergency plan.

2.2.3.3 Appropriate preventive and control measures are to be adopted against pests, rats, and other animals that are prone to spread disease at ports along the route.

2.2.3.4 Preventive disinfection is to be carried out regularly to cabins, public places, elevators, stairways, corridors, toilets etc. on board.

2.2.3.5 For passenger ships with a voyage time of more than 4 hours, a hygienic and epidemic prevention knowledge booklet for passengers is to be developed and placed for use in cabins and appropriate public spaces. A hygienic and epidemic prevention knowledge publicity video for passengers is to be filmed and played on a rolling basis in cabins, restaurants and other appropriate public spaces.

2.2.3.6 Temporary safety warnings are to be provided near the means of access to the isolation room and the air outlet of ventilation system of the isolation room.

2.2.3.7 The approved epidemic prevention and control plan is to be appropriately stored on board.

2.2.4 Management of medical waste

2.2.4.1 Medical waste on board is to be sorted, collected and treated in accordance with relevant provisions of the flag and/or port State authorities regarding sanitation and epidemic prevention.

2.2.4.2 Domestic waste of confirmed cases and suspected cases is to be considered as medical waste.

Section 3 ADDITIONAL REQUIREMENTS FOR LEVEL 2 AND 3 EPIDEMIC PREVENTION AND CONTROL

2.3.1 Additional requirements for level 2 epidemic prevention and control

2.3.1.1 Ships applying for the EPC 2 class notation are, in addition to satisfying the requirements of 2.2.1 to 2.2.4, to comply with the provisions of 2.3.1.2 to 2.3.1.7 below.

2.3.1.2 Galley and restaurant

(1) Separate and dedicated food processing area is to be provided and separated from other public spaces or passages.

(2) Public utensils, food processing and storage utensils are to be provided with disinfection facilities or measures.

(3) The arrangement of galley and restaurant is to consider separate processing and storage of raw and cooked food to prevent cross-contamination

(4) The galley is to be provided with at least one dedicated hand washing station for staff (including cleaning supplies and drying facilities).

(5) Dedicated garbage cans / waste bins are to be provided.

(6) A display hood capable of maintaining a suitable temperature or other means are to be provided to protect self-service food.

2.3.1.3 Food storage

(1) Food and toxic and hazardous substances are to be stored separately to avoid contamination.

(2) Food storage conditions are suitable to meet the quality assurance requirements of food production.

2.3.1.4 Drinking water

(1) Construction materials of drinking water tanks and delivery systems such as water pipes, valves and equipment are to be free from the possibility of pollution of drinking water.

(2) Delivery systems such as water pipes, valves and equipment are to have conspicuous identification marks and are to be provided with means to prevent back-flow.

(3) Drinking water tanks are to be provided with sampling and detection devices for periodical sampling and detection.

2.3.1.5 Garbage, solids and medical wastes

(1) The ship is to be provided with a covered container or a dedicated compartment that is clearly marked and specifically contains garbage, solids and medical wastes.

(2) Means are to be provided on board for the harmless treatment of domestic waste, surplus food, solid waste, and for treatment of biological medical waste, or bio-plastic bags are provided to store medical waste for treatment on shore after docking.

2.3.1.6 Medical facilities

(1) An infirmary is to be provided on board.

(2) Basic medicines and medical equipment are to provided according to the requirements of the International Medical Guide for Ship of the World Health Organization.

(3) Medical facilities are to be kept clean and well maintained. A hand washing station is to be provided in the infirmary.

2.3.1.7 Temporary safety warnings are to be provided near the means of access to the isolation room/zone and the air outlet of ventilation system of the isolation room/zone.

2.3.2 Additional requirements for level 3 epidemic prevention and control

2.3.2.1 Ships applying for the EPC 3 class notation are, in addition to satisfying the requirements of 2.3.1, to comply with the provisions of 2.3.2.2 to 2.3.2.12 below.

2.3.2.2 The ship is to be provided with medical practitioners with experience of communicable disease prevention and treatment.

2.3.2.3 The ship is to be provided with helicopter landing or hovering area.

2.3.2.4 The ship is to be provided with health investigation and thermometry system satisfying the requirements of Chapter 6.

2.3.2.5 he ship is to be provided with telemedicine assistant system satisfying the requirements of Chapter 6.

2.3.2.6 Food and food areas

(1) Areas are to be provided where foods of different nature (such as raw food and cooked food, clean food and non-clean food) are placed separately. If the same passageway is used to transport foods of different nature at the same time, a certain width needs to be considered to prevent contact. In the same galley, the operation interval of food of different nature is not to be less than 2 m.

(2) Different passageways are to be provided for loading of food and unloading of garbage to prevent cross contamination. Refrigerated foods are to be prevented from being exposed for too long at non-refrigerated temperature.

(3) All equipment surfaces in contact with food are to be made of approved materials which are smooth, durable and non-corrosive, and are to be easy to clean. Vinyl and linoleum flooring materials are not to be used in the food area. Bulkheads and ceilings in food areas are to be made of durable, non-corrosive materials which are water repellent and easy to clean.

(4) Food service areas (such as buffet service areas, service stations, bars and other similar areas) are to be provided with ceilings. Bulkheads and ceilings in food service areas are to be made of hard, durable, non-corrosive materials which are water repellent and easy to clean.

(5) Floors of food service area are to be made of hard, durable, non-slip materials which are water repellent.

(6) Ventilation openings and wastewater pipes are not to pass above the food preparation area, food storage area, and storage position of cleaning appliances.

(7) All food display areas (including food preparation display areas) (if any) are to be provided with effective protective measures (such as anti-sneezing baffles, display boxes, raised baffles, etc.). The baffle panel is to be made of durable and smooth plastic or glass that is easy to clean.

(8) The inner surface of the food elevator and food delivery machine is to be stainless steel.

(9) Steam used for food or food contact surface is to come from drinking water, and it is to be generated by special equipment (such as steamer, steam oven).

(10) The tabletop for placing food garbage is to be designed to ensure the removal of contaminated fluids, in order to prevent contamination of the clean tabletops around.

(11) The food service area is to be provided with garbage cans, garbage shredders or food waste recycling systems.

(12) Adequate overboard deck discharges and scuppers are to be arranged in the food area and washing area to avoid overflow of sewage.

2.3.2.7 Hand washing stations

(1) Hand washing stations are to be provided in food handling areas, preparation areas and cleaning areas, food (such as soup, ice cubes, etc.) distributor waiting areas, toilets and other areas. A hand washing station is to be provided for each galley and cutlery room where dirty dishes are stacked.

(2) Hand washing stations are to be provided in each crew restaurant and passenger buffet service area (if any). Each hand washing station is at least to be provided with a hand washing sink, a soap dispenser, and a toilet paper tube. The hand washing sink can be replaced by an automatic hand washing system. Soap dispenser and toilet paper tube are not to be fitted directly above the storage of cleaning utensils, food storage, food preparation table, bar and water fountain.

(3) The garbage can is to be as close as possible to the sink, and its size is to be suitable for the amount of waste paper produced. Decorative materials of the hand washing station are to be water repellent, durable and easy to clean.

2.3.2.8 Drinking water

(1) If drinking water filters fitted on ice machines, combination ovens, beverage machines are used, it is to be ensured that filters are easily accessible for replacement.

(2) The outlet of the automatic water dispenser is to be inclined and have sanitary protection.

(3) Stainless steel cabinets are to be provided for water dispensers in the food preparation area and an overflow outlet is to be provided.

(4) Drinking water storage tanks and other non-potable water tanks or liquid tanks are not to have common bulkheads. No other tanks containing non-potable liquids are to be arranged directly above the drinking water tanks. An approved coating of drinking water tank is to be used, and it is to be applied, dried and maintained according to the manufacturer's requirements.

(5) Non-potable water pipelines are not to pass through drinking water tanks. Welded pipes above the drinking water tank are to be treated for corrosion protection, and the drinking water pipelines inside the drinking water tank is to be seamless and non-corrosive.

(6) Ventilation pipes of drinking water tanks are not to be connected to those of non-potable water tanks. The drinking water distribution piping is to be at least 450 mm above the deck surface or normal bilge level. Lead, cadmium or other hazardous materials are not to be used to manufacture pipes, fittings or welding consumables.

(7) Drinking water tank and drinking water system are to be provided with means for cleaning, disinfecting and rinsing all the components.

(8) Drinking water heat exchangers are to be designed to prevent water pollution.

2.3.2.9 Garbage storage and treatment

(1) Garbage storage is to satisfy the following requirements:
- ① A large garbage storage station or storage room is to be provided, which is sufficient to meet the needs of storing unprocessed garbage generated during the longest voyage between two unloading.
- ② The garbage storage area is to be separated from all food preparation and storage areas, and fitted with sufficient air supply and exhaust to control temperature, humidity and odor.
- ③ A sealed and refrigerated storage space for wet garbage and an easily accessible hand washing station are to be provided.
- ④ It is to be ensured that all bulkheads and floors in the garbage storage area are durable and easy to clean.

(2) Garbage treatment is to satisfy the following requirements:
- ① A sufficient number of large stainless steel sorting tables are to be provided.
- ② A storage room for cleaning utensils and an easily accessible hand washing station are to be provided.
- ③ It is to be ensured that all bulkheads and floors in the garbage treatment area are durable, non-corrosive and easy to clean.
- ④ Sinks or automatic washing machines with pressure cleaning are to be provided for garbage cleaning operation equipment, garbage storage boxes and garbage bins.
- ⑤ Black water and grey water pipes in rooms, food areas and public areas are to be designed and fitted to prevent the backflow of wastewater, gas or odor.

2.3.2.10 Ventilation

Adequate ventilation is to be provided in all food preparation areas, cleaning areas, clean areas, and toilets to avoid overheating, excessive humidity, and excessive steam, condensate, water vapor, odor and smoke in such areas.

2.3.2.11 Where recreational water facilities are provided, the following requirements are to be satisfied:

(1) The decorative surface and working surface of the recreational water facility are to use non-porous and easy-to-clean materials.

(2) Recreational water facilities for babies are to use floor materials that are durable, water repellent, non-slip, and non-toxic.

(3) Drainage and suction ports of recreational water facilities and their devices are to be designed to prevent the human body and limbs from being trapped.

(4) Recreational water facilities are to be provided with filtering and disinfection systems, in order to ensure that recreational water is filtered and disinfected before reaching recreational water facilities.

(5) The filter is to be stored in a location that is easily accessible for inspection, cleaning and maintenance.

(6) Circulation pumps, filters and disinfection equipment of appropriate capacity are to be fitted to ensure the water exchange rate of recreational facilities

(7) The arrangement of the pump room of recreational water facilities is to be easily accessible and well ventilated. Each pump room is to be provided with a deck drainage system.

2.3.2.12 Where children's activity center (for children of less than 6 years of age) is provided, the following requirements are to be satisfied:

(1) Surfaces of tables, chairs or other furniture in the children's activity center are to be made of materials that are easy to clean and water repellent.

(2) Each children's activity center is to be provided with hand washing facilities, which are to be located outside the toilet, and the height of the sink from the ground does not exceed 560 mm. Hand washing facilities include soap liquid, paper tube or hand dryer and garbage can.

(3) The children's activity center is to be provided with a toilet for every 25 children. The toilet is to include the following facilities:
① children's toilet (of which the height does not exceed 280 mm, and the opening of the toilet seat does not exceed 203 mm);
② hand washing facilities (in accordance with 2.3.3.5 (2));
③ gloves and rags;
④ airtight and washable garbage cans;
⑤ the toilet exit door is to be self-closing.

(4) If diaper changing facilities are provided, the following equipment is to be included:
① table for changing diapers (non-leaking, water repellent, non-toxic, smooth, durable, clean);
② garbage bin (airtight) for storing dirty diapers;
③ hand washing facilities nearby (in accordance with the provisions of 2.3.3.5 (2));
④ a place to store diapers, gloves, rags and sterilizers.

2.3.2.13 Temporary safety warnings are to be provided near the means of access to the isolation room/zone and category II/III living zones, and near the air outlet of ventilation system of the isolation room/zone and category II/III living zones.

CHAPTER 3 COMPARTMENT ARRANGEMENT

Section 1 GENERAL PROVISIONS

3.1.1 General requirements

3.1.1.1 After the occurrence of an epidemic event, isolation measures are to be taken onboard the ship to reduce the risk of the spread of communicable diseases, e.g.: compartments onboard the ship are divided so that persons on board may be accommodated separately and activities may be carried out based on their health condition, so as to avoid unnecessary movement of persons living in different zones and to control the source of infection and cut off the spreading route insofar as practicable.

Section 2 REQUIREMENTS FOR LEVEL 1 EPIDEMIC PREVENTION AND CONTROL

3.2.1 General requirements

3.2.1.1 Compartments onboard the ship are to be divided as Category I living zone and isolation room according to the arrangement of compartments and the needs for response to an epidemic event. The functions of Category I living zone and isolation room are as follows:

(1) Category I living zone is only used for the accommodation and activities of healthy people.

(2) Isolation room is used to accommodate confirmed cases or suspected cases during the epidemic event. Suitable compartments may be designated as isolation room in the occurrence of epidemic.

3.2.1.2 Special care is to be provided outside the isolation room in use and conspicuous alarms are to be posted outside the ward and in nearby corridor.

3.2.1.3 Personnel in quarantine is to be provided with appropriate personal protection, accompanied by special personnel and isolated from others with concurrent disinfection carried out timely if he/she needs to leave the isolation room temporarily for the designated and dedicated toilet.

3.2.1.4 Excrement and wastewater discharged from personnel in quarantine are to be collected and treated according to relevant provisions for sanitation and epidemic prevention of flag and/or port authorities.

3.2.1.5 Suitable public space is to be selected as an interim buffer zone for re-accommodation of persons with different health condition after the occurrence of an epidemic event. Concurrent disinfection, terminal disinfection and effective isolation of persons with different health condition are to be carried out timely during the re-accommodation of persons.

3.2.1.6 Epidemic Prevention and Control Management Manual is to include the arrangement and means complying with 3.2.1.1 to 3.2.1.5 above.

Section 3 REQUIREMENTS FOR LEVEL 2 EPIDEMIC PREVENTION AND CONTROL

3.3.1 General requirements

3.3.1.1 Compartments onboard the ship are to be divided as Category I living zone, isolation room or isolation zone according to the arrangement of compartments and the needs for response to an epidemic event. Isolation zone is mandatory for passenger ships navigating for 24 hours and above. The functions of Category I living zone and isolation room/zone are as follows:

(1) Category I living zone is only used for the accommodation and activities of healthy people.

(2) Isolation room/zone is used to accommodate confirmed cases or suspected cases during the epidemic event. Medical space may be provided within the isolation zone.

3.3.1.2 Suitable public space is to be selected as an interim buffer zone for re-accommodation of persons with different health condition after the occurrence of an epidemic event. Concurrent disinfection, terminal disinfection and effective isolation of persons with different health condition are to be carried out timely during the re-accommodation of persons.

3.3.1.3 Epidemic Prevention and Control Management Manual is to include the arrangement and means complying with the requirements of this Section.

3.3.2 Arrangement of isolation zone

3.3.2.1 Isolation zone is to be located in a relatively independent zone onboard the ship where independent entrance is available.

3.3.2.2 Physical isolation between isolation zone and category I living zone is to be provided by means of deck, door or bulkhead extending from deck to deck.

3.3.2.3 The isolation zone is divided into clean zone and contaminated zone. Potential contaminated zone is to be provided as a buffer zone between these two zones. Functions of each zone and requirements are as follows:

(1) clean zone: entrance and exits (or passageway) for medical workers (or necessary crew) are provided at one end of isolation zone; locker room, toilet, shower, clean warehouse may be provided; lounge, watch room may be provided and if possible, room for expert group consultation, and monitoring and observation room may also be provided.

(2) potential contaminated zone:

① Office for medical care staff, treatment preparation room and warehouse may be provided in this zone and corridor for medical care staffs and place for wearing and taking off protective equipment are within this zone.

② Wearing and taking off of the protective equipment is to be separated if possible. Two adjacent rooms along the same corridor may be selected and, the room close to the clean zone is used for wearing the protective equipment and that close to the contaminated zone is used for taking off the protective equipment. Or, two separate passageways may be provided to totally separate the wearing and taking off of the protective equipment, if not possible, the wearing and taking off may be conducted in the same zone where wearing is close to the clean zone and taking off is close to the contaminated zone. Attention is to be paid that wearing and taking off are not conducted simultaneously. Dressing mirrors are to be provided in both wearing and taking off zones.

(3) Contaminated zone:

① Wards may be provided in contaminated zone.
② Telephone or alarm device is to be provided.
③ Toilet is to be provided in contaminated zone.

3.3.3 Garbage management and wastewater treatment in isolation zone

3.3.3.1 Garbage in isolation zone is to be treated as medical waste, which is to be collected with washable airtight vessel or dedicated compartment.

3.3.3.2 Hazard-free treatment is to be carried out before the garbage in isolation zone is sent to the dedicated compartment onboard the ship or transferred to the shore, e.g.: sealing the package with double packing and/or surface disinfection etc.

3.3.3.3 If independent dedicated compartment is provided in the isolation zone to collect garbage, the compartment is to be moderately airtight and the negative pressure ventilation is to be used and regular disinfection is required.

3.3.3.4 Waste water (including sewage and grey water) in isolation zone is to be treated with dedicated piping and collecting tank according to relevant provisions for sanitation and epidemic prevention of flag and/or port authorities.

3.3.3.5 The wastewater collection pipes in isolation zone are to be so designed and installed as to prevent the backflow of water, gas or odor.

3.3.3.6 The vent pipes of wastewater collection pipes in isolation zone are to be led to an open zone with good ventilation, and not close to personnel activity location, otherwise means of isolation are to be provided.

3.3.4 Requirements for isolation room

3.3.4.1 The isolation room is to meet the following requirements:

(1) The isolation room is to be a dedicated room separated from the category I living zone with physical isolation and is to be closed insofar as practicable.

(2) Telephone or alarm device is to be provided in the isolation room.

(3) Independent toilet is to be provided in the isolation room.

(4) Garbage from isolation room is to be treated as medical waste.

(5) Garbage from isolation room is to be collected with washable airtight vessel and hazard-free treatment is to be carried out before the garbage is transferred to the shore, e.g. sealing the package with double packing and/or surface disinfection etc.

(6) Waste water (including sewage and grey water) in isolation zone is to be treated with dedicated piping and collecting tank or dedicated collecting device according to relevant provisions for sanitation and epidemic prevention of flag and/or port authorities.

(7) The wastewater collection pipes in isolation zone is to be so designed and installed as to prevent the backflow of water, gas or odor.

(8) The vent pipes of wastewater collection pipes in isolation zone are to be led to an open zone with good ventilation, and not close to personnel activity location, otherwise means of isolation are to be provided.

Section 4 REQUIREMENTS FOR LEVEL 3 EPIDEMIC PREVENTION AND CONTROL

3.4.1 General requirements

3.4.1.1 Compartments onboard the ship are to be divided as Category I, Category II and Category III living zone and isolation room according to the arrangement of compartments and the needs for response to an epidemic event. The functions of living zone and isolation room are as follows:

(1) Category I living zone is only used for the accommodation and activities of healthy people.

(2) Category II living zone may be used for the accommodation and activities of close contacts with confirmed cases.

(3) Category III living zone may be for the accommodation and activities of confirmed cases when it is not feasible to accommodate all confirmed cases or suspected cases by isolation rooms.

(4) Isolation zone is used to accommodate confirmed cases or suspected cases during the epidemic event.

3.4.1.2 Physical isolation between living zones of different categories or isolation zone is to be provided by means of deck, door or bulkhead extending from deck to deck.

3.4.1.3 Suitable public space is to be selected as an interim buffer zone for re-accommodation of persons with different health condition. Concurrent disinfection, terminal disinfection and effective isolation of persons with different health condition are to be carried out timely during the re-accommodation of persons.

3.4.1.4 Epidemic Prevention and Control Management Manual is to include the arrangement and means complying with the requirements of this Section.

3.4.2 Arrangement of isolation zone

3.4.2.1 Isolation zone is to be located in a relatively independent area onboard the ship where independent entrance is available.

3.4.2.2 The isolation zone is divided into clean zone and contaminated zone. Potential contaminated zone is to be provided as a buffer zone between these two zones. Functions of each zone and requirements are as follows:

(1) clean zone: entrance and exit (or passageway) for medical workers (or necessary crew) are provided at one end of isolation zone; locker room, toilet, shower, clean warehouse may be provided; lounge, watch room may be provided and if possible, room for expert group consultation and monitoring and observation room may also be provided.

(2) potential contaminated zone:

① Office for medical care staff, treatment preparation room and warehouse may be provided in this zone and corridor for medical care staffs and place for wearing and taking off protective equipment are within this zone.

② Wearing and taking off of the protective equipment is to be separated if possible. Two adjacent rooms along the same corridor may be selected and, the room close to the clean zone is used for wearing the protective equipment and that close to the contaminated zone is used for taking off the protective equipment. Or, two separate passageways may be provided to totally separate the wearing and taking off of the protective equipment, if not possible, the wearing and taking off may be conducted in the same zone where wearing is close to the clean zone and taking off is close to the contaminated zone. Attention is to be paid that wearing and taking off are not conducted simultaneously. Dressing mirrors are to be provided in both wearing and taking off zones.

(3) Contaminated zone:

① Wards may be provided in contaminated zone.

② Telephone or alarm device is to be provided.

③ Toilet is to be provided in contaminated zone.

3.4.3 Garbage management and wastewater treatment in isolation zone

3.4.3.1 Garbage in isolation zone is to be treated as medical waste, which is to be collected with washable airtight vessel or dedicated compartment.

3.4.3.2 Hazard-free treatment is to be carried out before the garbage in isolation zone is sent to the dedicated compartment onboard the ship or transferred to the shore, e.g. sealing the package with double packing and/or surface disinfection etc.

3.4.3.3 If independent dedicated compartment is provided in the isolation zone to collect garbage, the compartment is to be moderately airtight and the negative pressure ventilation is to be used and regular disinfection is required.

3.4.3.4 Waste water (including sewage and grey water) in isolation zone is to be treated with dedicated piping and collecting tank according to relevant provisions for sanitation and epidemic prevention of flag and/or port authorities.

3.4.3.5 The wastewater collection pipes in isolation zone are to be so designed and installed as to prevent the backflow of water, gas or smell.

3.4.3.6 The vent pipes of wastewater collection pipes in isolation zone are to be led to an open area with good ventilation, and not close to personnel activity location, otherwise means of isolation are to be provided.

3.4.4 Provision of compartments in living zone

3.4.4.1 Category II living zone is at least to accommodate 15% of the personnel on board. Cabins in Category II living zone are to be used as single rooms insofar as practicable. Means of protection are to be provided for people in Category II living zone to ensure that they are separated from each other.

3.4.4.2 Category III living zone is at least to accommodate 5% of the personnel on board. Cabins in Category III living zone are to be used as single rooms insofar as practicable. Except for concentrated family accommodation, the room may accommodate 2 persons at most.

3.4.4.3 Independent toilet is to be provided in Category II and III living zone.

3.4.4.4 Telephone or alarm device is to be provided in Category II and III living zone for residents to timely inform the crew when they feel sick.

3.4.4.5 Disembarkation accesses are to be provided for living zones of different categories if possible.

3.4.4.6 Clean zone and potential contaminated zone are to be provided in category II and III living zones by referring to relevant requirements for the isolation zone, which are used as buffer of access to such zones from zones with low risk level.

3.4.5 Garbage management and wastewater treatment in living zone

3.4.5.1 Garbage in Category II and Category III living zones is to be treated as medical waste, which is to be collected with washable airtight vessel or dedicated compartment.

3.4.5.2 Hazard-free treatment is to be carried out before the garbage in Category II and Category III living zones is sent to the dedicated compartment onboard the ship or transferred to the shore, e.g. sealing the package with double packing and/or surface disinfection etc.

3.4.5.3 If independent dedicated compartment is provided in Category II and Category III living zones to collect garbage, the compartment is to be moderately airtight and the negative pressure ventilation is to be used and regular disinfection is required.

3.4.5.4 Waste water in Category II and Category III living zones is to be treated with infectious virus killing measures on board according to relevant provisions for sanitation and epidemic prevention of flag and/or port authorities.

3.4.5.5 The wastewater collection pipes in living zones of different sanitary protection level are to be independent with each other before disinfection is carried out.

3.4.5.6 The wastewater collection pipes in Category II and Category III living zones are to be so designed and installed as to prevent the backflow of water, gas or odor.

3.4.5.7 The vent pipes of wastewater collection pipes in Category II and Category III living zones are to be led to an open area with good ventilation, and not close to personnel activity location, otherwise means of isolation are to be provided.

CHAPTER 4 AIR CONDITIONING/VENTILATION AND AIR FILTRATION SYSTEM

Section 1 GENERAL PROVISIONS

4.1.1 General requirements

4.1.1.1 In order to reduce the risk of communicable disease spreading through air conditioning/ventilation system, effective measures are to be taken to reduce the pathogen content in indoor air. Appropriate air conditioning/ventilation methods or suitable air conditioning/ventilation system and/or suitable air filtration system may be provided in compartments and zones of different functions onboard the ship.

4.1.2 Definitions

4.1.2.1 High-medium efficiency air filter refers to the filter with the counting efficiency equal to or higher than 70% but lower than 95% with regard to particulate of 0.5μm or above in diameter which is inspected according to the provisions of GB/T 14295, or the filter which complies with equivalent international standards.

4.1.2.2 Sub-high efficiency air filter refers to the filter with the counting efficiency equal to or higher than 95% but lower than 99.9% with regard to particulate of 0.5μm or above in diameter which is inspected according to the provisions of GB/T 14295, or the filter which complies with equivalent international standards.

4.1.2.3 High efficiency air filter refers to the filter used for air filtration and tested with the sodium flame method specified in GB/T 6165, with the filtration efficiency not lower than 99.9%, or the filter complying with the equivalent international standards.

4.1.2.4 Super-high efficiency air filter refers to the filter used for air filtration and tested with the counting method specified in GB/T 6165, with the filtration efficiency not lower than 99.999%, or the filter complying with equivalent international standards.

Section 2 REQUIREMENTS FOR LEVEL 1 EPIDEMIC PREVENTION AND CONTROL

4.2.1 General requirements

4.2.1.1 In case of occurrence of an epidemic event likely to spread through air and aerosol, the air conditioning/ventilation arrangement or means are to be available in the isolation room so as to effectively avoid the epidemic transmission in the living zone.

4.2.1.2 Epidemic Prevention and Control Management Manual is to include the arrangement and means complying with 4.2.1.1 above.

Section 3 REQUIREMENTS FOR LEVEL 2 EPIDEMIC PREVENTION AND CONTROL

4.3.1 General requirements

4.3.1.1 Program for use of air conditioning/ventilation system under different epidemic events is to be included in the Epidemic Prevention and Control Management Manual so as to avoid the spread of pathogen through air conditioning/ventilation system insofar as practicable.

4.3.1.2 In case of occurrence of an epidemic event likely to spread through air and aerosol, the air conditioning system is at least to meet the requirements of 4.3.3 if it has to be used.

4.3.1.3 The exhaust outlet of isolation zone/room is to be located far away from all air inlets and personnel activity location insofar as practicable. Normally the straight-line distance is at least to be greater than 12 m and at least 2 m above all inlets and personnel activity location.

4.3.2 Mechanical ventilation system

4.3.2.1 Independent ventilation systems are to be provided in Category I living zone and isolation zone/room respectively.

4.3.2.2 Ventilation ducts of isolation zone/room are not allowed to pass through other spaces outside the zone.

(1) The air pressure is to be reduced in sequence of Category I living zone and isolation zone/room.

(2) Ventilation arrangements or means in the isolation zone are to be such as to effectively prevent communicable disease pathogen spreading through air and aerosol from diffusing from the contaminated zone to the clean zone through the semi-contaminated zone.

(3) The exhaust fan of isolation zone/room is to be fitted at the end of exhaust duct and the exhaust outlet of the exhaust system is not to be close to personnel activity zone. The exhaust gas is preferably to be discharged to the air at higher altitude and the outlet of exhaust system, sewage vent pipe and air supply inlet are not to be fitted on the same side and a safety distance is to be kept. The straight-line distance to the personnel activity zone and air inlet is at least to be greater than 12 m and at least 2 m above air inlet and personnel activity zone.

(4) The outlet of exhaust duct in isolation zone/room is to be far away from the air inlets, windows and doors in Category I living zone insofar as practicable. Normally the straight-line distance is to be greater than 12 m and to be at least 2 m above inlets, windows and doors. The outlet of exhaust duct is to be led directly to the outside of the ship and a check valve is to be fitted.

4.3.3 Air conditioning system

4.3.3.1 The air conditioning systems in living zone and isolation zone/room are to be independent with each other.

4.3.3.2 Ducts in isolation zone/room are not to pass through other spaces in the zone.

4.3.3.3 In case of occurrence of an epidemic event likely to spread through air and aerosol, the air conditioning/ventilation arrangement or means are to be available in the isolation zone/room so as to effectively avoid the epidemic transmission in the living zone. If an isolation zone is provided, the air flow is to be maintained in a fixed direction, namely from low risk zone towards the high risk zone. Zones with the risk level ranging from high to low are isolation zone and Category I living zone. Zones within the isolation zone with the risk level ranging from high to low are contaminated zone, semi- contaminated zone and clean zone.

4.3.3.4 The air conditioning system and piping are to be so designed to achieve independent air return in each room of the zone or, air filter of high-medium efficiency and above may be provided at the air supply outlet and air return inlet of the air conditioning system.

Section 4 REQUIREMENTS FOR LEVEL 3 EPIDEMIC PREVENTION AND CONTROL

4.4.1 General requirements

4.4.1.1 In addition to requirements for level 2 epidemic prevention and control specified in Section 3, level 3 epidemic prevention and control are to comply with the requirements of this Section.

4.4.2 Mechanical ventilation system

4.4.2.1 The air pressure is to be reduced in sequence of Category I living zone, Category II living zone, Category III living zone/isolation zone.

4.4.2.2 Ventilation arrangements or means in the isolation zone are to be such as to effectively prevent communicable disease pathogen spreading through air and aerosol from diffusing from the contaminated zone to the clean zone through the semi-contaminated zone.

4.4.2.3 Independent ventilation systems are to be provided in Category II living zone and Category III living zone respectively.

4.4.2.4 The outlet of exhaust duct in Category II living zone is to be far away from the air inlets, windows and doors in Category I living zone insofar as practicable. Normally the straight-line distance is to be greater than 12 m and to be at least 2 m above inlets, windows and doors. The outlet of exhaust duct is to be led directly to the outside of the ship and a check valve is to be fitted.

4.4.2.5 The exhaust fan of Category III living zone is to be fitted at the end of exhaust duct and the exhaust outlet of the exhaust system is not to be close to personnel activity zone. The exhaust gas is preferably to be discharged to the air at higher altitude and the outlet of exhaust system, sewage vent pipe and air supply inlet are not to be fitted on the same side and a safety distance is to be kept. The straight-line distance to the personnel activity zone and air inlet is at least to be greater than 12 m and at least 2 m above air inlet and personnel activity zone.

4.4.2.6 The outlet of exhaust duct in Category III living zone/isolation zone is to be far away from the air inlets, windows and doors in Category I living zone and Category II living zone insofar as practicable. Normally the straight-line distance is to be greater than 12 m and to be at least 2 m above inlets, windows and doors. The outlet of exhaust duct is to be led directly to the outside of the ship and a check valve is to be fitted.

4.4.3 Air conditioning system

4.4.3.1 Independent air conditioning systems are to be provided in Category II living zone and Category III living zone respectively.

4.4.3.2 In case of occurrence of an epidemic event likely to spread through air and aerosol, the air flow is to be maintained in a fixed direction, namely from low risk zone towards the high risk zone. Zones with the risk level ranging from high to low are isolation zone /Category III living zone, Category II living zone and Category I living zone. Zones within the isolation zone with the risk level ranging from high to low are contaminated zone, semi- contaminated zone and clean zone.

4.4.3.3 The air conditioning system and piping are to be so designed to achieve independent air return in each room of the zone or, air filter of high-medium efficiency and above may be provided at the air supply outlet and air return inlet of the air conditioning system.

Section 5 REQUIREMENTS FOR SANITARY VENTILATION SYSTEM

4.5.1 General requirements

4.5.1.1 Class notation SVS may be assigned upon application if the requirements of this Section are met, provided that requirements for level 1 epidemic prevention and control are met.

4.5.1.2 In case of occurrence of an epidemic event likely to spread through air and aerosol, the relative air pressure difference among Category I living zone, Category II living zone and Category III living zone/isolation zone/isolation room is not to be less than 5Pa. Zones with the air pressure ranging from low to high are isolation zone/Category III living zone, Category II living zone and Category I living zone.

4.5.2 Air conditioning system

4.5.2.1 The air conditioning system and piping in Category I living zone, Category II living zone and Category III living zone are to be so designed to achieve independent air return in each room of the zone.

4.5.2.2 Requirements for provision of air filters for air supply outlet and air return inlet of air conditioning systems in zones with different risk levels are shown in Table 4.5.2.

Requirements for Provision of Air Filters for Each Zone Table 4.5.2

Level of different zones	Air filter
Category I living zone	Sub-high efficiency, high-efficiency or super-high efficiency
Category II living zone	High-efficiency or super-high efficiency
Isolation zone/isolation room and Category III living zone	High-efficiency or super-high efficiency

CHAPTER 5 NEGATIVE PRESSURE ISOLATION ROOM

Section 1 GENERAL PROVISIONS

5.1.1 General requirements

5.1.1.1 Class notation NPR may be assigned upon application if the requirements of this Chapter are met, provided that requirements for level 3 epidemic prevention and control are met.

5.1.2 Plans and documents

5.1.2.1 The following plans and documents are to be submitted for approval:

(1) Arrangement plan of negative pressure isolation zone and negative pressure isolation room;

(2) Arrangement plan of ventilation system in negative pressure isolation zone, which is to indicate:
① vent position;
② pressure difference and air flow direction;
③ micro differential pressure gauge position;
④ air conditioning filter arrangement and grade.

Section 2 ARRANGEMENT REQUIREMENTS

5.2.1 Arrangement of negative pressure isolation room

5.2.1.1 The arrangement of negative pressure isolation room is to comply with the following requirements:

(1) The negative pressure isolation room is to be fitted in the isolation zone, preferably at one end and one side of the superstructure.

(2) The zone where the negative pressure isolation room is located (including the corridor and spaces adjacent to the room) is to be designated as the contaminated zone. The zone adjacent to the contaminated zone is to be designated as the potential contaminated zone. A sanitary buffer room is to be provided for the connection between the contaminated zone and the potential contaminated zone and between the potential contaminated zone and the clean zone, and the sanitary buffer room is not to be less than 3 m^2.

(3) The negative pressure isolation room may be fitted with inside (front) corridor or inside (front), outside (back) corridor. The corridor with height difference is to be connected with barrier-free ramps and anti-skid measures are to be taken.

(4) The negative pressure isolation room is to be fitted with a transfer window on the wall of the inside (front) corridor separated from it.

(5) The air shower is not to be fitted on the access and the air curtain is not to be fitted in the doorway of the isolation zone.

(6) The ordinary side-hung door or upper hung sliding door can be used between the negative pressure isolation room and the sanitary buffer room. The side-hung door is to be used preferably between the sanitary buffer room and the corridor. The doors are not to be wooden.

(7) The door leading to the outside is to open outwards, with obvious marks, emergency opening devices and safety escape marks. Other doors are to open to the higher pressure side.

5.2.2 Arrangement of compartments

5.2.2.1 The net height of the negative pressure isolation room is not to be lower than 2.8 m.

5.2.2.2 Each negative pressure isolation room is to accommodate no more than 3 people and is to be set as a single room insofar as practicable.

5.2.2.3 The area of the single negative pressure isolation room is not to be less than 11 m^2. The area of multi-person room is not to be less than 9 m^2 per person, and the bed spacing is not to be less than 1.1 m.

5.2.2.4 The negative pressure isolation room is to be provided with a telephone or alarm device for the patient to alert the doctor or person on watch when the patient feels unwell.

5.2.2.5 The negative pressure isolation zone is to be fitted with a duty room. After the negative pressure isolation room is put into operation, the door of the sanitary buffer room connecting the negative pressure isolation zone, the potential contaminated zone and the clean zone is to be provided with obvious marks indicating the connection zone. The doors are to be provided with open and closed status indicators. The duty room is to be provided with means of indicating whether doors of the sanitary buffer room are open or closed, giving audible and visual alarm when the door is open.

Section 3 VENTILATION REQUIREMENTS

5.3.1 General requirements

5.3.1.1 The isolation zone provided with negative pressure isolation rooms is to be provided with independent full fresh air direct current air conditioning system.

5.3.1.2 The distance between the outlet of the exhaust pipe in the negative pressure isolation zone and the air inlet, window and door of the spaces in category I and II living zones is to be as far away as possible. The outlet of the exhaust pipe is to lead directly outboard and a non-return valve is to be fitted.

5.3.2 Relative pressure difference

5.3.2.1 Relative pressure difference requirements for air in negative pressure isolation zone:

(1) The relative air pressure difference between the inside corridor in the contaminated zone and the connected sanitary buffer room, and that between the sanitary buffer room and the connected potentially contaminated zone is not to be less than 5 Pa. Zones with the air pressure ranging from low to high are the corridor in the contaminated zone, the sanitary buffer room and the potential contaminated zone.

(2) The sanitary buffer room between the potential contaminated zone and the clean zone is to maintain positive pressure for both zones. The relative positive pressure difference for the potential contaminated zone is not to be less than 15 Pa, and that for the clean zone is not to be less than 10 Pa.

(3) In the contaminated zone, the relative air pressure difference between adjacent connected rooms is not to be less than 5 Pa. Zones with the air pressure ranging from low to high are bathroom, negative pressure isolation room and inside corridor (or other purpose room in this zone).

(4) In the negative pressure isolation zone, the air pressure difference between the contaminated zone and the potential contaminated zone, and that between the potential contaminated zone and the clean zone is to be automatically monitored on the air conditioning system. An alarm is to be given automatically once the negative pressure fails and the duty room in the isolation zone is to be fitted with audible and visual alarm.

(5) In adjacent locations where pressure difference is required, a micro differential pressure gauge is to be fitted at the visual height of the connecting door.

5.3.3 Air flow control

5.3.3.1 Air flow control requirements for negative pressure isolation rooms

(1) The supply upwards and return downwards side air distribution is to be used in the negative pressure isolation room. The general direction of air flow is consistent with the direction of particle sedimentation. The air flow in the negative pressure room and its zone is to be directional and is to flow from the clean zone to the contaminated zone.

(2) The negative pressure isolation room is to be provided with the main air supply outlet and the secondary air supply outlet. The main air supply outlet is to be located in the ceiling of the conventional station for medical staff beside the hospital bed, not more than 0.5 m away from the head of the bed and not less than 0.9 m in length. The secondary air supply outlet is located in the ceiling at the end of the bed, not more than 0.3 m away from the end of the bed and not less than 0.9 m in length.

(3) The area ratio of main and secondary air supply outlets is 2:1 ~ 3:1. The outlet wind speed is not to be lower than 0.13 m/s.

(4) The double louver is to be used at the air supply outlet.

(5) The single vertical louver is to be used at the return air inlet (exhaust outlet) and to be located at the lower side of the head of the bed opposite to the air supply outlet. The upper edge of the inlet surface is to be not higher than 0.6 m from the ground and the lower edge is to be higher than 0.1 m from the ground. The wind speed of the return air inlet (exhaust outlet) is not to be more than 1.5 m/s.

(6) After the negative pressure isolation zone is put into operation, full fresh air supply is to be used with the fresh air volume per capita not less than 40 m^3/h. The number of air exchanges in negative pressure isolation room is not to be less than 8 times per hour, which may be not greater than 12 times per hour. The number of air exchanges in the auxiliary room in the negative pressure isolation zone is not to be less than 6 times per hour, which may be not greater than 10 times per hour.

(7) The number of air changes in the sanitary buffer room is not to be less than 60 times per hour.

5.3.4 Air filtration

5.3.4.1 The ventilation system air supply outlets and return air inlets (exhaust outlets) of the negative pressure isolation room and its toilet, and of the auxiliary room of the negative pressure isolation zone are to be provided with air filters of high efficiency and above.

5.3.4.2 The ventilation system air supply outlets and return air inlets (exhaust outlets) of the sanitary buffer room between the negative pressure isolation room and the potential contaminated zone, and of the sanitary buffer room between the potential contaminated zone and the clean zone are to be provided with air filters of high efficiency and above.

5.3.4.3 A zero-leakage exhaust device that can be safely disassembled is to be provided for exhaust air of the negative pressure isolation room and its toilet. The air filter is to be subject to an on-site scanning for leakage detection to confirm that there is no leakage before being fitted in the zero-leakage device.

5.3.4.4 The air vent pipe of the drain pipe in the negative pressure isolation zone is to be filtered by air filter of high efficiency and above and discharged far away from the air inlet.

CHAPTER 6 OTHER HEALTH ASSISTANT SYSTEMS

Section 1 GENERAL PROVISIONS

6.1.1 General requirements

6.1.1.1 This Chapter specifies the provisions of health investigation and thermometry system and telemedicine assistant system on board ships.

6.1.1.2 The health investigation and thermometry system includes a health investigation system that tracks and investigates the movement routes of persons on board and a human thermometry system that detects the body temperature of persons on board by means of electrical/electronic equipment. The two can be separate systems or an integrated system.

6.1.1.3 Class notation HIT may be assigned upon application if the requirements of Section 2 of this Chapter are met, provided that requirements for level 1 epidemic prevention and control are met.

6.1.1.4 Class notation TAS may be assigned upon application if the requirements of Section 3 of this Chapter are met, provided that requirements for level 1 epidemic prevention and control are met.

6.1.2 Plans and documents

6.1.2.1 For ships applying for the class notation HIT, the following plans and documents are to be submitted for approval:

(1) System diagram of health investigation system;

(2) Arrangement plan of health investigation system;

(3) System diagram of human thermometry system;

(4) Arrangement plan of human thermometry system.

6.1.2.2 For ships applying for the class notation TAS, the following plans and documents are to be submitted for approval:

(1) System diagram of telemedicine assistant system;

(2) Arrangement plan of telemedicine assistant system.

Section 2 HEALTH INVESTIGATION AND THERMOMETRY SYSTEM

6.2.1 Goal

6.2.1.1 The goal is to track and investigate the movement routes of all persons on board in the public area outside living accommodations and identify confirmed cases or suspected cases and close contacts with confirmed cases or suspected cases. At the same time, the body temperature of the person on board is to be detected and the alarm is to be given in case of abnormal body temperature.

6.2.2 Functional requirements

6.2.2.1 In order to achieve the goal given in 6.2.1, the following functional requirements are to be met:

(1) The health investigation system is to be able to clearly identify the person's main physical characteristics.

(2) The health investigation system is to be able to completely investigate the movement track of the person in public areas other than living accommodations.

(3) The human thermometry system is to be able to remotely detect the body temperature of the person on board.

(4) The human thermometry system is to be able to give an alarm for the abnormal body temperature that exceeds the temperature of the healthy body.

6.2.3 Health investigation system

6.2.3.1 The ship is to be provided with a health investigation system for video monitoring of the movements of all persons on board in the public areas outside living accommodations.

6.2.3.2 The health investigation system is to be able to clearly identify the person's intrinsic physical characteristics such as human face at a distance of up to 10 meters from the person.

6.2.3.3 Surveillance cameras of the health investigation system are to fully cover embarkation, public spaces and access, stairways, entrances, exits, and elevators to these public spaces, but no surveillance cameras are to be provided in the bathrooms, bathhouses and isolation rooms (if any). At the same time, surveillance cameras are also to cover areas frequently entered by the crew.

6.2.3.4 The health investigation system is to be powered by two independent power sources to ensure that the failure of one power source does not affect the normal power supply of the other.

6.2.3.5 The health investigation system is to be able to store surveillance records for last three months.

6.2.3.6 The surveillance camera of the health investigation system is to comply with the prevention level of the space where it is installed.

6.2.3.7 Means are to be provided to prevent passengers from accidentally entering spaces where screens of surveillance of the health investigation system are installed.

6.2.4 Human thermometry system

6.2.4.1 The ship is to be provided with a system to detect the body temperature of the person on board with the measurement accuracy of at least ±0.2℃.

6.2.4.2 The human thermometry system is to detect the human body temperature at a distance of not exceeding 3 m from the person.

6.2.4.3 The human thermometry system is to be permanently installed at least at the embarkation entrance and at appropriate entrances of public spaces.

6.2.4.4 The human thermometry system is to be able to detect the human body temperature in not more than 10 s.

6.2.4.5 The human thermometry detection system is to be powered by the ship main power source.

6.2.4.6 For the detection of body temperature over 37.3℃, the human thermometry system is to give an alarm in the manned space or doctor's duty place (if any).

6.2.4.7 The human thermometry system is to comply with the prevention level of the space where it is installed.

Section 3 TELEMEDICINE ASSISTANT SYSTEM

6.3.1 Goal

6.3.1.1 The goal is to provide telemedicine exchange, diagnosis and treatment assistance.

6.3.2 Functional requirements

6.3.2.1 In order to achieve the goal given in 6.3.1, the following functional requirements are to be met: the ship is to be able to seek shore-based medical assistance through the telemedicine assistant system, including medical exchange, diagnosis and treatment options, etc.

6.3.3 Telemedicine assistant system

6.3.3.1 The ship is to be provided with a telemedicine assistant system which is to be able to establish stable communication with shore-based medical facilities at any time.

6.3.3.2 The telemedicine assistant system is to provide a stable and clear voice and a stable and clear video picture of appropriate size during communication with shore-based medical facilities.

6.3.3.3 The communication network delay of the telemedicine assistant system is not to affect the normal communication between the ship and shore-based medical facilities.

6.3.3.4 The telemedicine assistant system is to be powered by the ship main power source and emergency power source.

6.3.3.5 The telemedicine assistant system is to be adapted to the marine environment of the installation space.