

## SAFETY AND QUALITY MANAGEMENT SYSTEM

Title: <b>Instructions on naked fire operation</b>	Authorization: <p style="text-align: center;"><b>Xie Ningjia</b></p>	Serial No. <b>I-ED002</b>	Issued Date: <b>Feb 28, 2016</b>
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**1.0 Purpose**

To exterminate any potential fire and secure maintenance work for the safety operations of ships.

**2.0 Scope**

This instruction is applicable to the ships managed by the company.

**3.0 Responsibility**

Shipmasters approve the <Permit to work> and <Permit to work for naked fire operations> after verification.

Chief officers or chief engineers designate and supervise the responsible persons on the scene to implement such an instruction.

**4.0 Instruction**

- 4.1 <Permit to work> and <Permit to work for naked fire operations> shall be approved and obtained before commencement of naked fire operations.
- 4.2 Operators shall be responsible for the safety of using welding equipment and storage thereof.
- 4.3 Workshops shall be free from combustible or toxic gases, and with density of oxygen up to 21%.
- 4.4 All combustibles, liquids and gases shall be removed from workshops and other compartments adjacent thereto. The density of hydrocarbon in compartments on and under decks shall be lower than 2% after cleaning-up and gas-freeing operations. Those compartments shall be filled up with inert gas or ballast water.
- 4.5 Workshops shall be kept tidy and free of grease or other materials so as to avoid the production of combustible or toxic gases when being heated.
- 4.6 Those open areas next to the workshops where sparks may reach shall be covered; workshops shall be protected to isolate sparks and to insulate the radiation of heat.
- 4.7 All pipelines for combustible media shall be separated. Those contacting with each other shall be flushed, discharged, ventilated, and filled up with inert gas or water if necessary. During operations, adequate ventilation and regular tests shall be provided.
- 4.8 Welding equipment shall be well protected; leakage at the connection of acetylene welding shall be checked; Hoses shall be kept in good condition, free of any leakage and damage, and stored distinctively according to their colors; the insulation of power cables must be secured and the connection of power cables shall be installed properly.
- 4.9 Before welding, preparations shall be made such as checking various places and positions, standing by proper fire-fighting appliances, cleaning up all areas involved, removing combustibles or gases in vicinity particularly for those on the reserve side of the objects to be welded, and providing ventilation if necessary. No welding can be allowed for containers with pressure inside, oil tanks or pipes not cleaned up and ventilated.
- 4.10 At least 2 crewmembers shall be present when welding, one for operation and the other for keeping safety. The operators shall wear long sleeve shirt, gloves, glasses and protective mask. Monitoring shall be provided if necessary on the reverse side of the objects being welded. Particular attention shall be paid to the naked fire operations in restricted compartments, cabinets or other spaces where adequate ventilation are not provided. Welding operation shall not be lasted for long time. Operators shall not leave the objects being welded before they get cooled and shall take measures to avoid to be scalded if necessary.

- 4.11 When the ship lies alongside or is in waters regulated by the port authority, welding operations can only be undertaken with the approval of the port authority or in compliance with local regulations.
  - 4.12 If welding operations are undertaken by shipyard workers, approval shall be obtained from responsible authority, and fire-fighting apparatus and fire watch shall be placed. The operations shall be terminated upon finding it unsafe to carry out such operations. After welding operations, operators shall double check the work having been done and the surroundings, including possible dangers on the reverse side of the objects being welded, and shall not leave the objects before they get cooled.
  - 4.13 Electrical welding power cables shall not pass through above the equipment in operation, cargo sling wire ropes or acetylene bottles, oxygen bottles. The cable or hoses shall be kept in a proper length. Those power cables or hoses passing through corridors shall be protected by covers. Welding clamps or welding rods shall not be earthed. Power supply of the equipment shall be cut off after welding or when being laid up for long time.
  - 4.14 Before ignition, operators shall blow and clean up the path of valves before connection, inspect and make sure no leakage in all valves, no twisting on the hoses, tightly secured hoses, and no iron wire used for securing the connections of hoses to avoid piercing or damaging. During welding, hoses shall not sustain excessive strains and shall be away from flames and objects to be welded. Low volts lighting shall be used and the cable shall be away from the welding position.
  - 4.15 High pressure bottles shall be secured by wedges and lines when using them, and shall be place on their end at proper position. No reversion is allowed. The distance between bottles shall exceed 30 meters, and the distance between bottles and the welding workshop shall exceed 5 meters. The bottles shall be positioned in sheltered placed instead of electric welding machine room and other places exposed to sunlight, close to boilers or other heat resources.
  - 4.16 Once the hot work completed, the persons conducted the work shall be responsible for cleaning the place where the work was done so as to ensure that fire occurrence is eliminated.
- 5.0 Records**
- I-VD014-F001 Permit to work
  - I-VD014-F002 Permit to work for naked fire operations