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Circular

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To relevant departments of CCS Headquarters, CCS surveyors, plan approval centers, shipowners, ship management companies, shipyards, marine product manufacturers, design units

Notice on Revision of Rules for Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, 2009 and Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, 2006

The present revision of CCS Rules for Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, 2009 (hereinafter referred to as Chemical Rules) and Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, 2006 (hereinafter referred to as Liquefied Gas Rules) including its 2008 Amendments are made for the purpose of implementation of relevant requirements of IACS UR Z1 Rev.4 /IACS UR Z16 Rev.3_Corr.1 and IACS Rec.114. Contents of the present revision will be incorporated into the next edition of Chemical Rules and Liquefied Gas Rules.

The present revision mainly contains the following:

adjusting survey items covered in annual and intermediate surveys for Chemical Rules;

adjusting survey items covered in special surveys for Liquefied Gas Rules;

adding the design, installation and inspection requirements for emergency shut down (ESD) valves into the Liquefied Gas Rules;

adding the arrangement and inspection requirements for cargo sampling connections into the Liquefied Gas Rules.

This Circular will enter into force from 1 July 2011.

Revision of Chemical Rules (see Annex 1) will be implemented from 1 January 2012.

As to the revision of Liquefied Gas Rules (see Annex 2), the requirements for cargo sampling connection arrangements (CCS 9.1.2a - CCS 9.1.2c) and the requirements for ESD valves (CCS 5.6.4a- CCS 5.6.4b) apply to liquefied gas carriers constructed on and after 1 January 2012. For any existing gas carriers , if an ESD valve will be replaced after 1 January 2012, the aforementioned requirements for ESD valves are to be complied with. The remaining revision contents in Annex 2 to this circular will apply to all liquefied gas carriers from the date of entry into force of this Circular.

CCS survey units and plan approval centers are required to organize relevant personnel to study this Circular upon receipt of it and implement it in plan approval and surveys.

Annex 1: Revision of Rules for Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, 2009

Annex 2: Revision of Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, 2006

Annex 3: UR Z1 (Rev.4) Annual and intermediate classification survey coverage of IMO Resolution A.997(25) as amended by IMO Resolution A.1020(26)

Annex 4: UR Z1 (Corr.1) Annual and intermediate classification survey coverage of IMO Resolution A.997(25) as amended by IMO Resolution A.1020(26)

Annex 5: UR Z16 (Corr.1, Rev.3) Periodical surveys of cargo installations on ships carrying liquefied gases in bulk

Annex 6: RecNo.114 (New) Recommendation for the design, construction, operation and survey of emergency shut down valves and safe cargo sampling connections on liquefied gas carriers

Please feel free to contact Technical Management Department of CCS for any inquiry. E-mail: rt@ccs.org.cn

This Circular is available on www.ccs.org.cn and forwarded by each branch to relevant shipowners, ship management companies, shipyards, marine product manufacturers and designer units within its business area.

Annex 1

Revision of Rules for Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, 2009

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Chapter A2 CLASSIFICATION AND SURVEYS

Section 3 SURVEYS

In the existing paragraph A2.3.2.2 (1):

1. A new sub-item “c” is added in ⑦ as follows:

“c. confirming that the system for continuous monitoring of the concentration of flammable vapours is satisfactory.”

2. A new item ⑩ is added as follows:

“to examine the equipment for personnel protection, including:

a. the protective clothing for crew engaged in loading and discharging operations and its stowage is in a satisfactory condition;

b. the required safety equipment and associated breathing apparatus and associated air supplies and, when appropriate, emergency-escape respiratory and eye protection, are in a satisfactory condition and are properly stowed. ”

3. A new item ⑪ is added as follows:

“to confirm that sampling points or detector heads are located in suitable positions in order that potentially dangerous leakages are readily detected.”

In the existing paragraph A 2.3.2.3 (1), the words “In addition to the requirements of 5.4.3, 5.8.3, 5.9.3 and 5.10.3 of Chapter 5 of PART ONE of CCS Rules for Classification of Sea-Going Steel Ships, and the requirements of A2.3.2.2(1)① to ⑨ and (2) of the Rules, the following survey items are to be covered:” are replaced by “In addition to the requirements of 5.4.3, 5.8.3, 5.9.3 and 5.10.3 of Chapter 5 of PART ONE of CCS Rules for Classification of Sea-Going Steel Ships, and the requirements of A2.3.2.2(1)① to and (2) of the Rules, the following survey items are to be covered:”.

Annex 2

Revision of Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, 2006

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CHAPTER A2 CLASSIFICATION AND SURVEYS

A2.3.2.4 Special surveys

The following sentence is added after the first sentence in A2.3.2.4(4)①:

"However, for type C tanks, this does not mean that non-destructive testing can be dispensed with totally."

CHAPTER 5 PROCESS PRESSURE VESSELS AND LIQUID, VAPOUR, AND PRESSURE PIPING SYSTEMS

5.6 Cargo system valving requirements

The following paragraphs are added after 5.6.4:

"CCS 5.6.4a In addition to operating the emergency shut down (ESD) valve from a remote position, it is also to be possible to operate the valve manually locally. It is required that manual operation is not the removal of the valve opening power but a physical mechanical over-ride forcing the valve onto its seat.

CCS 5.6.4b A clear indication of the valve position is to be provided; the use of the valve handle position may not provide a robust indication of the actual valve position."

CHAPTER 9 ENVIRONMENTAL CONTROL

9.1 Environmental control within cargo tanks and cargo piping systems

The following paragraphs are added after 9.1.2:

"CCS 9.1.2a At least two valves are to be used to isolate the gas sampling point.

CCS 9.1.2b Whilst it is permissible to use threaded connections for the sampling coupling for pipes with a diameter of 25 mm or less, the use of threaded connections for the sampling coupling is to be avoided. If a threaded coupling is used, a positive means to prevent the coupling from rotating is to be provided and regular inspections of the tightness of the connection are to be performed and recorded.

CCS 9.1.2c Open loop sampling connections are only to be used when only minor releases of gas/liquid residuals to the atmosphere are possible. In all other cases arrangements are to be provided to allow the unused sample to be returned to the cargo tank in a safe manner."

CHAPTER 18 OPERATING REQUIREMENTS

18.7 Systems and controls

The following paragraphs are added after 18.7:

"CCS 18.7a It is to be periodically verified that the ESD valves onboard function correctly. The test results are to be recorded. Also, as part of the check on the integrity of the cargo containment system,

the ESD valves are to be pressure tested and internally inspected. Pressure testing at the same pressure as working pressure is required to be conducted every 5 years.

CCS 18.7b The instruction manual produced by the ESD valve manufacturer providing information on installing, servicing and reassembly of the valves is to be retained on board the ship.”

Z1 Annual and intermediate classification survey coverage of IMO Resolution ~~A.948(23)~~ A.997(25) as amended by IMO Resolution A.1020(26)

(1982) (Rev. 1 1994) (Rev. 2 June 1999) (Rev.3 Sept 2005) (Rev.4 May 2010)

1 Preamble

The following text identifies the Annual and Intermediate Survey requirements of IMO Res. ~~A.948(23)~~ A.997(25) "~~Revised~~ Survey Guidelines Under the Harmonized System of Survey and Certification, 2007", as amended by IMO Res. A.1020(26), which are, as a minimum, to be covered by classification surveys (the paragraph numbers referred to are those of Res. ~~A.948(23)~~ A.997(25) as amended by Res. A.1020(26)). In cases where the Administration has delegated authority for the Society to act on its behalf, the remainder of ~~A.948(23)~~ A.997(25) as amended by A.1020(26) is carried out as a statutory requirement by the Society on behalf of the Administration.

2 Annual Survey

2.1 Loadline items - Annex 2 Paragraph 1.2.2.1 through 1.2.2.1~~3~~5.

2.2 Hull items - Annex 1 Paragraphs 2.2.2.1 through 2.2.2.6 and 2.2.2.28 through 2.2.2.35.

2.3 Machinery and electrical items - Annex 1 Paragraphs 2.2.2.7 through 2.2.2.27 except for 2.2.2.17 and 2.2.2.26.

2.4 Firefighting equipment - Annex 1 Paragraph 1.2.2.1 through 1.2.2.13 (where requirements pertaining to firefighting equipment are included in the Society's Rules).

2.5 Oil tanker additional items (Deck foam and inert gas systems; steering gear; hull, machinery and equipment) - Annex 1 Paragraph 1.2.3.1 through 1.2.3.6 except for 1.2.3.5 and Annex 1 Paragraphs 2.2.3.1 through 2.2.3.16.

2.6 Chemical tanker additional items (Steering gear, structure, equipment, fittings, arrangements, and materials) - Annex 1 Paragraph 2.2.4.1 and Annex 4 Paragraphs 1.2.2.1 through 1.2.2.1~~8~~9 and 1.2.2.21.

Note:

1. UR Z1 Rev.2, May 1999 is a complete rewrite of the former versions of this UR, i.e. UR Z1(1992) and its revision in 1994 owing to IMO Assembly Resolution A.746(18) superseding A.413(XI). Consequently the title of UR Z1 in its original version reading as "Annual Survey of all cargo vessels and intermediate survey of tankers covering class matters in IMCO Resolution A.413(XI)" has also been reworded.

2. UR Z1(Rev 3, Sept.2005) is revised owing to IMO Assembly Resolution A.948(23) superseding A.746(18).

3. UR Z1(Rev.4, May 2010) is revised owing to IMO Assembly Resolution A.997(25) superseding A.948(23) and subsequently IMO Assembly Resolution A.1020(26) amending A.997(25).

Z1 (cont)

2.7 Gas carrier additional items (Steering gear, structure, equipment, fittings, arrangements, and materials) - Annex 1 Paragraph 2.2.4.1 and Annex 4 Paragraphs 2.2.2.1 through 2.2.2.~~29~~30, except for 2.2.2.2~~5~~6 (fireman's outfit).

3 Intermediate Survey - The Intermediate Survey is to consist of the Annual Survey items specified above plus the following items.

3.1 Ballast tanks and cargo spaces - Annex 1 Paragraph 2.3.2.~~1~~2 through 2.3.2.4.

3.2 Oil tanker additional items (Piping systems and cargo tanks and electrical circuits in dangerous zones) - Annex 1 Paragraph 2.3.3.~~1~~2 through 2.3.3.4.

3.3 Chemical tanker additional items (Steering gear, structure, equipment, fittings, arrangements, and materials) - ~~Annex 1 Paragraphs 2.3.4 and~~ Annex 4 Paragraphs 1.3.2.~~1~~2 through 1.3.2.5.

3.4 Gas carrier additional items (Steering gear, structure, equipment, fittings, arrangements, and materials) - ~~Annex 1 Paragraph 2.3.4 and~~ Annex 4 Paragraphs 2.3.2.~~1~~2 through 2.3.2.5.

End of Document

Z1 Annual and intermediate classification survey coverage of IMO Resolution A.997(25) as amended by IMO Resolution A.1020(26)

(1982) (Rev. 1 1994) (Rev. 2 June 1999) (Rev.3 Sept 2005) (Rev.4 May 2010) (Corr.1 Jan 2011)

1 Preamble

The following text identifies the Annual and Intermediate Survey requirements of IMO Res. A.997(25) "Survey Guidelines Under the Harmonized System of Survey and Certification, 2007", as amended by IMO Res. A.1020(26), which are, as a minimum, to be covered by classification surveys (the paragraph numbers referred to are those of Res. A.997(25) as amended by Res. A.1020(26)). In cases where the Administration has delegated authority for the Society to act on its behalf, the remainder of A.997(25) as amended by A.1020(26) is carried out as a statutory requirement by the Society on behalf of the Administration.

2 Annual Survey

2.1 Loadline items - Annex 2 Paragraph 1.2.2.1 through 1.2.2.15.

2.2 Hull items - Annex 1 Paragraphs 2.2.2.1 through 2.2.2.6 and 2.2.2.28 through ~~2.2.2.35~~ 2.2.2.34 except for 2.2.2.29 and 2.2.2.33.

2.3 Machinery and electrical items - Annex 1 Paragraphs 2.2.2.7 through 2.2.2.27 except for 2.2.2.17 and 2.2.2.26.

2.4 Firefighting equipment - Annex 1 Paragraph 1.2.2.1 through 1.2.2.13 (where requirements pertaining to firefighting equipment are included in the Society's Rules).

2.5 Oil tanker additional items (Deck foam and inert gas systems; steering gear; hull, machinery and equipment) - Annex 1 Paragraph 1.2.3.1 through 1.2.3.6 except for 1.2.3.5 and Annex 1 Paragraphs 2.2.3.1 through 2.2.3.16.

2.6 Chemical tanker additional items (Steering gear, structure, equipment, fittings, arrangements, and materials) - Annex 1 Paragraph 2.2.4.1 and Annex 4 Paragraphs 1.2.2.1 through 1.2.2.19 and 1.2.2.21.

Note:

1. UR Z1 Rev.2, May 1999 is a complete rewrite of the former versions of this UR, i.e. UR Z1(1992) and its revision in 1994 owing to IMO Assembly Resolution A.746(18) superseding A.413(XI). Consequently the title of UR Z1 in its original version reading as "Annual Survey of all cargo vessels and intermediate survey of tankers covering class matters in IMCO Resolution A.413(XI)" has also been reworded.

2. UR Z1(Rev 3, Sept.2005) is revised owing to IMO Assembly Resolution A.948(23) superseding A.746(18).

3. UR Z1(Rev.4, May 2010) is revised owing to IMO Assembly Resolution A.997(25) superseding A.948(23) and subsequently IMO Assembly Resolution A.1020(26) amending A.997(25).

Z1 (cont)

2.7 Gas carrier additional items (Steering gear, structure, equipment, fittings, arrangements, and materials) - Annex 1 Paragraph 2.2.4.1 and Annex 4 Paragraphs 2.2.2.1 through 2.2.2.30, except for 2.2.2.26 (fireman's outfit).

3 Intermediate Survey - The Intermediate Survey is to consist of the Annual Survey items specified above plus the following items.

3.1 Ballast tanks and cargo spaces - Annex 1 Paragraph 2.3.2.2 through 2.3.2.4.

3.2 Oil tanker additional items (Piping systems and cargo tanks and electrical circuits in dangerous zones) - Annex 1 Paragraph 2.3.3.2 through 2.3.3.4.

3.3 Chemical tanker additional items (Steering gear, structure, equipment, fittings, arrangements, and materials) - Annex 4 Paragraphs 1.3.2.2 through 1.3.2.5.

3.4 Gas carrier additional items (Steering gear, structure, equipment, fittings, arrangements, and materials) - Annex 4 Paragraphs 2.3.2.2 through 2.3.2.5.

End of Document

Z16 Periodical surveys of cargo installations on ships carrying liquefied gases in bulk

(June 1999) (Rev.1 Mar 2006) (Rev.2 May 2007) (Rev.3 Mar 2010) (Corr.1 Feb 2011)

1 General

1.1 Scope

The Surveys required herein are relevant to ships designed for the carriage of liquefied gases in bulk. These requirements are related to cargo installations and are additional to those already specified in Z1 and Z7.

1.2 Extent and methods

1.2.1 The surveys are intended to include all installations and equipment related to the carriage and handling of liquefied gases. These survey requirements do not cover fire protection, fire fighting installation, portable equipment, and personnel protection equipment.

1.2.2 The annual survey is preferably to be carried out during a loading or discharging operation. Access for cargo tanks or inerted hold spaces, necessitating gas-freeing/aerating will normally not be necessary unless required by the Rules of the individual Society.

1.2.3 The intermediate survey required in Section Z16.4, intends to supplement the annual survey by testing cargo handling installations with related automatic control, alarm and safety systems for correct functioning. The intermediate survey is preferably to be carried out with the ship in a gas-free condition. The extent of the testing required for the intermediate survey will normally be such that the survey cannot be carried out during a loading or discharging operation.

1.3 Survey intervals

Survey intervals are to be in accordance with UR Z1 and Z7.

Note:

1. Changes introduced in Rev.3 (and its Corr.1) are to be uniformly applied by IACS Societies for surveys commenced on or after 1 July 2011.

Z16 (cont)

2 Special Survey

2.1 General

The requirements of Section Z16.4 apply with the following additions.

2.2 Cargo containment survey

2.2.1 All cargo tanks are to be examined internally.

2.2.2 Special attention is to be given to the cargo tank and insulation in way of chocks, supports and keys. Removal of insulation may be required in order to verify the condition of the tank or the insulation itself if found necessary by the Surveyor.

Where the arrangement is such that the insulation cannot be examined, the surrounding structures of wing tanks, double bottom tanks and cofferdams are to be examined for cold spots when the cargo tanks are in the cold condition unless voyage records together with the instrumentation give sufficient evidence of the integrity of the insulation system.

2.2.3 Non-destructive testing:

2.2.3.1 Non-destructive testing is to supplement cargo tank inspection with special attention to be given to the integrity of the main structural members, tank shell and highly stressed parts, including welded connections as deemed necessary by the surveyor. However, for type C tanks, this does not mean that non-destructive testing can be dispensed with totally. The following items are, inter alia, considered as highly stressed parts:

- cargo tanks supports and anti-rolling/anti-pitching devices,
- web frames or stiffening rings,
- swash bulkhead boundaries,
- dome and stump connections to tank shell,
- foundations for pumps, towers, ladders, etc.,
- pipe connections.

2.2.3.2 For independent tanks type B, the extent of non-destructive testing shall be as given in a programme specially prepared for the cargo tank design.

2.2.4 The tightness of all cargo tanks is to be verified by an appropriate procedure. Provided that the effectiveness of the ship's gas detection equipment has been confirmed, it will be acceptable to utilize this equipment for the tightness test of independent tanks below deck.

2.2.5 Where findings of Z16.2.2.1 to Z16.2.2.4 or an examination of the voyage records raises doubts as to the structural integrity of a cargo tank, a hydraulic or hydro-pneumatic test is to be carried out. For integral tanks and for independent tanks type A and B, the test pressure is to be in accordance with IACS UR G1.10.5 or G1.10.7 as appropriate. For independent tanks type C, the test pressure is not to be less than 1.25 times the MARVS.

2.2.6 At every other special survey (i.e., 2^{nd}, 4^{th}, 6^{th}, etc.), all independent cargo tanks type C are to be either:

2.2.6.1 Hydraulically or hydro-pneumatically tested to 1.25 times MARVS, followed by non-destructive testing in accordance with Z16.2.2.3.1, or

Z16 (cont)

2.2.6.2 Subjected to a thorough, planned non-destructive testing. This testing is to be carried out in accordance with a programme specially prepared for the tank design. If a special programme does not exist, the following applies:

– cargo tank supports and anti-rolling/anti-pitching devices,
– stiffening rings,
– Y-connections between tank shell and a longitudinal bulkhead of bilobe tanks,
– swash bulkhead boundaries,
– dome and sump connections to the tank shell,
– foundations for pumps, towers, ladders etc.,
– pipe connections.

At least 10% of the length of the welded connections in each of the above mentioned areas is to be tested. This testing is to be carried out internally and externally as applicable.

Insulation is to be removed as necessary for the required non-destructive testing.
(The individual Societies may choose to include any one or both of the above listed two alternatives in their Rules.)

2.2.7 As far as practicable all hold spaces and hull insulation (if provided), secondary barriers and tank supporting structures are to be visually examined. The secondary barrier of all tanks is to be checked for their effectiveness by means of a pressure/vacuum test, a visual examination or another acceptable method.

2.2.8

1) For membrane and semi-membrane tanks systems, inspection and testing are to be carried out in accordance with programmes specially prepared in accordance with an approved method for the actual tank system.

2) For membrane containment systems a tightness test of the secondary barrier shall be carried out in accordance with the system designers' procedures as approved by the classification society.

3) For membrane containment systems with glued secondary barriers the values obtained shall be compared with previous results or results obtained at newbuilding stage. If significant differences are observed for each tank or between tanks, the Surveyor is to require an evaluation and additional testing as necessary.

2.2.9 The pressure/vacuum relief valves, rupture disc and other pressure relief devices for interbarrier spaces and hold spaces are to be opened, examined, tested and readjusted as necessary, depending on their design.

2.2.10 The pressure relief valves for the cargo tanks are to be opened for examination, adjusted, function tested, and sealed. If the cargo tanks are equipped with relief valves with non-metallic membranes in the main or pilot valves, such non-metallic membranes are to be replaced. Where a proper record of continuous overhaul and retesting of individually identifiable relief valves is maintained, consideration will be given to acceptance on the basis of opening, internal examination, and testing of a representative sampling of valves, including each size and type of liquefied gas or vapor relief valve in use, provided there is logbook evidence that the remaining valves have been overhauled and tested since crediting of the previous Special Survey.

Z16 (cont)

2.3 Piping systems

2.3.1 The cargo, liquid nitrogen and process piping systems, including valves, actuators, compensators, etc. are to be opened for examination as deemed necessary. Insulation is to be removed as deemed necessary to ascertain the condition of the pipes. If the visual examination raises doubt as to the integrity of the pipelines, a pressure test at 1.25 times the MARVS for the pipeline is to be carried out. After re-assembly the complete piping systems are to be tested for leaks.

2.3.2 The pressure relief valves are to be function-tested. A random selection of valves is to be opened for examination and adjusted.

2.4 Components

Cargo pumps, compressors, process pressure vessels, liquid nitrogen tanks, heat exchangers and other components, including prime movers, used in connection with cargo handling and methane boil-off burning are to be examined as required in the Rules of each individual Society for periodical survey of machinery.

2.5 Miscellaneous

2.5.1 Systems for removal of water or cargo from interbarrier spaces and holds are to be examined and tested as deemed necessary.

2.5.2 All gas-tight bulkheads are to be inspected. The effectiveness of gas-tight shaft sealing is to be verified.

2.5.3 The following equipment is to be examined: hoses and spool pieces used for segregation of piping systems for cargo, inert gas and bilging.

2.5.4 It is to be verified that all cargo piping systems are electrically bonded to the hull.

Z16 (cont)

3. Annual Survey

3.1 General

3.1.1 The log books are to be examined with regard to correct functioning of the cargo containment and cargo handling systems. The hours per day of the reliquefaction plants or the boil-off rate is to be considered.

3.1.2 All accessible gas-tight bulkhead penetrations including gas-tight shaft sealings are to be visually examined.

3.1.3 The means for accomplishing gas tightness of the wheelhouse doors and windows is to be examined. All windows and sidescuttles within the area required to be of the fixed type (non-opening) are to be examined for gas tightness. The closing devices for all air intakes and openings into accommodation spaces, service spaces, machinery spaces, control stations and approved openings in superstructures and deckhouses facing the cargo area or bow and stern loading/unloading arrangements, are to be examined.

3.2 Cargo handling systems

The cargo handling piping and machinery, e.g. cargo and process piping, cargo heat exchangers, vapourizers, pumps, compressors and cargo hoses are in general to be visually examined, as far as possible, during operation.

3.3 Cargo containment venting systems

Venting systems, including protection screens if provided, for the cargo tanks, interbarrrier spaces and hold spaces are to be visually examined externally. It is to be verified that the cargo tank relief valves are sealed and that the certificate for the relief valves opening/closing pressures is onboard.

3.4 Instrumentation and safety systems

3.4.1 The instrumentation of the cargo installations with regard to pressure, temperature and liquid level is to be verified in good working order by one or more of the following methods:

- Visual external examination;
- Comparing of read outs from different indicators;
- Consideration of read outs with regard to the actual cargo and/or actual conditions;
- Examination of maintenance records with reference to cargo plant instrumentation maintenance manual;
- Verification of calibration status of the measuring instruments.

3.4.2 The logbooks are to be examined for confirmation that the emergency shutdown system has been tested.

3.5 Environmental control for cargo containment systems

1) Inert gas/dry air installations including the means for prevention of backflow of cargo vapour to gas-safe spaces are to be verified as being in satisfactory operating condition.

2) For membrane containment systems normal operation of the nitrogen control system for insulation and interbarrier spaces shall be confirmed to the Surveyor by the Master.

Z16 (cont)

3.6 Miscellaneous

3.6.1 It is to be verified that all accessible cargo piping systems are electrically bonded to the hull.

3.6.2 Arrangements for burning methane boil-off are to be visually examined as far as practicable. The instrumentation and safety systems are to be verified as being in good working order in accordance with Z16.3.4.1.

3.6.3 The relevant instruction and information material such as cargo handling plans, filling limit information, cooling down procedures, etc. are to be verified as being onboard.

3.6.4 Mechanical ventilation fans in gas dangerous spaces and zones are to be visually examined.

Z16 (cont)

4. Intermediate survey

4.1 General

The requirements of Section Z16.3 apply with the following additions:

4.2 Instrumentation and safety systems

4.2.1 The instrumentation of the cargo installation with regard to pressure, temperature and liquid level is to be visually examined and to be tested by changing the pressure, temperature and level as applicable and comparing with test instruments. Simulated testing may be accepted for sensors which are not accessible or for sensors located within cargo tanks or inerted hold spaces. The testing is to include testing of alarm and safety functions.

4.2.2 The piping of the gas detection system is to be visually inspected for corrosion and damage as far as practicable. The integrity of the suction lines between suction points and analyzing units is to be verified as far as possible. Gas Detectors are to be calibrated or verified with sample gases.

4.2.3 The emergency shutdown system is to be tested, without flow in the pipe lines, to verify that the system will cause the cargo pumps and compressors to stop.

4.3 Electrical equipment

Electrical equipment in gas-dangerous spaces and zones is to be examined as far as practicable with particular respect to the following:

– Protective earthing (Spot check).
– Integrity of enclosures.
– Damage of outer sheath of cables.
– Function testing of pressurized equipment and of associated alarms.
– Testing of systems for de-energizing non-certified safe electrical equipment located in spaces protected by air-locks, such as electrical motor-rooms, cargo control rooms, etc.
– Testing of insulation resistance of circuits. Such measurements are only to be made when the ship is in a gas-free or inerted condition. Where proper records of testing are maintained consideration may be given to accepting recent readings by the ship's crew.

Note: See also IACS Rec. No.35 - Inspection and maintenance of electrical equipment installed in hazardous areas.

4.4 Miscellaneous

The instrumentation and safety systems for burning cargo as fuel are to be examined in accordance with the requirements of Z16.4.2.1.

End of Document

No. 114 (June 2010) Recommendation for the design, construction, operation and survey of emergency shut down valves and safe cargo sampling connections on liquefied gas carriers

Reference is made to IGC Code Reg. 5.6, 9.1 and 18.7

1. Scope

This document is to provide guidelines on the design, construction, operation, survey and testing of emergency shut down valves (ESD) and for the provision of safe cargo sampling arrangements for Liquefied Gas Carriers.

2. Emergency Shut Down Valves

The IGC Code Regulation 5.6, Cargo system valving arrangements, specifies the requirements for emergency shutdown valves. In addition, the following recommendations are made:

2.1 Control of ESD valves

In addition to operating the ESD valve from a remote position, it must also be possible to operate the valve manually locally. It is recommended that manual operation is not the removal of the valve opening power but a physical mechanical over-ride forcing the valve onto its seat.

2.2 Indication of Position

A clear indication of the valve position should be provided; the use of the valve handle position may not provide a robust indication of the actual valve position.

2.3 Testing and Inspection

The IGC Code Reg 18.7 states:

"Cargo emergency shutdown and alarm systems involved in cargo transfer should be tested and checked before cargo handling operations begin. Essential cargo handling controls should also be tested and checked prior to transfer operations."

Ship operators should periodically verify that the ESD valves onboard their vessels function correctly. The test results should be recorded.

Also, as part of the check on the integrity of the cargo containment system, the ESD valves should be pressure tested and internally inspected. Pressure testing at the same pressure as working pressure is recommended to be conducted every 5 years.

2.4 Documentation

The instruction manual produced by the ESD valve manufacturer providing information on installing, servicing and reassembly of the valves should be retained on board the ship.

No. 114 (cont)

Safe Cargo Sampling Connections

3. Basic Requirements

IGC Code Reg 9.1 states:

"9.1.2. A sufficient number of gas sampling points should be provided for each cargo tank in order to adequately monitor the progress of purging and gas-freeing. Gas sampling connections should be valved and capped above the main deck."

In addition, the following recommendations are made:

3.1 Valve isolation

At least two valves should be used to isolate the gas sampling point.

3.2 Sampling coupling connection

Whilst it is permissible to use threaded connections for the sampling coupling for pipes with a diameter of 25mm or less, the use of threaded connections for the sampling coupling should be avoided. If a threaded coupling is used, a positive means to prevent the coupling from rotating should be provided and regular inspections of the tightness of the connection should be performed and recorded.

3.3 Configuration

Open loop sampling connections should only be used when only minor releases of gas/liquid residuals to the atmosphere are possible. In all other cases arrangements should be provided to allow the unused sample to be returned to the cargo tank in a safe manner.

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