ClassNK

SURVEY PROGRAMME for Tankers

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 area, 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 Tanks and Spaces

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

Tank Arrangement*/Tank List*, which is attached to next page is to be referred.
(*: Delete as appropriate)

3 List of tanks 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 tanks of the ship, the extent of coatings and the corrosion protective 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; CS=clad steel; SS=stainless steel

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)

Tank Arrangement*/Tank List* (*: Delete as appropriate)

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 Tanks and spaces are to be safe for access. 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 In preparation for survey and thickness measurements and to allow for a thorough examination, all spaces shall be cleaned including removal from surfaces of all loose accumulated corrosion scale. Spaces shall be sufficiently clean and free from water, scale, dirt, oil residues etc. to reveal corrosion, deformation, fractures, damages, or other structural deterioration as well as the condition of the coating. However, those areas of structure whose renewal has already been decided by the owner need only be cleaned and descaled to the extent necessary to determine the limits of the areas to be renewed.

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 : _____

Cargo Tank Cleaning Procedures

Indicate the frequency of the tank washing, especially uncoated tanks:

- _____

Washing medium used:

- Crude oil : _____
- Heated seawater : _____
- Other medium (specify) : _____

Inert Gas System installed : Yes / No

- Details of inert gas plant : _____
- Indicate average oxygen content during inerting : _____

Reference are made to

- *IACS Recommendation 39 - Guidelines for the use of Boats or Rafts for Close-up surveys; and,*
- *Chapter 10 of the International Safety Guide for Oil Tankers and Terminals (ISGOTT) - Entry into and working in enclosed spaces.*

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:

Tank No.	Structure	C (Cargo) / B (Ballast)	Permanent staging*	Temporary staging	Rafts	Portable Ladders	Direct access	Cherry picker	Other means** (Please specify)
F.P.	Fore peak		☐	☐	☐	☐	☐	☐	
A.P.	Aft peak		☐	☐	☐	☐	☐	☐	
Wing Tanks	Under deck		☐	☐	☐	☐	☐	☐	
	Side shell		☐	☐	☐	☐	☐	☐	
	Longitudinal bulkhead		☐	☐	☐	☐	☐	☐	
	Transverse bulkhead		☐	☐	☐	☐	☐	☐	
	Transverse		☐	☐	☐	☐	☐	☐	
	Horizontal girder		☐	☐	☐	☐	☐	☐	
	Tank Top		☐	☐	☐	☐	☐	☐	
Centre Tanks	Under deck		☐	☐	☐	☐	☐	☐	
	Longitudinal bulkhead		☐	☐	☐	☐	☐	☐	
	Transverse bulkhead		☐	☐	☐	☐	☐	☐	
	Transverse		☐	☐	☐	☐	☐	☐	
	Horizontal girder		☐	☐	☐	☐	☐	☐	
	Tank top		☐	☐	☐	☐	☐	☐	
Double Side Ballast Tanks	Under deck		☐	☐	☐	☐	☐	☐	
	Side shell		☐	☐	☐	☐	☐	☐	
	Longitudinal bulkhead		☐	☐	☐	☐	☐	☐	
	Side stringer		☐	☐	☐	☐	☐	☐	
	Web and transverse bulkhead		☐	☐	☐	☐	☐	☐	
	Double bottom structure		☐	☐	☐	☐	☐	☐	
	Upper stool internal structure		☐	☐	☐	☐	☐	☐	
	Lower stool internal structure		☐	☐	☐	☐	☐	☐	

*: Applicable to Oil Tankers only.

**: 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 Permanent staging and passages through structures;

.2 Temporary staging and passages through structures;

.3 Hydraulic arm vehicles such as conventional cherry pickers, lifts and moveable platforms;

.4 Boats or rafts;

.5 Portable ladders;

.6 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 the following conditions shall be observed:

.1 Only rough duty, inflatable rafts or boats, having satisfactory residual buoyancy and stability even if one chamber is ruptured, shall be used;

.2 The boat or raft shall be tethered to the access ladder and an additional person shall be stationed down the access ladder with a clear view of the boat or raft;

.3 Appropriate lifejackets shall be available for all participants;

.4 The surface of water in the tank shall be calm (under all foreseeable conditions the expected rise of water within the tank shall not exceed 0.25 m) and the water level either stationary or falling. On no account shall the level of the water be rising while the boat or raft is in use;

.5 The tank or space must contain clean ballast water only. Even a thin sheen of oil on the water is not acceptable;

.6 At no time shall the water level be allowed to be within 1 m of the deepest under deck web face flat so that the survey team is not isolated from a direct escape route to the tank hatch. Filling to levels above the deck transverses shall only be contemplated if a deck access manhole is fitted and open in the bay being examined, so that an escape route for the survey party is available at all times. Other effective means of escape to the deck may be considered;

.7 If the tanks (or spaces) are connected by a common venting system, or Inert Gas system, the tank in which the boat or raft shall be used shall be isolated to prevent a transfer of gas from other tanks (or spaces).

5.5 Rafts or boats alone may be allowed for inspection of the under deck areas for tanks or spaces if the depth of the webs is 1.5 m or less.

5.6 If the depth of the webs is more than 1.5 m, boats or rafts alone may be allowed when at least one of the following conditions is satisfied:

.1 When the coating of the under deck structure is in GOOD condition and there is no evidence of wastage

.2 A permanent means of access as described below is provided in each bay to allow safe entry and exit

i) Direct access from deck via a vertical ladder and a small platform is to be fitted approximately 2 m below the deck; or

ii) Access to the deck from a longitudinal permanent platform which is to be of the full length of the tank and arranged in level with or above the maximum water level needed for rafting of under deck structures and to have ladders to the deck in each end of the tank. The maximum water level is to be assumed to be not more than 3 m from the deck plate measured at the midspan of the deck

transverses and in the middle of the length of the tank.

If neither of the above conditions are met, then staging or other equivalent means shall be provided for the survey of the under deck areas.

5.7 The use of rafts or boats alone in 5.5 and 5.6 does not preclude the use of boats or rafts to move about within a tank during a survey.

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 in accordance with the requirements of the Rules.

See, Table B5.1 and Table B5.2 of Rules Part B (Fresh Water Tanks, Fuel Oil Tanks and Lubrication Oil Tanks are not required for Intermediate Survey)

Cargo Tanks	
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 the ship in accordance with the requirements of the Rules.

For single hull tankers:

See, Table B5.5-1 of Rules Part B

.1 Ballast Wing Tanks

Structural member	Tank
One web frame*	
All web frames*	
One deck transverse	
Both T. BHDs	
Lower part of one T. BHD	
All T. BHDs	

*: In way of ballast wing tank, if any, or a cargo tank used primarily for water ballast within cargo area.

.2 Ballast Centre Tanks

Structural member	Tank
One deck transverse	
All web frames	
Lower part of one T. BHD	
All T. BHDs	

.3 Cargo Wing Tanks

Structural member	Tank
One deck transverse	
All web frames	
Min. 30% of all web frames (Oil tankers)	
One web frame (Other than oil tankers)	
Lower part of one T. BHD	
All T. BHDs	

.4 Cargo Centre Tanks

Structural member	Tank
One deck transverse	
Min. 30% of all deck transverses (Oil tankers)	
Min. 30% of all bottom transverses (Oil tankers)	
One web frame (Other than oil tankers)	
Lower part of one T. BHD	
All T. BHDs	

For double hull tankers:

See, Table B5.5-1 of Rules Part B

.1 Ballast Double Hull Tanks*

Structural member	Tank
One web frame	
All web frames	
Knuckle area and the top of one web frame	
One T. BHD	
All T. BHDs	

*: Ballast Double Hull Tanks mean the following, apart from the fore and aft peak tanks:

(a): all ballast compartments (hopper tank, side tank and double-deck tank, if separate from double-bottom tank) located on one side, i.e. portside or starboard side, and additionally double-bottom tank on portside plus starboard side, when the longitudinal central girder is not watertight and, therefore, the double bottom tank is a unique compartment from portside to starboard side; or

(b): all ballast compartments (double-bottom tank, hopper tank, side tank and double-deck tank) located on one side, i.e. portside or starboard side, when the longitudinal central girder is watertight and, therefore, the portside double-bottom tank separate from the starboard-side double-bottom tank.

.2 Cargo Tanks

Structural member	Tank
One deck transverse	
All web frames	
One web frame	
Lower part of one T. BHD	
All T. BHDs	

8 Identifications of tanks for tank testing

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

See, Table B5.23-1 of Rules Part B (N.A. to Intermediate Survey)

Cargo Tanks	
Ballast Tanks	
Fresh Water Tanks	
Fuel Oil Tanks	
Lubrication Oil Tanks	
Other Water Tanks	
Steel cargo pipe outside cargo tanks and ballast pipes passing through cargo tanks (Chemical tankers only)	

9 Minimum thickness of hull structures

This section of the survey programme shall specify the minimum thickness for hull structures of the 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 the areas and sections where thickness measurements shall be taken in accordance with the Rules.

See, Table B5.10-1 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 area	☐ 1 section ☐ 2 sections ☐ 3 sections
Deck plating	☐ each deck in one transverse section* ☐ each deck within cargo area ☐ all exposed main deck outside cargo area ☐ representative exposed superstructure deck
Wind and water strakes	☐ selected outside cargo area ☐ all within cargo area ☐ all
F.P.T. & A.P.T.	☐ internals
Bottom and side shell plate	☐ each plate within cargo 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**
Pipes	☐ cargo oil, fuel oil, ballast, vent pipes including vent masts and headers, inert gas pipes and all other piping in pump room and on weather decks** ☐ selected steel cargo pipes outside cargo tanks and ballast pipes passing through cargo tanks (Chemical tankers only)
Others	

*: In way of ballast tank, if any, or a cargo tank used primarily for water ballast within cargo area

**: 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 and ballast tanks and void spaces within the cargo area, using the tables 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:

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:

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, if 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 and ballast tanks (scantling drawings), including information regarding use of high tensile steel (HTS), to 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 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

Tank No.	Structure	C (Cargo) / B (Ballast)	Permanent staging*	Temporary staging	Rafts	Portable Ladders	Direct access	Cherry picker	Other means** (Please specify)
F.P.	Fore peak		☐	☐	☐	☐	☐	☐	
A.P.	Aft peak		☐	☐	☐	☐	☐	☐	
Wing Tanks	Under deck		☐	☐	☐	☐	☐	☐	
	Side shell		☐	☐	☐	☐	☐	☐	
	Longitudinal bulkhead		☐	☐	☐	☐	☐	☐	
	Transverse bulkhead		☐	☐	☐	☐	☐	☐	
	Transverse		☐	☐	☐	☐	☐	☐	
	Horizontal girder		☐	☐	☐	☐	☐	☐	
	Tank Top		☐	☐	☐	☐	☐	☐	
Centre Tanks	Under deck		☐	☐	☐	☐	☐	☐	
	Longitudinal bulkhead		☐	☐	☐	☐	☐	☐	
	Transverse bulkhead		☐	☐	☐	☐	☐	☐	
	Transverse		☐	☐	☐	☐	☐	☐	
	Horizontal girder		☐	☐	☐	☐	☐	☐	
	Tank top		☐	☐	☐	☐	☐	☐	
Double Side Ballast Tanks	Under deck		☐	☐	☐	☐	☐	☐	
	Side shell		☐	☐	☐	☐	☐	☐	
	Longitudinal bulkhead		☐	☐	☐	☐	☐	☐	
	Side stringer		☐	☐	☐	☐	☐	☐	
	Web and transverse bulkhead		☐	☐	☐	☐	☐	☐	
	Double bottom structure		☐	☐	☐	☐	☐	☐	
	Upper stool internal structure		☐	☐	☐	☐	☐	☐	
	Lower stool internal structure		☐	☐	☐	☐	☐	☐	

*: Applicable to Oil Tankers only.

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

History of cargo with H_2S content or heated cargo for the last 3 years together with indication as to whether cargo was heated and, where available, Marine Safety Data Sheets (MSDS)*
☐ Nil
☐ See Attachments
☐ Remarks:

** Refer to resolution MSC.150(77) on Recommendation for material safety data sheets for MARPOL Annex I cargoes and marine fuel oils.*

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 and ballast tanks and void spaces within the cargo area, including peak tanks.

Table SPQ2

Tank No.	Corrosion protection (1)	Coating extent (2)	Coating condition (3)	Structural deterioration (4)	Tank damage history (5)
Cargo wing tanks					
Cargo centre tanks					
Double bottom tanks					
Double side tanks					
Upper stools					
Lower stools					
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; CS=clad steel; SS=stainless steel
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.

(ii) The wastage allowance for longitudinal strength members given in the following table 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, 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.

Structural Member	Wastage Allowance
- Shell plates - Strength deck plates - Longitudinal beams (flat bar) on shear strake and strength deck - Tight bulkheads in deep tanks***** - 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

***** 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.**

(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* in excess of 75% of allowable margin 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[except cargo tanks], Intermediate and Special Survey).