ClassNK

SURVEY PROGRAMME for Bulk Carriers (including Ore Carriers)

Basic Information and Particulars

Ship's Name	:	
IMO Number	:	
Flag State	:	
Port of Registry	:	
Gross Tonnage	:	
Deadweight (metric tonnes)	:	
Length between perpendiculars (m)	:	
Shipbuilder	:	
Hull Number	:	
Recognized Organization (RO)	:	Nippon Kaiji Kyokai
RO Ship Identity (Class Number)	:	
Date of delivery of the ship	:	
Owner	:	
Thickness Measurement Firm	:	

Even if the Special Survey / Intermediate Survey is divided to commencement and completion, all survey items are to be listed in the program.

Prepared by the owner in co-operation with the Classification Society.

Survey programme is to be verified by NK survey office prior to commencing Special Survey / Intermediate Survey.

Date:

( )
(Name and signature of authorized owner's representative)

Date:

( )
Nippon Kaiji Kyokai
Office

1 Preamble

1.1 Scope

1.1.1 The present Survey Programme covers the minimum extent of overall surveys, close-up surveys, thickness measurements and pressure testing within the cargo length area, cargo holds, ballast tanks, including fore and aft peak tanks, required by the NK Rules.

1.1.2 The arrangements and safety aspects of the survey shall be acceptable to the attending surveyor(s).

1.2 Documentation

All documents used in the development of the survey programme shall be available onboard during the survey.

2 Arrangement of Cargo holds, tanks and spaces

This section of the survey programme shall provide information (either in the form of plans or text) on the arrangement of cargo holds, tanks and spaces that fall within the scope of the survey.

Hold & Tank Arrangement*/Hold & Tank List*, which is attached to next page is to be referred.

(*: Delete as appropriate)

3 List of cargo holds, tanks and spaces with information on their use, extent of coatings and corrosion protection system

This section of the survey programme shall indicate any changes relating to (and shall update) the information on the use of the cargo holds and ballast tanks of the ship, the extent of coatings and the corrosion prevention system provided in the Survey Planning Questionnaire.

☐ Nil

☐ Changes as follows:

Spaces	Fr. No	Corrosion Protection (1)	Coating Extent (2)	Coating Condition (3)

1) HC=hard coating; SC=soft coating; A=anodes; SH=semi-hard coating; NP=no protection

2) U=upper part; M=middle part; L=lower part; C=complete

3) G=good; F=fair; P=poor, RC=recoated (during the last 3 years)

4 Conditions for survey

This section of the survey programme shall provide information on the conditions for survey, e.g. information regarding cargo hold and tank cleaning, gas freeing, ventilation, lighting, etc.

4.1 The owner shall provide the necessary facilities for a safe execution of the survey.

4.2 In order to enable the attending surveyors to carry out the survey, provisions for proper and safe access shall be agreed between the owner and NK.

4.3 In cases where the provisions of safety and required access are judged by the attending surveyors not to be adequate, the survey of the spaces involved shall not proceed.

4.4 Cargo holds, tanks and spaces are to be safe for access. Cargo holds, tanks and spaces shall be gas free and properly ventilated. Prior to entering a tank, void or enclosed space, it shall be verified that the atmosphere in that space is free from hazardous gas and contains sufficient oxygen.

4.5 Cargo holds, tanks and spaces shall be sufficiently clean and free from water, scale, dirt, oil residues, sediments etc., to reveal corrosion, deformation, fractures, damages or other structural deterioration as well as the condition of the coating. In particular this applies to areas which are subject to thickness measurement.

4.6 Sufficient illumination shall be provided to reveal significant corrosion, deformation, fractures, damages or other structural deterioration as well as the condition of the coating.

4.7 The attending surveyor(s) shall always be accompanied by at least one responsible person assigned by the Company experienced in tank and enclosed spaces inspection. In addition a backup team of at least two experienced persons shall be stationed at the hatch opening of the tank or space that is being surveyed. The back-up team shall continuously observe the work in the tank or space and shall keep lifesaving and evacuation equipment ready for use.

4.8 Where Soft Coatings have been applied, safe access shall be provided for the surveyor to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures, which may include spot removal of the coating. When safe access cannot be provided, the soft coating shall be removed.

4.9 A communication system is to be arranged between the survey party in the tank or space being examined, the responsible officer on deck and, as the case may be, the navigation bridge. The communication arrangements are to be maintained throughout the survey. This system shall also include the personnel in charge of ballast pump handling if boats or rafts are used.

4.10 Survey at sea or at anchorage may be accepted provided the surveyor is given the necessary assistance from the personnel on board.

Complete cargo/ballast discharge to be confirmed by : _____

O_2 content measurement and gas detection to be confirmed by : _____

Cleanliness in cargo holds/ballast tanks to be confirmed by : _____

5 Provisions and method of access to structures

This section of the survey programme shall indicate any changes relating to (and shall update) the information on the provisions and methods of access to structures provided in the Survey Planning Questionnaire.

☐ Nil
☐ Changes as follows:

Hold/Tank No.	Structure	Permanent staging	Temporary staging	Rafts	Portable Ladders	Direct access	Cherry picker	Other means* (Please specify)
F.P.	Fore Peak	☐	☐	☐	☐	☐	☐	
A.P.	Aft Peak	☐	☐	☐	☐	☐	☐	
Cargo Holds	Hatch side coamings	☐	☐	☐	☐	☐	☐	
	Topside sloping plate	☐	☐	☐	☐	☐	☐	
	Upper stool plating	☐	☐	☐	☐	☐	☐	
	Cross deck	☐	☐	☐	☐	☐	☐	
	Side shell, frames & brackets (Single Hull)	☐	☐	☐	☐	☐	☐	
	Double side tank plating (Double Hull)	☐	☐	☐	☐	☐	☐	
	Transverse bulkhead	☐	☐	☐	☐	☐	☐	
	Hopper tank platting	☐	☐	☐	☐	☐	☐	
	Lower stool plating	☐	☐	☐	☐	☐	☐	
	Tank top	☐	☐	☐	☐	☐	☐	
Topside Tanks	Underdeck structure	☐	☐	☐	☐	☐	☐	
	Side shell & structure	☐	☐	☐	☐	☐	☐	
	Sloping plate & structure	☐	☐	☐	☐	☐	☐	
	Webs & bulkheads	☐	☐	☐	☐	☐	☐	
Hopper Tanks	Hopper sloping plate & structure	☐	☐	☐	☐	☐	☐	
	Side shell & structure	☐	☐	☐	☐	☐	☐	
	Bottom structure	☐	☐	☐	☐	☐	☐	
	Webs & bulkheads	☐	☐	☐	☐	☐	☐	
	Double bottom structure	☐	☐	☐	☐	☐	☐	
	Upper stool internal structure	☐	☐	☐	☐	☐	☐	
	Lower stool internal structure	☐	☐	☐	☐	☐	☐	
Double Side Tanks (Double Hull)	Side shell & structure	☐	☐	☐	☐	☐	☐	
	Inner skin & structure	☐	☐	☐	☐	☐	☐	
	Webs & bulkheads	☐	☐	☐	☐	☐	☐	
Wing Tanks (Ore Carriers)	Underdeck & structure	☐	☐	☐	☐	☐	☐	
	Side shell & structure	☐	☐	☐	☐	☐	☐	
	Side shell vertical web & structure	☐	☐	☐	☐	☐	☐	
	Longitudinal bulkhead & structure	☐	☐	☐	☐	☐	☐	
	Longitudinal bulkhead web & structure	☐	☐	☐	☐	☐	☐	
	Bottom plating & structure	☐	☐	☐	☐	☐	☐	
	Cross ties/stringers	☐	☐	☐	☐	☐	☐	

* In case where remote inspection technics (rope access, drone, etc.) are applied, it is required to inform NK in advance.

5.1 For overall survey, means shall be provided to enable the surveyor to examine the structure in a safe and practical way.

5.2 For close-up surveys, one or more of the following means for access, acceptable to the surveyor, shall be provided:

(1) For close-up surveys of the hull structure, other than cargo hold shell frames:
- (a) Permanent staging and passages through structures
- (b) Temporary staging and passages through structures
- (c) Hydraulic arm vehicles such as conventional cherry pickers, lifts and movable platforms
- (d) Boats or rafts for ballast tanks and cargo tanks
  Boats or rafts may be applied to void spaces and other similar spaces provided the structural capacity of the space is sufficient to withstand static loads at all levels of water.
- (e) Portable ladders
- (f) Other equivalent means

(2) For close-up surveys of the cargo hold shell frames of bulk carriers less than 100,000DWT:
- (a) Permanent staging and passages through structures
- (b) Temporary staging and passages through structures
- (c) Portable ladder restricted to not more than 5m in length may be accepted for surveys of lower section of a shell frame including bracket
- (d) Hydraulic arm vehicles such as conventional cherry pickers, lifts and movable platforms
- (e) Boats or rafts provided the structural capacity of the hold (used for ballast) is sufficient to withstand static loads at all levels of water
- (f) Other equivalent means

(3) For close-up surveys of the cargo hold shell frames of bulk carriers of 100,000DWT or more:

(a) For Intermediate Surveys (ships under 10 years of age) and Special survey No.1:
- i) Permanent staging and passages through structures
- ii) Temporary staging and passages through structures
- iii) Hydraulic arm vehicles such as conventional cherry pickers, lifts and movable platforms
- iv) Boats or rafts provided the structural capacity of the hold (used for ballast) is sufficient to withstand static loads at all levels of water
- v) Other equivalent means

Notwithstanding the above, the use of a portable ladder fitted with a mechanical device to secure the upper end of the ladder is acceptable for the close-up survey of side frames at Annual surveys. However, it is not acceptable for the close-up survey of suspect area identified at the previous survey or the ongoing survey.

(b) For Subsequent Intermediate Surveys (ships not less than 10 years of age) and Special surveys:
- i) Permanent staging and passages through structures
- ii) Temporary staging and passages through structures
- iii) Hydraulic arm vehicles such as conventional cherry pickers for surveys of lower and middle part of side frames(However, the use of hydraulic arm vehicles or aerial lifts may be accepted by the attending surveyor for the close-up surveys of the upper parts of side shell frames or other structures in all cases where the maximum working height is not more than 17m.)
- iv) Lifts and movable platforms
- v) Boats or rafts provided the structural capacity of the hold (used for ballast) is sufficient to withstand static loads at all levels of water
- vi) Other equivalent means

5.3 Surveys of tanks by means of boats or rafts may only be undertaken with the agreement of the surveyor, who shall take into account the safety arrangements provided, including weather forecasting and ship response in reasonable sea conditions.

5.4 When rafts or boats will be used for close-up survey conditions to keep safety and effectiveness shall comply with the equivalent criteria for the cases on tankers.

6 List of equipment for survey

This section of the survey programme shall identify and list the equipment that will be made available for carrying out the survey and the required thickness measurements.

The following safety equipment is available on board.

a) O_2 content meter / Type : _____
   Accuracy to be checked by : _____
b) Gas detector / Type : _____
   Accuracy to be checked by : _____
c) Portable Safety Light / No. : _____ sets of _____ type
d) Available breathing apparatus : _____ sets of _____ type
e) Other safety equipment, if any : _____
f) Are the other safety equipment also available at repair yard? Yes / No

7 Survey requirements

7.1 Overall survey

This section of the survey programme shall identify and list the spaces that shall undergo an overall survey for this ship in accordance with the requirements of the Rules.

See, Table B5.1 of Rules Part B (Fresh Water Tanks, Fuel Oil Tanks and Lubrication Oil Tanks are not required for Intermediate Survey)

Cargo Holds	
Ballast Tanks	
Peak Tanks	
Fresh Water Tanks	
Fuel Oil Tanks	
Lubrication Oil Tanks	
Voids/Cofferdams	
Machinery spaces and other Tanks/Spaces	

7.2 Close-up survey

This section of the survey programme shall identify and list the hull structures that shall undergo a close-up survey for this ship in accordance with the requirements of the Rules.

For single hull bulk carriers:

See, Table B5.6-1 of Rules Part B

.1 Ballast Tanks

Structural member	Tank
One T. Web	
All T. Webs	
Fwd & Aft T. BHDs	
All T. BHDs	

.2 Cargo Holds

Structural member	Hold
All shell frames	
At least 1/2 of shell frames	
At least 1/4 of shell frames	
Selected frames	
Two selected T. BHDs	
All T. BHDs	
All cross deck	
Air pipes and sounding pipes i.w.o. tank top	
All piping arrangements	
All hatch covers and hatch coamings	

For double hull bulk carriers:

See, Table B5.6-1 of Rules Part B

.1 Ballast Tanks

Structural member	Tank
One T. Web	
All T. Webs	
Fwd & aft T. BHDs	
All T. BHDs	
At least 1/4 of stiffeners on S. Shell and L. BHD	
All stiffeners on S. Shell and L. BHD	

.2 Cargo Holds

Structural member	Hold
Two selected T. BHDs	
One T. BHD	
All T. BHDs	
All cross deck	
Air pipes and sounding pipes i.w.o. tank top	
All piping arrangements	
All hatch covers and hatch coamings	

For ore carriers:

See, Table B5.6-2 of Rules Part B

.1 Ballast Tanks

Structural member	Tank
One web frame ring	
All web frame rings	
One deck transverse	
Fwd & aft T. BHDs	
Lower part of one T. BHD	
All T. BHDs	

.2 Cargo Holds

Structural member	Hold
Two selected T. BHDs	
One T. BHD	
All T. BHDs	
All cross deck	
Air pipes and sounding pipes i.w.o. tank top	
All piping arrangements	
All hatch covers and hatch coamings	

.3 Wing Void Spaces

Structural member	Space
One web frame ring	
Other web frame rings	

8 Identifications of tanks for tank testing

This section of the survey programme shall identify and list the cargo holds and tanks that shall undergo tank testing for this ship in accordance with the Rules.

See, Table B5.24 of Rules Part B (N.A. to Intermediate Survey)

Ballast Holds	
Ballast Tanks	
Fresh Water Tanks	
Fuel Oil Tanks	
Lubrication Oil Tanks	
Other Water Tanks	

9 Minimum thickness of hull structures

This section of the survey programme shall specify the minimum thickness for hull structures of this ship that are subject to the Guidelines (indicate either (a) or preferably (b), if such information is available):

(a) ☐ Determined from the attached* wastage allowance table and the original thickness according on the hull structure plans of the ship;

(b) ☐ Given in the following table(s)

*: The wastage allowance tables shall be attached to the survey programme.

See, Appendix 3.1 – The Wastage Allowance

10 Thickness measurement firm

This section of the survey programme shall identify changes, if any, relating to the information on the thickness measurement firm provided in the Survey Planning Questionnaire.

☐ Nil
☐ Changes as follows:

Name:
Address:

11 Identification of areas and sections for thickness measurements

This section of the survey programme shall identify and list the areas and sections where thickness measurements shall be taken in accordance with the Rules.

See, Table B5.15 of Rules Part B

Location	TM requirements
Suspect area	***To be described if applicable***
Structural members subject to close-up survey	☐ Structural members specified in paragraph 7.2
Transverse section within cargo length area	☐ 2 sections ☐ 3 sections
Deck plating	☐ two transverse section of deck plating, outside line of cargo hatch openings within cargo length area ☐ all strength deck where log cargoes or other cargoes that are prone to accelerate corrosion are loaded within cargo length area ☐ each deck outside line of cargo hatch openings within cargo length area ☐ all exposed main deck outside cargo length area ☐ representative exposed superstructure deck
Wind and water strakes	☐ i.w.o. the two transverse sections within cargo length area ☐ selected outside cargo length area ☐ all within cargo length area ☐ all
F.P.T. & A.P.T.	☐ internals
Bottom and side shell plate	☐ each plate within cargo length area ☐ full length of all keel plates ☐ appropriate number of plates in way of cofferdams, machinery space and aft end of tanks ☐ sea chests ☐ i.w.o. overboard discharges*
Others	

*: when deemed necessary by the Surveyor

12 Damage experience related to the ship

This section of the survey programme shall provide details of the hull damages for at least the last three years in way of the cargo holds, ballast tanks and void spaces within the cargo area, using the table provided below. These damages are subject to survey.

Hull damages sorted by location for this ship

☐ Nil
☐ See Survey Record
Record No. : _____
☐ Hull damages as follows:

Cargo Hold, Tank or space number or area	Possible cause, if known	Description of the damages	Location	Repair	Date of repair

Hull damages for sister or similar ships (if available) in the case of design related damage

☐ Nil
☐ See Survey Record
Record No. : _____
☐ Hull damages as follows:

Cargo Hold, Tank or space number or area	Possible cause, if known	Description of the damages	Location	Repair	Date of repair

13 Areas identified with substantial corrosion from previous surveys

This section of the survey programme shall identify and list the areas of substantial corrosion from previous surveys.

☐ Nil
☐ Remarks:

14 Critical structural areas and suspect areas

This section of the survey programme shall identify and list the critical structural areas and the suspect areas, when such information is available.

☐ Nil
☐ Remarks:

15 Other relevant comments and information

This section of the survey programme shall provide any other comments and information relevant to the survey.

☐ Nil
☐ Remarks:

Appendices

Appendix 1 - List of Plans

The Rules require that main structural plans of cargo holds and ballast tanks (scantling drawings), including information regarding use of high tensile steel (HTS) shall be available. This appendix of the survey programme shall identify and list the main structural plans which form part of the survey programme.

Appendix 2 - Survey Planning Questionnaire

The Survey Planning Questionnaire, which has been submitted by the owner, shall be appended to the survey programme.

Appendix 3 - Other documentation

This part of the survey programme shall identify and list any other documentation that forms part of the survey programme.

.1 **The Wastage Allowance**, as referred to Paragraph 9 “Minimum thickness of hull structures” is attached to this survey programme.

Appendix 1 - List of Plans

Main structural plans of cargo holds and ballast tanks (scantling drawings), including information regarding use of high tensile steels (HTS)

- Midship Section and Typical Trans. BHD
- Construction Profile & Decks
- Shell Expansion (Fore & Aft)
- Transverse Bulkheads
- Forward Construction
- Afterward Construction

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Appendix 2 - SURVEY PLANNING QUESTIONNAIRE

The following information will enable the owner in co-operation with ClassNK to develop a survey programme complying with the requirements of the Rules. It is essential that the owner provides, when completing the present questionnaire, up-to-date information. The present questionnaire, when completed, will provide all the information and material required by the Rules.

Particulars

Ship's Name	:
IMO Number	:
Flag State	:
Port of Registry	:
Owner	:
RO Ship Identity (Class Number)	:
Gross Tonnage	:
Deadweight (metric tonnes)	:
Date of delivery of the ship	:

Information on access provision for close-up surveys and thickness measurement

The owner shall indicate, in the table below, the means of access to the structures subject to close-up survey and thickness measurement. A close-up survey is an examination where the details of structural components are within the close visual inspection range of the attending surveyor, i.e. preferably within reach of hand. Applicable access provisions are to be ticked.

Table SPQ1

Hold/Tank No.	Structure	Permanent staging	Temporary staging	Rafts	Portable Ladders	Direct access	Cherry picker	Other means* (Please specify)
F.P.	Fore Peak	☐	☐	☐	☐	☐	☐	
A.P.	Aft Peak	☐	☐	☐	☐	☐	☐	
Cargo Holds	Hatch side coamings	☐	☐	☐	☐	☐	☐	
	Topside sloping plate	☐	☐	☐	☐	☐	☐	
	Upper stool plating	☐	☐	☐	☐	☐	☐	
	Cross deck	☐	☐	☐	☐	☐	☐	
	Side shell, frames & brackets (Single Hull)	☐	☐	☐	☐	☐	☐	
	Double side tank plating (Double Hull)	☐	☐	☐	☐	☐	☐	
	Transverse bulkhead	☐	☐	☐	☐	☐	☐	
	Hopper tank platting	☐	☐	☐	☐	☐	☐	
	Lower stool plating	☐	☐	☐	☐	☐	☐	
	Tank top	☐	☐	☐	☐	☐	☐	
Topside Tanks	Underdeck structure	☐	☐	☐	☐	☐	☐	
	Side shell & structure	☐	☐	☐	☐	☐	☐	
	Sloping plate & structure	☐	☐	☐	☐	☐	☐	
	Webs & bulkheads	☐	☐	☐	☐	☐	☐	
Hopper Tanks	Hopper sloping plate & structure	☐	☐	☐	☐	☐	☐	
	Side shell & structure	☐	☐	☐	☐	☐	☐	
	Bottom structure	☐	☐	☐	☐	☐	☐	
	Webs & bulkheads	☐	☐	☐	☐	☐	☐	
	Double bottom structure	☐	☐	☐	☐	☐	☐	
	Upper stool internal structure	☐	☐	☐	☐	☐	☐	
	Lower stool internal structure	☐	☐	☐	☐	☐	☐	
Double Side Tanks (Double Hull)	Side shell & structure	☐	☐	☐	☐	☐	☐	
	Inner skin & structure	☐	☐	☐	☐	☐	☐	
	Webs & bulkheads	☐	☐	☐	☐	☐	☐	
Wing Tanks (Ore Carriers)	Underdeck & structure	☐	☐	☐	☐	☐	☐	
	Side shell & structure	☐	☐	☐	☐	☐	☐	
	Side shell vertical web & structure	☐	☐	☐	☐	☐	☐	
	Longitudinal bulkhead & structure	☐	☐	☐	☐	☐	☐	
	Longitudinal bulkhead web & structure	☐	☐	☐	☐	☐	☐	
	Bottom plating & structure	☐	☐	☐	☐	☐	☐	
	Cross ties/stringers	☐	☐	☐	☐	☐	☐	

* In case where remote inspection technics (rope access, drone, etc.) are applied, it is required to inform NK in advance.

History of bulk cargoes of a corrosive nature (e.g. high sulphur content)
☐ Nil
☐ See Attachments
☐ Remarks:

Owner's inspections

Using a format similar to that of the table below (which is given as an example), the owner shall provide details of the results of their inspections, for the last 3 years on all cargo holds and ballast tanks and void spaces within the cargo area, including peak tanks.

Table SPQ2

Hold or Tank No.	Corrosion protection (1)	Coating extent (2)	Coating condition (3)	Structural deterioration (4)	Hold and Tank damage history (5)
Cargo holds					
Topside tanks					
Hopper tanks					
Double bottom tanks					
Upper stools					
Lower stools					
Double side tanks (Double Hull Bulk Carrier)					
Wing tanks (Ore Carriers)					
Fore peak					
Aft peak					
Miscellaneous other spaces					

Note: Indicate tanks which are used for oil/ballast

1) HC=hard coating; SC=soft coating; A=anodes; SH=semi-hard coating; NP=no protection
2) U=upper part; M=middle part; L=lower part; C=complete
3) G=good; F=fair; P=poor; RC=recoated (during the last 3 years)
4) N= no findings recorded; Y= findings recorded, description of findings is to be attached to the questionnaire
5) N=Nil; DR=damage & repair; L= Leakages; CV= Conversion (description shall be attached to this questionnaire)

Name of owner's representative:

_____

Signature: _____

Date: _____

Reports of Port State Control inspections

List the reports of Port State Control inspections containing hull structural related deficiencies and relevant information on the rectification of the deficiencies:
☐ Nil
☐ Remarks:

Safety Management System

List non-conformities related to hull maintenance, including the associated corrective actions:
☐ Nil
☐ Remarks:

Name and address of the approved thickness measurement firm:

Name:
Address:

Appendix 3.1 - The Wastage Allowance

(1) Principal structural hull members

(i) The wastage allowance (diminution limits) for plates and stiffeners are shown in the following **Table 3.1-1**.

(ii) The wastage allowance for longitudinal strength members given in the following **Table 3.1-1** are based on the condition that the diminution limit of longitudinal strength of the hull has not been reached.

(iii) The values of the wastage allowance indicate limit values in case of uniform wear of members.

(iv) Notwithstanding the following **Table 3.1-1**, the wastage allowance for local corrosion such as stress corrosion and pitting are to be decided at the discretion of the Surveyor. The standard diminution limit for local corrosion other than stress corrosion is to be taken as 40% of the original thickness.

(v) Notwithstanding the following **Table 3.1-1**, the wastage allowance for the ships subject to the retroactive requirements for existing bulk carrier is to be assessed ship by ship.

Table 3.1-1

Structural Member	Wastage Allowance
- Shell plates - Strength deck plates - Longitudinal beams (flat bar) on shear strake and strength deck - Tight bulkheads in deep tanks*1 - Inner bottom plates	20% of original thickness + 1 mm
- Floors and girders in double bottom - Primary members (web & face) - Web, face and bracket of hold frames - Watertight bulkhead plates	25% of original thickness
- Web and face of frames (excluding hold frames), longls beams, stiffeners and brackets - Effective deck plates - Hatch cover and hatch beam	30% of original thickness

***1** The deep tank is a tank used for carriage of water, oil and other liquids, forming a part of the hull in holds or tween decks.

(2) Minimum thickness for high tensile steel members

If high-tensile steel is used in bottom longitudinals of tankers with a single bottom construction, the wear and tear limit of the web is taken as 25% of the original thickness. If high-tensile steel is used in other structural members, the wear and tear limit is to be in accordance with (1) and (2) above.

(3) Measure against corrosion

When remarkable corrosion is found in the results of thickness measurement, the Surveyor shall examine the pattern and extent of the corrosion through intensive inspection or thickness measurement and take a necessary measure such as (i) & (ii) below. Where *substantial corrosion* is found, the additional thickness measurement is required. ***Substantial corrosion*** **is an extent of corrosion such that assessment of corrosion pattern indicates a wastage in excess of 75% of allowable margins, but within acceptable limits. Notwithstanding the above, for the following (a) to (c), "substantial corrosion" is an extent of corrosion such that the assessment of the corrosion pattern indicates a gauged (or measured) thickness between the thickness obtained by adding 0.5(mm) to the renewal thickness and the renewal thickness. "Renewal thickness" refers to the minimum allowable thickness below which the renewal of structural members is to be carried out. (1.3.1(6), Part B of the Rules)**

(a) For ships complying with the provisions of Part CSR-B and, Part CSR-T or Part CSR-B&T of the Rules.

(b) For hatch covers and hatch coamings for cargo holds of the ships stipulated otherwise by the Society. (below (4) to be referred to)

(c) For transverse watertight bulkheads in cargo hold complying with the provision of

Chapter 31A, Part C of the Rules before revision on 1st July 2023 / Annex 1.1, Part 2-2, Part C of the Rules after revision on 1st July 2023 or Chapter 31B, Part C of the Rules before revision on 1st July 2023. (below (4) to be referred to)

(i) Corrosion exceeding acceptable limit
The Surveyor shall require repair such as renewal of the corroded plate exceeding acceptable limit. However, special consideration may be given for structural members whose actual scantling surpasses much the Rule requirements.

(ii) *Substantial corrosion*
Necessary instruction for further inspection of corrosion which does not exceed acceptable limit, but where continuous monitoring is deemed necessary shall be given. S*ubstantial corrosion* is to be nominated as *suspect area* and thickness measurement and necessary inspections of the area is to be carried out at subsequent Survey (Annual, Intermediate and Special Survey).

(4) Structural members stipulated in 1.3.1(6), Part B of the Rules (Note)

(Note) : The ships having subject members, the survey status shows description in Special Attention for Surveys as follows except for the members of (a) as below.

"T NET" CONCEPT APPLIED TO THE FOLLOWING MEMBERS

(a) Ships complying with the provisions of Rules Part CSR-B, Part CSR-T or Part CSR-B&T of the Rules

Notwithstanding (b) through (e) below, the renewal thickness for each structural element is indicated in the structural drawings.

(b) Hatch covers and hatch coamings for cargo holds

(i) For hatch covers located forward of 0.25 L_1*1 from the forward end of L_1 of bulk carriers which are contracted for construction on or after 1 July 1998 and prior to 1 January 2004 and are at a beginning stage of construction*2 prior to 1 January 2005, the renewal thickness is given by the following formula. If a voluntary addition is included in as bult thickness, the value may be at the discretion of the Society.

$t_{renewal} = t_{as\text{-}built} - t_c + 0.5$ (*mm*)

$t_{as\text{-}built}$: as built thickness (*mm*)

t_c: Corrosion addition specified in **Table 3.1-2**

*1 : L_1 is the length of ship specified in 2.1.2, Part A of the Rules or 0.97 *times* the length of ship on the designed maximum load line, whichever is smaller (*m*).

*2 : Ships at beginning stage of construction specified in 2.1.45, Part A of the Rules

Table 3.1-2

		Corrosion addition t_c (*mm*)	
Steel Hatch Cover	Type of structure	For top, side and bottom plating	For internal structures
	Single plating type	2.0	
	Double plating type	2.0	1.5

(ii) For hatch covers and hatch coamings of bulk carriers not complying with the provision of Part CSR-B or CSR-B&T of the Rules, which are contracted for construction on or after 1 January 2004 or are at the beginning stage of construction on or after 1 January 2005; or ships other than bulk carries which are at the beginning stage of construction on or after 1 January 2005 and that have the application for Classification Survey during Construction submitted to the Society prior to 10 June 2005, the renewal thickness is given by the following formula. If a voluntary addition is included in as built thickness, the value may be at the discretion of the Society.

$t_{renewal} = t_{as\text{-}built} - t_c + 0.5$ (*mm*)

$t_{as\text{-}built}$: as built thickness (*mm*)

t_c: Corrosion addition specified in **Table 3.1-3**

Table 3.1-3

		Corrosion addition t_c (*mm*)	
Steel Hatch Cover	Type of structure	For top, side and bottom plating	For internal structures
	Single plating type	2.0	
	Double plating type	2.0	1.5
Hatch Coaming		1.5	

(iii) For hatch covers and hatch coamings of ships other than bulk carriers that have the application for Classification Survey during Construction submitted to the Society on or after 10 June 2005, the renewal thickness is given by the following formula. If a voluntary addition is included in as built thickness, the value may be at the discretion of the Society.

$t_{renewal} = t_{as\text{-}built} - t_c + 0.5$ (*mm*)

$t_{as\text{-}built}$: as built thickness (*mm*)

t_c: Corrosion addition specified in **Table 3.1-4**

Where corrosion addition t_c is 1.0 (*mm*), renewal thickness may be given by the formula $t_{renewal} = t_{as\text{-}built} - t_c$ (*mm*)

Table 3.1-4

		Corrosion addition t_c (*mm*)	
Steel Hatch Cover	Type of structure	For top, side and bottom plating	For internal structures
	Single plating type	2.0*	
	Double plating type	1.5*	1.0
Hatch Coaming		1.5	

* : For steel hatch covers in way of cellular cargo holds: 1.0(*mm*)

(iv) For hatch covers and hatch coamings of ships which are constructed for construction on or after 1 July 2012 except bulk carriers defined in 1.3.1(13), Part B of the Rules (excluding those affixed with the notation "CSR"), self-unloading ships defined in 1.3.1(19), Part B of the Rules and ships other than ordinary bulk carriers with a single deck, and bilge hopper tanks, topside tanks and a double bottom for the length of the cargo area.

Renewal thickness ($t_{renewal}$) is given by the following formula. If a voluntary addition is included in as built thickness, the value may be at the discretion of the Society.

$t_{renewal} = t_{as\text{-}built} - t_c + 0.5$ *(mm)*

$t_{as\text{-}built}$: as built thickness *(mm)*

t_c: Corrosion addition specified in Table 3.1-5

Where corrosion addition t_c is 1.0 *(mm)*, renewal thickness may be given by the formula $t_{renewal} = t_{as\text{-}built} - t_c$ *(mm)*

Table 3.1-5

Type of ship	Type of structural member		Corrosion addition t_c *(mm)*
Container carriers and car carriers	Steel hatch cover		1.0
	Hatch coaming		1.5
Ships other than those specified above	Single plating type hatch cover		2.0
	Double plating type hatch cover	Top, side and bottom plating	1.5
		Internal structures	1.0
	Hatch coaming, hatch coaming stay and stiffeners		1.5

(v) For hatch covers and hatch coamings of ships which are contracted for construction on or after 1 July 2024 (excluding those affixed with the notation "CSR"). Renewal thickness ($t_{renewal}$) is given by the following formula. If a voluntary addition is included in as built thickness, the value may be at the discretion of the Society.

$t_{renewal} = t_{as\text{-}built} - t_c + 0.5$ *(mm)*

$t_{as\text{-}built}$: as built thickness *(mm)*

t_c: Corrosion addition specified in Table 3.1-6

Where corrosion addition t_c is 1.0 *(mm)*, renewal thickness may be given by the formula $t_{renewal} = t_{as\text{-}built} - t_c$ *(mm)*

Table 3.1-6

Type	Ship type	Framing system		t_c(mm)
Type 1 ship	Ships other than the below	Single skin hatch covers		2.0
		Double skin hatch covers	Top, side and bottom plating	1.5
			Internal structural members	1.0
		Hatch coamings, hatch coaming stays and stiffeners		1.5
	Container carrier Car carrier	Hatch covers (in general)		1.0
		Hatch coamings		1.5
Type 2 ship	Ore carrier Combination carriers which are designed to carry either oil or solid cargoes in bulk, like ore/oil carriers. Self-unloading ships (Ships specified in 1.3.1(13), Part B of the Rules (excluding those affixed with the notation "CSR") and (19))	Single skin hatch covers		2.0
		Double skin hatch covers	Top, side and bottom plating	2.0
			Internal structural members	1.5
		Hatch coamings, hatch coaming stays and stiffeners		1.5

Notes
(1) Corrosion additions for both sides of hatch covers and hatch coamings on non-exposed decks are to be as deemed appropriate by the Society.
(2) The definitions of Type 1 ship and Type 2 ship are given 14.6.1.2, Part 1, Part C of the Rules.

(c) Vertically corrugated watertight bulkhead abaft the foremost hold complying with the provision of Chapter 31B, Part C of the Rules before revision on 1st July 2023 (related to IACS UR S19)

For bulk carriers with single side construction, which of 150m (L_f*3) in length and above, carrying solid bulk cargoes having bulk density*4 of 1.78 t/m^3 or above, which are contracted for construction before 1 July 1998 and are at a beginning stage of construction prior to 1 July 1999, the renewal thickness is given by the following formula. The ships these requirements are applicable to are identified by NOTE in Survey Status.

$t_{renewal} = t_{net} + 0.5$ *(mm)*

t_{net}: Required net thickness described in the notification letters on the assessment results or the previous survey record (Form H/BCS(S-19))

*3 : Length for Freeboard specified in 2.1.3, Part A of the Rules

*4 : Bulk density (t/m3) means the ratio of the loaded cargo mass to the volume which is assumed to be occupied by the loaded cargo including empty spaces within the bulk cargo.

(d) Vertically corrugated watertight bulkheads in cargo holds complying with the provision of .Chapter 31A, Part C of the Rules before revision on 1st July 2023 / Annex 1.1, Part 2-2,

Part C of the Rules after revision on 1st July 2023.

(i) For bulk carriers, except double side skin construction[*5], which of 150m (L_f) in length and above, carrying solid bulk cargoes having bulk density of 1.0 t/m^3 or above, which are contracted for construction on and after 1 July 1998, or which are contracted for construction prior to 1 July 1998, but are at a similar stage of construction on and after 1 July 1999, the renewal thickness is given by the following formula.

$t_{renewal} = t_{as\text{-}built} - 3.0\ (mm)$

$t_{as\text{-}built}$: as built thickness (mm)

*5 : Double side skin construction is to be recognized as single side skin construction if the distance between side shell to the extent between the bottom of top-side tank and the top of bilge hopper tank in cargo holds is either of the followings.

- less than 760mm for bulk carriers at a similar stage of construction prior to1 January 2000, or
- less than 1,000mm for bulk carriers at a similar stage of construction on or after 1 January 2000

(ii) For ships[*6] with the class notation (BC-XII), which of 150m (L_f) in length and above, being designed to carry solid bulk cargoes having bulk density of 1.0 t/m^3 or above, which are at the beginning stage of construction on or after 1 July 2006, the renewal thickness is given by the following formula.

$t_{renewal} = t_{as\text{-}built} - 3.0\ (mm)$

$t_{as\text{-}built}$: as built thickness (mm)

*6 : Ships of single-side skin construction, or ships of double-side skin construction in which any part of a longitudinal bulkhead is located within B/5 or 11.5m, whichever is less, inboard from the ship's side at right angles to the centreline at the assigned summer load line. B is Breadth of Ship specified in 2.1.4, Part A of the Rules.

(iii) For ships subject to above (ii), which have the application for Classification Survey during Construction submitted to the Society on or after 1 July 2007, the renewal thickness is given by the value indicated in the structural drawings.

(e) Hold Frames (related to IACS UR S31)

For bulk carriers having hold frames, which are contracted for construction prior to 1 July 1998, the renewal thickness is given by the following formula. The ships these requirements are applicable to are identified by NOTE in Survey Status.

$t_{renewal} = t_{ren}\ (mm)$

t_{ren} : Thickness of which renewal is required (mm) described in Preliminary Assessment or the previous thickness measurement record (Form TM7 (S31))