



TECHNICAL CIRCULAR No. 453 of 07th December 2017

To: All Surveyors/Auditors

Applicable to flag: All Flags

General Cargo Ship Inspection 3

Reference: Surveyor's equipment and tools

Surveyor's equipment and tools

4 Equipment and tools

4.1 Personal protective equipment

The following protective clothing and equipment to be worn as applicable during the surveys:

- (a) **Working clothes:** Working clothes should be of a low flammability type and be easily visible.
- (b) **Head protection:** Hard hat (metal hats are not allowed) shall always be worn outside office building/unit accommodations.
- (c) **Hand and arm protection:** Various types of gloves are available for use, and these should be used during all types of surveys. Rubber/plastic gloves may be necessary when working in cargo holds.
- (d) **Foot protection:** Safety shoes or boots with steel toe caps and non slip soles shall always be worn outside office buildings/unit accommodations.
Special footwear may be necessary on slippery surfaces or in areas with chemical residues.
- (e) **Ear protection:** Ear muffs or ear plugs are available and should be used when working in noisy areas. As a general rule, you need ear protection if you have to shout to make yourself understood by someone standing close to you.
- (f) **Eye protection:** Goggles should always be used when there is danger of solid particles or dust getting into the eyes. Protection against welding arc flashes and ultraviolet light should also be considered.
- (g) **Breathing protection:** Dust masks shall be used for protection against the inhalation of harmful dusts, paint spraying and sand blasting. Gas masks and filters should be used by personnel working for short periods in an atmosphere polluted by gases or vapour.
(Self-contained breathing apparatus: Surveyors shall not enter spaces where such equipment is necessary due to unsafe atmosphere. Only those who are specially trained and familiar with such equipment should use it and only in case of emergency).
- (h) **Lifejacket:** Recommended to be used when embarking/disembarking ships offshore, from/to

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pilot boat.

4.2 Personnel survey equipment

The following survey equipment is to be used as applicable during the surveys:

(a) **Torches:** Torches (Flashlights) approved by a competent authority for use in a flammable atmosphere shall be used in gas dangerous areas. A high intensity beam type is recommended for in-tank inspections. Torches are recommended to be fitted with suitable straps so that both hands may be free.

(b) **Hammer:** In addition to its normal purposes the hammer is recommended for use during surveys inside units, tanks etc. as it may be most useful for the purpose of giving distress signal in case of emergency.

(c) **Oxygen analyser/Multigas detector:** For verification of acceptable atmosphere prior to tank entry, pocket size instruments which give an audible alarm when unacceptable limits are reached are recommended. Such equipment shall have been approved by national authorities.

(d) **Safety belts and lines:** Safety belts and lines should be worn where high risk of falling down from more than 3 meters is present.

(e) **Radiation meter:** For the purpose of detection of ionizing radiation (X or gamma rays) caused by radiographic examination, a radiation meter of the type which gives an audible alarm upon detection of radiation is recommended.

4.3 Thickness measurement and fracture detection

(a) Thickness measurement is to comply with the requirements of the Classification Society concerned. Thickness measurement should be carried out at points that adequately represent the nature and extent of any corrosion or wastage of the respective structure (plate, web, etc.).

(b) Thickness measurement is normally carried out by means of ultrasonic test equipment. The accuracy of the equipment is to be proven as required.

(c) The thickness measurement is to be carried out by a qualified company certified by the relevant Classification Society.

(d) One or more of the following fracture detection procedures may be required if deemed necessary and should be operated by experienced qualified technicians:

- radiographic equipment
- ultrasonic equipment
- magnetic particle equipment
- dye penetrant

REFERENCES:

- **CONARINA class**

ATTACHMENTS: No.

Kindest Regards,
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