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RULES CHANGE NOTICE No.2

Part 1 Seagoing Ships

RULES FOR CLASSIFICATION AND SURVEYS

Volume I

April 2023

Jl. Yos Sudarso No. 38-40, Tanjung Priok
Jakarta 14320 - Indonesia
rules@bki.co.id
www.bki.co.id

Foreword

This Rules Change Notice (RCN) No.1 gives new additions and amandments to the “Rules for Classification and Surveys (Pt.1, Vol.I), 2022 Consolidated Edition” along with the effective dates from which these changes are applicable.

Amendments to the preceding Edition are marked by strikethrough, red color, and expanded text. These new additions and amendments are to be read in conjunction with the requirements given in the 2022 Consolidated Edition of the Rules.

The summary of current amendments for each section including the implementation date are indicated in *Table 1 - Amendments Incorporates in This Notice.*

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Further queries or comments concerning this Rules are welcomed through communication to BKI Head Office.

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Rules Changes Notice No. 2 – April 2023

Table 1 – Amendments Incorporates in This Notice

These amendments will come into force from 1st July 2023 unless specify otherwise below

Paragraph	Title/Subject	Status/Remark
Section 3 - Surveys - General Requirements		
B	Surveys for Maintenance of Class	
1.1.2.1)	Hull items	Add new requirement from IACS UR Z1 2.2 (Rev.9)
1.1.2.2)	Machinery and Electrical items	Add new requirement from IACS UR Z1 2.3 (Rev.9)
1.3.2.5)		Add new requirement from IACS UR Z7 2.2.5 (Rev.26)
Table 3.1	Minimum Requirements for Thickness Measurements at Class Renewal Survey	Add new requirement from IACS UR Z7 Table 1 (Rev.27)
D	Thickness Measurement	
1.4	Thickness measurements and close-up surveys	Add new requirement from IACS UR Z7 1.4 (Rev.26); Z7.2 1.4 (Rev.7)
Section 4 - Surveys		
I	Additional Requirements for Ships with ESP Notation	
A	General	
4.1.3		Add new reference from IACS UR Z7 1.4 (Rev.26); Z7.2 1.4 (Rev.7)
7.3.9)		Add new requirement from IACS UR Z10.1 5.7.3.9 (Rev.23); Z10.2 5.7.3.9 (Rev.35); Z10.3 5.7.3.9 (Rev.18); Z10.5 5.7.3.9 (Rev.18)
8.2.2.11)		Add new requirement from IACS UR Z10.1 5.1.2.11 (Rev.23); Z10.3 5.1.2.11 (Rev.18); Z10.4 5.1.2.11 (Rev.15)
12.2	Reporting	Add new requirement from IACS UR Z10.1 8.2 (Rev.23); Z10.2 9.2 (Rev.35); Z10.3 8.2 (Rev.18); Z10.4 9.2 (Rev.15); Z10.5 9.2 (Rev.17);
II	Additional Requirements for Ships Not Subject to ESP Notation	
B	General Dry Cargo Ships	
1.1	Application	Add new requirement from IACS UR Z7.1 1.1.2 (Rev.13)
1.2	Thickness measurements and close-up surveys	Deleted and move to Sec.3.D.1.4
2.1.3		Add new reference from IACS UR Z7 1.4 (Rev.26); Z7.2 1.4 (Rev.7)
5.2.3		Deleted by IACS UR Z7.1 1.1.2 (Rev.13)
C	Shell Doors, Stern Doors, Inner Doors and Bow Doors of Ro-Ro Ships	Changed the title
4.	Retrospective Application of Side Shell Doors, Stern Doors, Bow Doors and Inner Doors to existing Ro-Ro Passenger Ships (UR S15 and S16)	Add new requirement from IACS UR S16 (Rev.1, Corr.1) and UR S15 (Rev.1)
Annex A - Annexes to Section 1-3		
A.2	Hull Survey for New Construction	
G	Newbuilding survey planning	
4.1 & 4.2		Change the reference as amandment Rules

Paragraph	Title/Subject	Status/Remark
		for Bulk Carrier and Oil Tanker (Pt.1, Vol.XVII.A)
A.3	The Wastage Allowance	
6	Transverse corrugated watertight bulkheads built in accordance Rules for Hull (Pt.1, Vol.II), Section 23, E dan J (IACS UR S18 and S19)	Add new requirement form IACS UR Z7 1.5 (Rev.26); Z7.1 1.5 (Rev.13);
A.7	Definition	Add new definition from IACS UR Z7.2 1.2.1 (Rev.8),
Annex B - Annexes to Section 4-I		
B.4	Technical Assessment in Conjunction with the Planning of Enhanced Surveys for Renewal Survey Hull	
3.1.2		Corrigenda
3.2.1.2		Corrigenda
Fig.B.4.1	Technical assessment and the survey planning process	Corrigenda
Fig.B.4.2	Typical locations susceptible to structural damage or corrosion in bulk carriers	Corrigenda
Fig.B.4.3	Typical damage and repair example (reproduced from reference 5)	Corrigenda
Fig.B.4.4	Typical damage and repair example (reproduced from reference 1)	Corrigenda
B.6	Guidelines for the Gauging of the Vertically Corrugated Transverse Watertight Bulkhead Between Holds No. 1 and 2	
2.		Corrigenda
3.		Corrigenda
Fig B.6.5		Corrigenda
Fig B.6.6		Corrigenda
5.		Corrigenda
Fig. B.6.7		Corrigenda
B.12	ESP Survey Reporting Principles	Add new requirement from IACS UR Z10.2 Table VI–VII (Rev.36); Z10.3 Table VI-VII (Rev.19); Z10.4 Table VIII-IX (Rev.17); Z10.5 Table VI-VII (Rev.19);
B.13	Recommended Procedures for Thickness Measurements	Add new requirement from IACS UR Z10.1 Annex II (Rev.23); Z10.2 Annex II (Rev.36); Z10.2 Annex II (Rev.35, Corr.1); Z10.2 Annex II (Rev.35); Z10.4 Annex II (Rev.16); Z10.4 Annex II (Rev.15); Z10.5 Annex II (Rev.18)

Section 3 Surveys – General Requirements

B. Surveys for Maintenance of Class

1. Periodical surveys

1.1 Annual Surveys

1.1.2 Scope

The survey is to consist of an examination for the purpose of ensuring, as far as practicable, that the hull, hatch covers, hatch coamings, closing appliances, equipment and related piping are maintained in a satisfactory condition.

1) Hull items:

- examining, in general and as far as can be seen, the hull and its closing appliances;
- examining the anchoring and mooring equipment as far as can be seen, for ships built after 01/01/2007, confirming that the towing and mooring equipment is properly marked with any restriction associated with its safe operation;
- examining, for bulk carriers of 150 m and above, where appropriate, the ship's structure in accordance with the Ship Construction File, taking into account identified areas that need special;
- examining the collision and the other watertight bulkheads as far as can be seen;
- examining and testing (locally and remotely) all the watertight doors in watertight bulkheads;
- examining the arrangements for closing openings in the shell plating below the freeboard deck;
- checking the ballasting arrangements;
- examining each bilge pump and confirming that the bilge pumping system for each watertight compartment is satisfactory;
- confirming that the drainage from enclosed cargo spaces situated on the freeboard deck is satisfactory;
- examining visually the drainage facilities for blockage or other damage and confirming the provision of means to prevent blockage of drainage arrangements, for closed vehicle and Ro-Ro spaces and special category spaces where fixed pressure water-spraying systems are used;
- confirming, when appropriate and as far as is practicable when examining internal spaces on oil tankers and bulk carriers, that the means of access to cargo and other spaces remain in good condition;
- examining the functionality of bilge well alarms to all cargo holds and conveyor tunnels;
- for bulk carriers, examining the hold, ballast and dry space water level detectors and their audible and visual alarms;
- for bulk carriers, checking the arrangements for availability of draining and pumping systems forward of the collision bulkhead;
- for single hull, single hold cargo ships, examining the cargo hold water level detector and its audible and visual alarm;
- Survey of watertight cable transits:

- The Cable Transit Seal Systems Register (Register), as detailed in Annex A.5, is to be reviewed to confirm it is being maintained and as far as practicable the transits are to be examined to confirm their satisfactory condition;
- Where there are records entered since the last annual survey of any disruption to the cable transits or installation of new cable transits, the satisfactory condition of those transits is to be confirmed by review of records and, if deemed necessary, by examination. The results are to be recorded in the Register against the specific cable transit.

2) Machinery and Electrical items:

– confirming that the machinery, boilers and other pressure vessels, associated piping systems and fittings are installed and protected so as to reduce to a minimum any danger to persons on board, due regard being given to moving parts, hot surfaces and other hazards;

– confirming that the normal operation of the propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative;

– confirming that means are provided so that the machinery can be brought into operation from the dead ship condition without external aid;

– carrying out a general examination of the machinery, the boilers, all steam, hydraulic, pneumatic and other systems and their associated fittings to see whether they are being properly maintained and with particular attention to the fire and explosion hazard;

– examining and testing the operation of main and auxiliary steering arrangements, including their associated equipment and control systems;

– confirming that the means of communication between the navigation bridge and steering gear compartment and the means of indicating the angular position of the rudder are operating satisfactorily;

– confirming that with ships having emergency steering positions there are means of relaying heading information and, when appropriate, of supplying visual compass readings to the emergency steering position;

– confirming that the various alarms required for hydraulic power-operated, electric and electro-hydraulic steering gears are operating satisfactorily and that the re-charging arrangements for hydraulic power-operated steering gears are being maintained;

– examining the means for the operation of the main and auxiliary machinery essential for the propulsion and the safety of the ship, including, when applicable, the means of remotely controlling the propulsion machinery from the navigating bridge (including the control, monitoring, reporting, alert and safety actions) and the arrangements to operate the main and other machinery from a machinery control room;

– confirming the operation of the ventilation for the machinery spaces;

– confirming that the engine room telegraph, the second means of communication between the navigation bridge and the machinery space and the means of communication with any other positions from which the engines are controlled are operating satisfactorily;

– confirming that the engineer's alarm is clearly audible in the engineers' accommodation;

– examining, as far as practicable, visually and in operation, the electrical installations, including the main source of power and the lighting systems;

– confirming, as far as practicable, the operation of the emergency source(s) of electrical power including their starting arrangements, the systems supplied and, when appropriate, their automatic operation;

– examining, in general, that the precautions provided against shock, fire and other hazards of electrical origin are being maintained;

- examining the arrangements for periodically unattended machinery spaces and, in particular, the random testing of alarm, automatic and shutdown functions;
- examining, where applicable, the alternative design and arrangements for machinery or electrical installations, or fire safety, in accordance with the test, inspection and maintenance requirements, if any, specified in the approved documentation;
- confirming, as far as practicable, that no changes have been made in the structural fire protection, examining any manual and automatic fire doors and proving their operation, testing the means of closing the main inlets and outlets of all ventilation systems and testing the means of stopping power ventilation systems from outside the space served;
- confirming that the means of escape from accommodation, machinery and other spaces are satisfactory;
- examining the helicopter facilities;
- examining visually the condition of any expansion joints in seawater systems;
- examining visually and confirming operation of the towing winch emergency release system;

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1.3 Class Renewal Surveys

1.3.2 Scope

5) All spaces including holds and their 'tween decks where fitted; double bottom, deep, ballast, peak and cargo tanks; pump rooms, pipe tunnels, duct keels, machinery spaces, dry spaces, cofferdams and voids are to be internally examined including the plating and framing, bilges and drain wells, sounding, venting, pumping and drainage arrangements. Internal examination of fuel oil, lube oil and fresh water tanks is to be carried out in accordance with Table 3.3. At Class Renewal Survey No.3 and subsequent Class Renewal Surveys, structural downflooding ducts and structural ventilation ducts are to be internally examined.

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Table 3.1 Minimum Requirements for Thickness Measurements at Class Renewal Survey

Class Renewal Survey No. I Age < 5	Class Renewal Survey No. II 5 < Age < 10	Class Renewal Survey No. III 10 < Age < 15	Class Renewal Survey No. IV and Subsequent 15 < Age
1) Suspect areas throughout the vessel.	1) Suspect areas through-out the vessel.	1) Suspect areas through-out the vessel.	1) Suspect areas throughout the vessel.
	2) One transverse section of deck plating in way of a cargo space within the amidships 0,5**L**	2) Two transverse sections within the amidships 0,5**L** in way of two different cargo spaces.	2) A minimum of three transverse sections in way of cargo spaces within the amidships 0,5**L**.
		3) All cargo hold hatch covers and coamings (plating and stiffeners).	3) All cargo hold hatch covers and coamings (plating and stiffeners).
		4) Internals in forepeak and afterpeak ballast tanks.	4) Internals in forepeak and afterpeak ballast tanks.
			5) All exposed main deck plating full length.

Table 3.1 Minimum Requirements for Thickness Measurements at Class Renewal Survey *(continued)*

Class Renewal Survey No. I Age < 5	Class Renewal Survey No. II 5 < Age < 10	Class Renewal Survey No. III 10 < Age < 15	Class Renewal Survey No. IV and Subsequent 15 < Age
			6) Representative exposed superstructure deck plating (poop, bridge, and forecastle deck).
			7) Lowest strake and strakes in way of 'tween decks of all transverse bulkheads in cargo spaces together with internals in way.
			8) All wind and water strakes, port and starboard, full length.
			9) All keel plates full length. Also, additional bottom plates in way of cofferdams, machinery space, and aft end of tanks.
			10)Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending surveyor.

Notes:

1. *Thickness measurement locations are to be selected to provide the best representative sampling of areas likely to be most exposed to corrosion, considering cargo and ballast history and arrangement and condition of protective coatings.*
2. *Thickness measurements of internals may be specially considered by the Surveyor if the hard-protective coating is in GOOD condition.*
3. *For ships less than 100 m in length, the number of transverse sections required at Class Renewal Survey No. III may be reduced to one (1), and the number of transverse sections required at Subsequent Class Renewal Surveys may be reduced to two (2).*
4. *For ships more than 100 m in length, at Class Renewal Survey No. III, thickness measurements of exposed deck plating within amidship 0,5**L** may be required.*
5. *Subject to cargo hold hatch covers of approved design which structurally have no access to the internals, thickness measurement shall be done of accessible parts of hatch covers structures.*

----------*end*----------

D. Thickness Measurement

1. Procedural Requirements

1.4 Thickness measurements and close-up surveys

1.4.1 In any kind of survey, i.e. special, intermediate, annual or other surveys having the scope of the foregoing ones, thickness measurements of structures in areas where close-up surveys are required, shall be carried out simultaneously with close-up surveys.

1.4.2 Consideration may be given by the attending Surveyor to allow use of Remote Inspection Techniques (RIT) as an alternative to close-up survey. Surveys conducted

using a RIT are to be completed to the satisfaction of the attending Surveyor. When RIT is used for a close-up survey, temporary means of access for the corresponding thickness measurements is to be provided unless such RIT is also able to carry out the required thickness measurements.

Note:

Use of RIT as an alternative to close-up survey is not allowed for ships assigned with the service notation ***Bulk Carrier (ESP)*** *or* ***Bulk Carrier (ESP), BC-A*** *or* ***Bulk Carrier (ESP) BC-B*** *or* ***Bulk Carrier (ESP) BC-C*** *or* ***Self-Unloading Bulk Carrier (ESP)*** *or* ***Ore Carrier (ESP)*** *or* ***Combination Carrier/OBO (ESP)*** *or* ***Oil Tanker (ESP)****.*

1.4.3 For structure built with a material other than steel, alternative thickness measurement requirements may be developed and applied as deemed necessary by BKI

1.4.4 Thickness measurement is normally to be carried out by means of ultrasonic test equipment. The accuracy of the equipment is to be proven to the Surveyor as required in A.7. BKI provides guidance for thickness measurements using ultrasonic test equipment in Petunjuk Pelaksanaan Standar Pengukuran Ketebalan Konstruksi Lambung (Pt.1, Vol.X) which can be used by operators, shipyards and service suppliers.

The thickness measurements are to be carried out by a firm authorized by BKI.

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Section 4 Surveys

I. Additional Requirements for Ships with ESP Notation

A. General

4. Procedures for Thickness Measurements

4.1 General

4.1.3 Thickness measurements of structures in areas where close-up surveys are required shall be carried out simultaneously with close-up surveys. See Section 3, D.1.4

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7. Survey Planning Meeting

7.1 Proper preparation and close co-operation between the attending surveyor(s) and the owner's representatives onboard prior to and during the survey are an essential part in the safe and efficient conduct of the survey. During the survey on board safety meetings are to be held regularly.

7.2 Prior to commencement of any part of the renewal and intermediate survey, a survey planning meeting is to be held between the attending surveyor(s), the owner's representative in attendance, the thickness measurement firm operator (as applicable) and the master of the ship or an appropriately qualified representative appointed by the master or Company for the purpose to ascertain that all the arrangements envisaged in the survey programme are in place, so as to ensure the safe and efficient conduct of the survey work to be carried out.

7.3 The following is an indicative list of items that are to be addressed in the meeting:

1) schedule of the vessel (i.e. the voyage, docking and undocking manoeuvres, periods alongside, cargo and ballast operations, etc.);
2) provisions and arrangements for thickness measurements (i.e. access, cleaning/de-scaling, illumination, ventilation, personal safety);
3) extent of the thickness measurements;
4) acceptance criteria (refer to the list of minimum thicknesses);
5) extent of close-up survey and thickness measurement considering the coating condition and suspect areas/areas of substantial corrosion;
6) execution of thickness measurements;
7) taking representative readings in general and where uneven corrosion/pitting is found;
8) mapping of areas of substantial corrosion;
9) communication between attending surveyor(s) the thickness measurement ~~company~~ firm operator(s) and owner representative(s) concerning findings.

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8. Survey programme

8.2 In developing the survey programme, the following documentation is to be collected and consulted with a view to selecting tanks, areas, and structural elements to be examined:

8.2.2 For Oil Tankers, Chemical Tankers and Double Hull Oil Tankers:

1) survey status and basic ship information;
2) documentation on board, as described in 3.2 and 3.3;
3) main structural plans of cargo and ballast tanks (scantlings drawings), including information regarding use of high-tensile steels (HTS);
4) Executive Hull Summary;
5) relevant previous damage and repair history;
6) relevant previous survey and inspection reports from both the recognized organization and the owner;
7) cargo and ballast history for the last 3 years, including carriage of cargo under heated conditions;
8) details of the inert gas plant and tank cleaning procedures;
9) information and other relevant data regarding conversion or modification of the ship's cargo and ballast tanks since the time of construction;
10) description and history of the coating and corrosion protection system (including previous class notations), if any;
11) inspections by the Owner's personnel during the last 3 years with reference to structural deterioration in general, leakages in tank boundaries and piping and condition of the coating and corrosion protection system if any. Guidance for reporting is shown in Annex B.1;
12) information regarding the relevant maintenance level during operation including port state control reports of inspection containing hull related deficiencies, Safety Management System non-conformities relating to hull maintenance, including the associated corrective action(s); and
13) any other information that will help identify suspect areas and critical structural areas

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12. Reporting and Evaluation of Survey

12.2 Reporting

.1 Principles for survey reporting are shown in Annex B. 12.

.~~1~~2 When a survey is split between different survey stations, a report is to be made for each portion of the survey. A list of items examined and / or tested (pressure testing, thickness measurements etc.) and an indication of whether the item has been credited, are to be made available to the next attending Surveyor(s), prior to continuing or completing the survey.

.~~2~~3 An Executive Hull Summary of the survey and results is to be issued to the Owner as shown in Annex B. 12 and placed on board the vessel for reference at future surveys. The Executive Hull Summary is to be endorsed by BKI's surveyor.

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II. Additional Requirements for Ships Not Subject to ESP Notation

B. General Dry Cargo Ships

1. General Requirements

1.1 Application

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1.1.2 For General Dry Cargo Ships with hybrid cargo hold arrangements, e.g. with some cargo holds of single-side skin and others of double-side skin, the requirements are to be applied only to structure in way of the single-side skin cargo hold region.

1.1.2~~3~~ The requirements apply to surveys of hull structure and piping systems in way of cargo holds, cofferdams, pipe tunnels, void spaces and fuel oil tanks within the cargo area and all ballast tanks.

1.1.3~~4~~ The requirements contain the minimum extent of examination, thickness measurements and tank testing. The survey is to be extended when Substantial Corrosion and/or structural defects are found and include additional Close-up Survey when necessary.

~~1.2 Thickness measurements and close-up surveys~~

~~1.2.1 In any kind of survey, i.e. special, intermediate, annual or other surveys having the scope of the foregoing ones, thickness measurements, when required by Table 4 II.5 of structures in areas where close-up surveys are required, shall be carried out simultaneously with close-up surveys.~~

~~1.2.2 Consideration may be given by the attending Surveyor to allow use of Remote Inspection Techniques (RIT) as an alternative to close-up survey. Surveys conducted using a RIT are to be completed to the satisfaction of the attending Surveyor. When RIT is used for a close-up survey, temporary means of access for the corresponding thickness measurements as specified in this Section is to be provided unless such RIT is also able to carry out the required thickness measurements.~~

2. Procedures for Thickness Measurements

2.1 General

2.1.3 Thickness measurements of structures in areas where Close-up Surveys are required shall be carried out simultaneously with Close-up Surveys. See Section 3, D.1.4.

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5. Renewal Surveys

5.2 Tank Protection

5.2.3 Where the hard-protective coating in ~~ballast~~ tanks is found to be in a GOOD condition, the extent of close-up surveys and thickness measurements may be specially considered.

C. Shell Doors, Stern Doors, ~~and~~ Inner Doors and Bow Doors of Ro-Ro Ships

4. Retrospective Application of Side Shell Doors, Stern Doors, Bow Doors and Inner Doors to existing Ro-Ro Passenger Ships (UR S15 and S16)

4.1 Side Shell Doors and Stern Doors

1) The structural condition of bow doors and inner doors, especially the primary structure, the securing and supporting arrangements and the hull structure alongside and above the doors, are to be specially examined and any defects rectified.

2) The requirements of Rules for Hull (Pt.1, Vol.II) Sec.6, H.8 concerning operating procedures of the bow door and inner door are to be complied with.

3) The following measures are to be complied with by all existing ro-ro passenger ships with the date of building before the 30th June 1996, including, when not differently deliberated by the competent flag Administrations, ships only engaged on domestic sea voyages.

a) The location and arrangement of inner doors are to comply with the applicable requirements of the SOLAS Convention and with Rules for Hull (Pt.1, Vol.II) Sec.6, H.1.2.4.

b) Ships with visor door are to comply with Rules for Hull (Pt.1, Vol.II) Sec.6, H.6.2.7 requiring redundant provision of securing devices preventing the upward opening of the bow door. In addition, where the visor door is not self closing under external loads (i.e. the closing moment M_y calculated in accordance with Rules for Hull (Pt.1, Vol.II) Sec.6, H.3.1.3 is less than zero) then the opening moment Mo is not to be taken less than $-M_y$. If drainage arrangements in the space between the inner and bow doors are not fitted, the value of M_o is to be specially considered.

Where available space above the tanktop does not enable the full application of Rules for Hull (Pt.1, Vol.II) Sec.6, H.6.2.7, equivalent measures are to be taken to ensure that the door has positive means for being kept closed during seagoing operation.

c) Ships with visor door are to comply with Rules for Hull (Pt.1, Vol.II) Sec.6, H.6.2.8 requiring securing and supporting devices excluding hinges to be capable of bearing the vertical design force (F_z - 10W) without exceeding the permissable stresses given in Rules for Hull (Pt.1, Vol.II) Sec.6, H.2.1.1.

d) For side-opening doors, the structural arrangements for supporting vertical loads, including securing devices, supporting devices and, where applicable, hull structure above the door, are to be re-assessed in accordance with the applicable requirements of Rules for Hull (Pt.1, Vol.II) Sec.6, H.6 and modified accordingly.

e) The securing and locking arrangements for bow doors and inner doors which may lead to the flooding of a special category space or ro-ro space as defined in the Rules for Hull (Pt.1, Vol.II) Sec.6, H.1.3 are to comply with the following requirements:

- Separate indicator lights and audible alarms are to be provided on the navigation bridge and on each panel to indicate that the doors are closed and that their securing and locking devices are properly positioned.
- The indication panel is to be provided with a lamp test function. It is not to be possible to turn off the indicator light.
- The indication panel on the navigation bridge is to be equipped with a mode selection function “harbour/sea voyage”, so arranged that audible alarm is given if the vessel leaves harbour with the bow doors or inner doors not closed or with any of the securing devices not in the correct position.
- A water leakage detection system with audible alarm and television surveillance are to be arranged to provide an indication to the navigation bridge and to the engine control station of any leakage through the doors.

4.2 Bow Doors and Inner Doors

1) The structural condition of side shell doors and stern doors, especially the primary structure, the securing and supporting arrangements and the hull structure alongside and above the doors, are to be specially examined and any defects rectified.

2) The following measures are to be complied with by all existing ro-ro passenger ships with the date of building before the 30th June 1996, including, when not differently deliberated by the competent flag Administrations, ships only engaged on domestic sea voyages.

   a) The structural arrangement of securing devices and supporting devices of inwards opening doors in way of these securing devices and, where applicable, of the surrounding hull structure is to be reassessed in accordance with the applicable requirements of Rules for Hull (Pt.1, Vol.II) Sec.6, J.6 and modified accordingly.

   b) The securing and locking arrangements for side shell doors and stern doors which may lead to the flooding of a special category space or ro-ro spaces as defined in Rules for Hull (Pt.1, Vol.II) Sec.6, H.1.3, are to comply with the following requirements :

      – Separate indicator lights and audible alarms are to be provided on the navigation bridge and on each operating panel to indicate that the doors are closed and that their securing and locking devices are properly positioned.

      – The indication panel is to be provided with a lamp test function. It shall not be possible to turn off the indicator light.

      – The indication panel on the navigation bridge is to be equipped with a mode selection function "harbour/sea voyage", so arranged that audible alarm is given if the vessel leaves harbour with side shell or stern doors not closed or with any of the securing devices not in the correct position.

      – A water leakage detection system with audible alarm and television surveillance is to be arranged to provide an indication to the navigation bridge and to the engine control room of any leakage through the doors.

3) Documented operating procedures for closing and securing side shell and stern doors are to be kept on board and posted at the appropriate places.

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Annex A Annexes to Section 1-3

A.2 Hull Survey for New Construction

G. Newbuilding survey planning

4. Shipbuilding quality standards for the hull structure during new construction are to be reviewed and agreed during the kick-off meeting. Structural fabrication is to be carried out in accordance with IACS Recommendation 47, "Shipbuilding and Repair Quality Standard", or a Recognized Fabrication Standard (RFS) which has been accepted by BKI prior to the commencement of fabrication/construction. The work is to be carried out in accordance with the Rules and under survey of BKI.

BKI may accept an RFS as an alternative to IACS Rec. 47 provided that 4.1 or 4.2 is complied with as applicable.

4.1 Where a RFS is well established and has well documented history (3 or more years prior to the new ship contract) of successful application to similar designs as the new ship and that history is for the same Shipyard as the new ship. Then the Shipyard is to create a summary document referencing the RFS to be used in construction and highlighting any limitations to usage of the selected RFS. This summary document is to be included with the "record of kick-off meeting" for the ship.

The summary document is also to be included in the SCF, (for Tankers and Bulk Carriers subject to SOLAS Chapter II-1 Part A-1 Regulation 3-10 refer to Rules for Oil Tanker and Bulk Carriers (Pt.1, Vol.XVII.A), Table 3.~~7~~3 Tier II Item 11), as applicable.

4.2 Where a RFS is new or revised or otherwise not as per 4.1 the following steps are to be carried out:

1) The tolerances and fabrications standards of the RFS are to be compared with those of Recommendation 47. Any that are less stringent than those of Recommendation 47 are to be identified.

2) The tolerances and fabrication standards of the RFS identified in 1) are to be assessed to determine the acceptability for use and/or any restrictions for usage for the subject (or proposed) design. Details of how the acceptability for use and/or restrictions are to be recorded, and,

3) A summary document including the outcomes of 1) and 2) is to be compiled. This document is to also include a reference to the RFS, details of the tolerance and fabrication standards not analysed as part of 2) and any limitations to the usage of the RFS.

The summary document is to be included with the "record of the kick-off meeting" of the ship. The summary document is also to be included in the SCF, (for Tankers and Bulk Carriers subject to SOLAS Chapter II-1 Part A-1 Regulation 3-10 refer to Rules for Oil Tanker and Bulk Carriers (Pt.1, Vol.XVII.A), Table 3.~~7~~3 Tier II Item 11), as applicable.

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A.3 The Wastage Allowance

6. Transverse corrugated watertight bulkheads built in accordance Rules for Hull (Pt.1, Vol.II), Section 23, E dan J (IACS UR S18 and S19)

6.1 For bulk carriers of 150 m in length and upwards, contracted for construction on or after 1 July 1998 and carrying solid bulk cargoes having a density of 1.0 t/m^3 and above, Steel renewal is required where the gauged thickness is less than t_{net} + 0.5 mm.

Where the gauged thickness is within the range t_{net} + 0.5 mm and t_{net} + 1.0 mm, coating (applied in accordance with the coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal.

The corrosion addition t_k is to be taken equal to 3.5 mm.

6.2 For the following bulk carriers of 150 m in length and upwards and carrying solid bulk cargoes having a density of 1.78 t/m^3 and above, steel renewal for the gauged thickness of transverse watertight corrugated bulkheads between cargo holds Nos.1 and 2, according to Annex B.6.5:

1. Bulk carriers contracted for construction before 1 July 1998 and not complying with Rules for Hull (Pt.1, Vol.II) Sec.23.E;
2. Bulk carriers the keels of which were laid or which were at a similar stage of construction before 1 July 1999 and not complying with Rules for Hull (Pt.1, Vol.II) Sec.23.E.

----------*end*----------

A.7 Definition

Ballast Tank

A Ballast Tank is a tank that is being used primarily for salt water ballast.

----------*end*----------

Annex B Annexes to Section 4-I

B.4 Technical Assessment in Conjunction with the Planning of Enhanced Surveys for Renewal Survey Hull

3. Technical assessment

3.1. General

3.1.1. There are three basic types of possible failure which may be the subject of technical assessment in connection with planning of surveys: corrosion, cracks and buckling. Contact damages are not normally covered by the survey plan since indents are usually noted in memoranda and assumed to be dealt with as a normal routine by surveyors.

3.1.2. Technical assessments performed in conjunction with the survey planning process should, in principle, be as shown schematically in Fig. B.4.1 which depicts, schematically, how technical assessments can be carried out in conjunction with the survey planning process. The approach is based on an evaluation of experience and knowledge basically related to:

1) design; and
2) corrosion.

----------*end*----------

3.2. Methods

3.2.1. Design details

.1 Damage experience related to the ship in question and similar ships, where available, is the main source of information to be used in the process of planning. In addition, a selection of structural details from the design drawings should be included.

.2 Typical damage experience to be considered will consist of:

- number, extent, location and frequency of cracks; and
- location of buckles.

This information may be found in the survey reports and/or the owner's files, including the results of the owner's own inspections. The defects should be analysed, noted and marked on sketches.

In addition, general experience should be utilized. For example, Fig. B.4.2 shows typical locations in bulk carriers which experience has shown may be susceptible to structural damage. Also, reference[1] should be made which contains a catalogue of typical damages and proposed repair methods for various ship structural details.

Such figures should be used together with a review of the main drawings, in order to compare with the actual structure and search for similar details which may be susceptible to damage. An example is shown in Fig. B.4.3 and Fig.B.4.4.

----------*end*----------

[1] For oil tanker see Ref.2, for bulk carrier see Ref.5, for chemical tankers and double hull oil tankers see Ref.3 and Ref.5, for double side bulk carrier see Ref.3 and Ref.5
Ref. 3, which contains catalogues of typical damages and proposed repair methods for double hull oil tanker structural details which may to some extent be similar to structural details in double skin bulk carrier

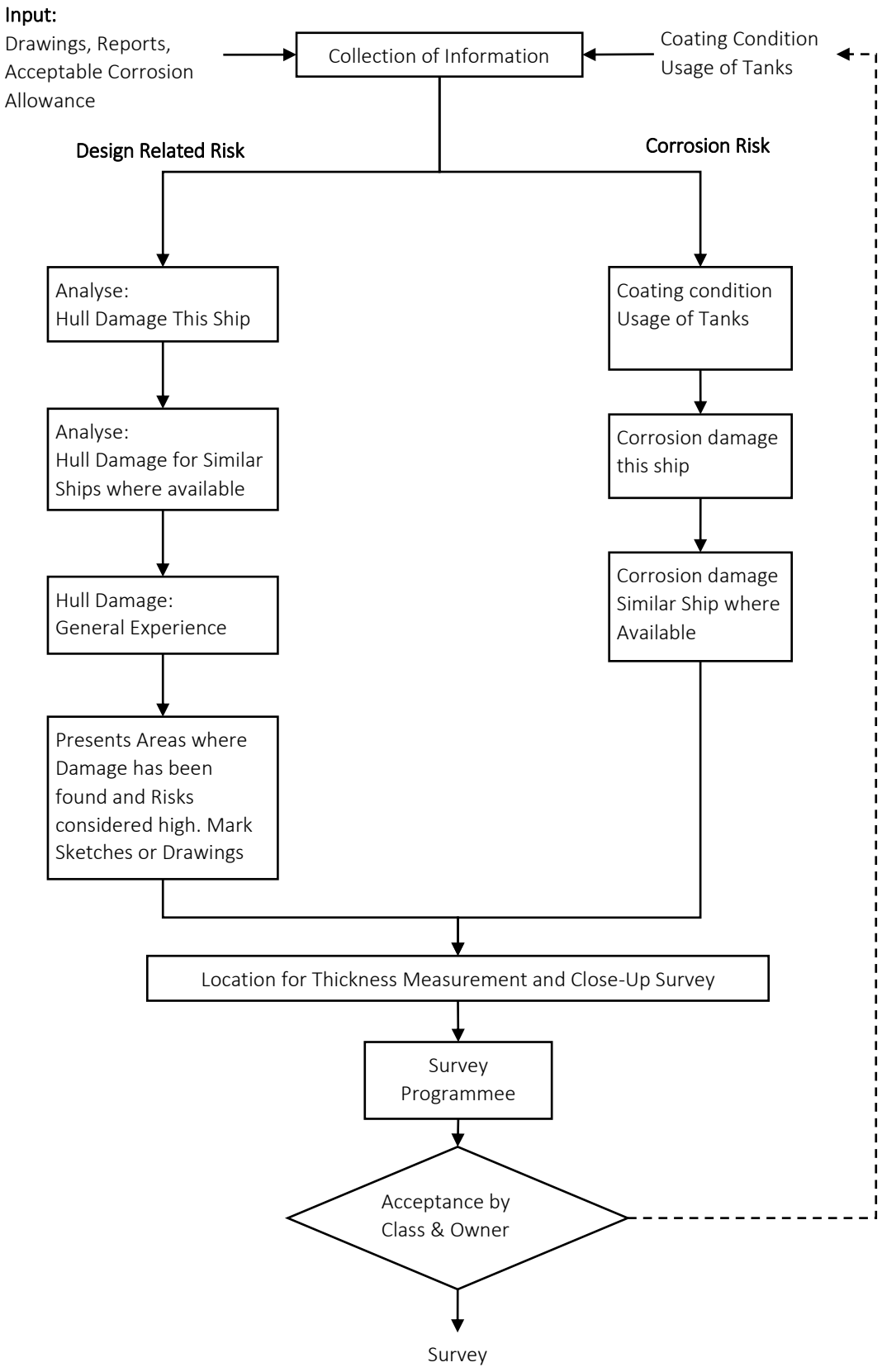


Fig. B.4.1 Technical assessment and the survey planning process

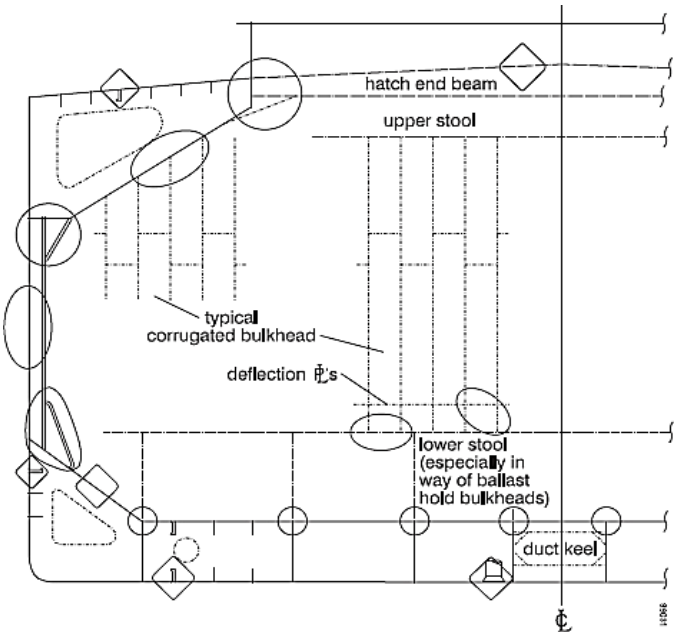
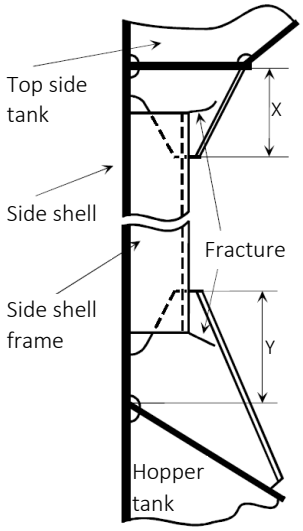
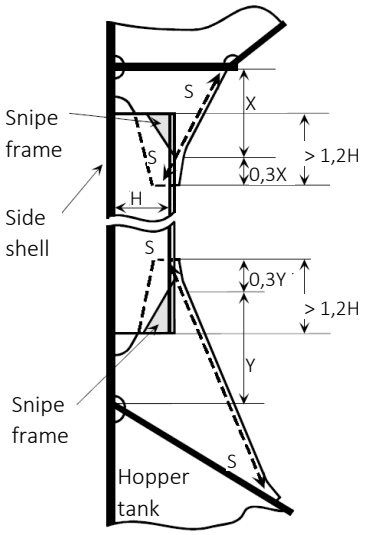


Fig. B.4.2 Typical locations susceptible to structural damage or corrosion in bulk carriers

BULK CARRIER	Guidelines for Surveys, Assessment and Repair of Hull Structure	
Part 1	Cargo hold region	Example No.
Area 3	Cargo hold side structure	1-a
Detail of damage	Fractures in brackets at termination on frame	



Separate bracket configuration



S = Snipped end

Notes on possible cause damage

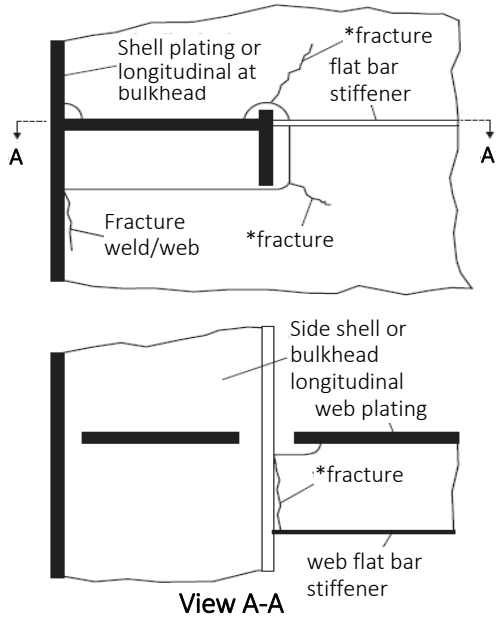
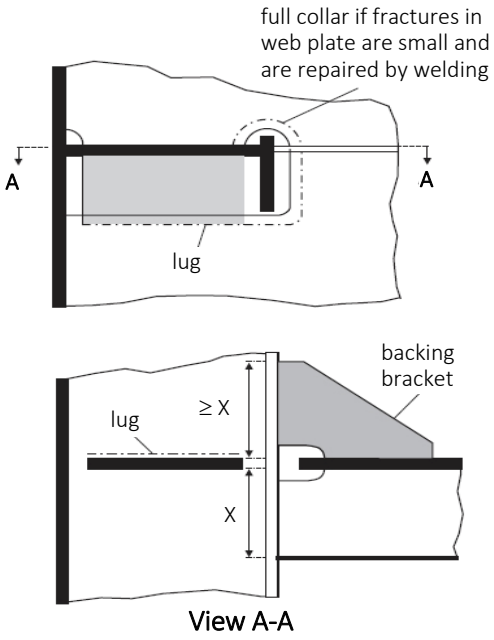
1. This type of damage is caused due to stress concentration.

Notes on repairs

1. For small fractures, e. g. hairline fractures, the fracture can be veed-out, ground, examined by NDT for fractures, and rewelded.
2. For larger/significant fractures consideration is to be given to cropping and partly renewing/renewing the frame brackets. If renewing the brackets, end of frames can be sniped to soften them.
3. If felt prudent, soft toes are to be incorporated at the boundaries of the bracket to the hopper plating.
4. Attention to be given to the structure in wing tank in way of the extended bracket arm. i.e. reinforcement provided in line with the bracket.

Fig. B.4.3 Typical damage and repair example (reproduced from reference 5)

Location :	Connection of longitudinals to transverse webs	
Example No:	1. Web and flat bar fractures at cut-outs for longitudinals stiffener connections	

TYPICAL DAMAGE	PROPOSED REPAIR
	
Note* one or more fractures may occur	Web and flat bar cropped and part renewed or alternatively welded

Factors contributing to damage:

1. Asymmetrical connection of flat bar stiffener resulting in high peak stresses at the heel of the stiffener under fatigue loading.
2. Insufficient area of connection of longitudinal to web plate.
3. Defective weld at return around the plate thickness.
4. High localised corrosion at areas of stress concentration such as flat bar stiffener connections, corners of cut-out for the longitudinal and connection of web to shell at cut-outs.
5. High stress in the web of the transverse.
6. Dynamic sea way load/ship motions

Figure 1	Tankers structure co-operative forum (TSCF) Subject: catalogue of structural details	Figure 1

Fig. B.4.4 Typical damage and repair example (reproduced from reference 1)

----------*end*----------

B.6 Guidelines for the Gauging of the Vertically Corrugated Transverse Watertight Bulkhead Between Holds No. 1 and 2

1. Gauging is necessary to determine the general condition of the structure and to define the extent of possible repairs and/or reinforcements of the vertically corrugated transverse watertight bulkhead for verification of the compliance with Rules for Hull (Pt.1, Vol.II) Sec.23.J.

2. Taking into account the buckling model specified in Rules for Hull (Pt.1, Vol.II) Sec.23.J, in the evaluation of strength of the bulkhead, it is essential to determine the thickness diminution at the critical levels shown in Fig. B.6.5 and Fig. B.6.6 of this annex.

3. The gauging should be carried out at the levels as described below. To adequately assess the scantlings of each individual vertical corrugation, each corrugation flange, web, shedder plate and gusset plate within each of the levels given below should be gauged.

Level (a) **Ships without lower stool** (see Fig. B.6.5):

Locations:

- The mid-breadth of the corrugation flanges at approximately 200 mm above the line of shedder plates;
- The middle of gusset plates between corrugation flanges, where fitted;
- The middle of the shedder plates;
- The mid-breadth of the corrugation webs at approximately 200 mm above the line of shedder plates.

Level (b) **Ships with lower stool** (see Fig. B.6.6):

Locations:

- The mid-breadth of the corrugation flanges at approximately 200 mm above the line of shedder plates;
- The middle of gusset plates between corrugation flanges, where fitted;
- The middle of the shedder plates;
- The mid-breadth of the corrugation webs at approximately 200 mm above the line of shedder plates.

Level (c) **Ships with or without lower stool** (see Fig. B.6.5 and Fig. B.6.6):

Locations:

- The mid-breadth of the corrugation flanges and webs at about the mid-height of the corrugation.

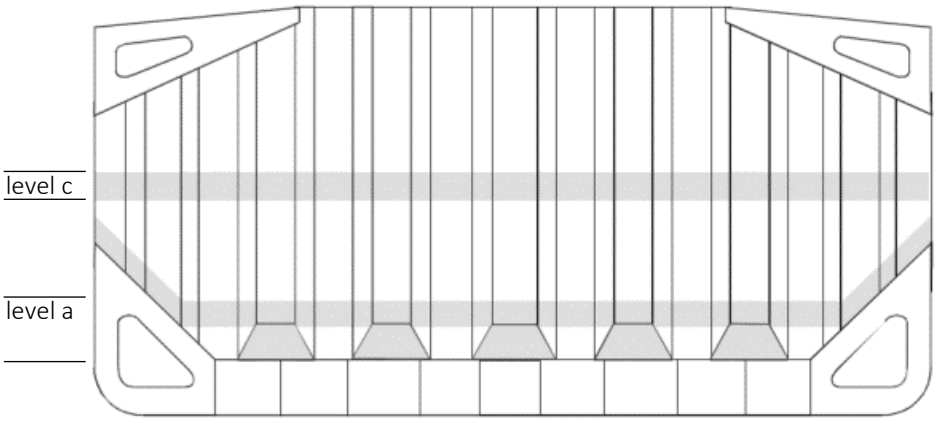


Fig. B.6.5 – Ships without lower stool

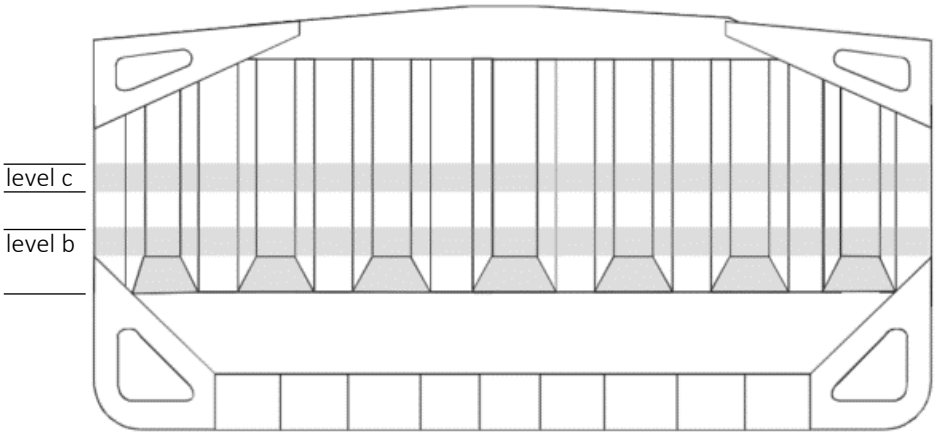


Fig. B.6.6 – Ships with lower stool

4. Where the thickness changes within the horizontal levels, the thinner plate should be gauged. B

5. Renewal/reinforcement shall be done in accordance with the following requirements (see Note 1).

~~3)~~ 1) Steel renewal is required where the gauged thickness is less than t_{net} + 0,5 mm, t_{net} being the thickness used for the calculation of bending capacity and shear stresses as given in Rules for Hull (Pt.1, Vol.II) Sec.23.J.4.2. or the local net plate thickness as given in Rules for Hull (Pt.1, Vol.II) Sec.23.J.4.7. Alternatively, reinforcing doubling strips may be used providing the net thickness is not dictated by shear strength requirements for web plates (see Rules for Hull (Pt.1, Vol.II) Sec.23.J.4.5 and Rules for Hull (Pt.1, Vol.II) Sec.23.J.4.6.2) or by local pressure requirements for web and flange plates (see Rules for Hull (Pt.1, Vol.II) Sec.23.J.4.7).

~~4)~~ 2) Where the gauged thickness is within the range t_{net} + 0,5 mm and t_{net} + 1,0 mm, coating (applied in accordance with the coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal.

Note 1 :

See also Annex UR S19, Rev.5:

Annex 1 : Guidance on Renewal/Reinforcement of Vertically Corrugated Transverse Watertight Bulkhead Between Cargo Holds Nos. 1 And 2.

Annex 2 : Guidance to Access Capability of Carriage Of High Density Cargoes on Existing Bulk Carriers According to The Strength of Transvers Bulkhead Between Cargo Holds Nos.1 And 2.

~~5)~~ 3) Where steel renewal or reinforcement is required, a minimum thickness of t_{net} + 2,5 mm is to be replenished for the renewed or reinforced parts.

~~6)~~ 4) When:

$$0,8 \cdot (R_{eH,1} \cdot t_{fl}) \geq R_{eh,2} \cdot t_{st}$$

where:

$R_{eH,1}$ = minimum upper yield stress, in N/mm^2, of the material used for the corrugation flanges

$R_{eh,2}$ = minimum upper yield stress, in N/mm^2, of the material used for the lower stool side plating or floors (if no stool is fitted)

t_{fl} = flange thickness, in mm, which is found to be acceptable on the basis of the criteria specified in a) above or, when steel renewal is required, the replenished thickness according to the criteria specified in b) above. The above flange thickness dictated by local pressure requirements (see Rules for Hull (Pt.1, Vol.II), Sec.23.J.4.7) need not be considered for this purpose

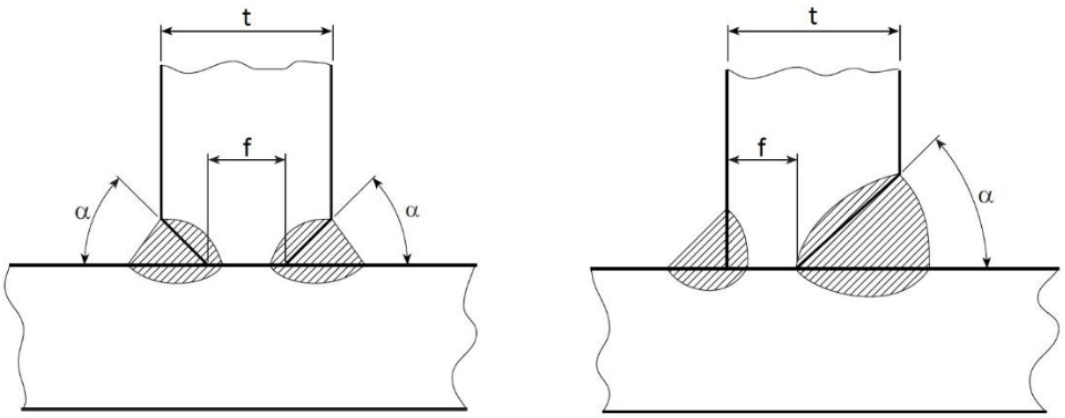
t_{st} = as built thickness, in mm, of the lower stool side plating or floors (if no stool is fitted)

Gussets with shedder plates, extending from the lower end of corrugations up to 0,1 · ℓ or reinforcing doubling strips (on bulkhead corrugations and stool side plating) are to be fitted.

If gusset plates are fitted, the material of such gusset plates is to be the same as that of the corrugation flanges. The gusset plates are to be connected to the lower stool shelf plate or inner bottom (if no lower stool is fitted) by deep penetration welds (see Fig. B.6.7).

~~7)~~ 5) Where steel renewal is required, the bulkhead connections to the lower stool shelf plate or inner bottom (if no stool is fitted) are to be at least made by deep penetration welds (see Fig. B.6.7).

~~8)~~ 6) Where gusset plates are to be fitted or renewed, their connections with the corrugations and the lower stool shelf plate or inner bottom (if no stool is fitted) are to be at least made by deep penetration welds (see Fig. B.6.7).



Root face f : 3 mm to t/3 mm
Groove angle α : 40° to 60°

Fig. B.6.7 Connection by deep penetration welds

----------*end*----------

B.12. ESP Survey Reporting Principles

As a principle, for ships which are subject to ESP, the surveyor is to include the following content in his report for survey of hull structure and piping systems, as relevant for the survey.

The structure of the reporting content may be different, depending on the report system for the respective Societies.

1. General

1.1 A survey report is to be generated in the following cases:

1. In connection with commencement, continuation and / or completion of periodical hull surveys, i.e. annual, intermediate and special surveys, as relevant

2. When structural damages / defects have been found

3. When repairs, renewals or modifications have been carried out

4. When condition of class (recommendation) has been imposed or deleted

1.2 The purpose of reporting is to provide:

1. Evidence that prescribed surveys have been carried out in accordance with applicable classification rules

2. Documentation of surveys carried out with findings, repairs carried out and condition of class (recommendation) imposed or deleted

3. Survey records, including actions taken, which shall form an auditable documentary trail. Survey reports are to be kept in the survey report file required to be on board

4. Information for planning of future surveys

5. Information which may be used as input for maintenance of classification rules and instructions

1.3 When a survey is split between different survey stations, a report is to be made for each portion of the survey. A list of items surveyed, relevant findings and an indication of whether the item has been credited, are to be made available to the next attending surveyor, prior to continuing or completing the survey. Thickness measurement and tank testing carried out is also to be listed for the next surveyor.

2. Extent of the survey

2.1 Identification of compartments where an overall survey has been carried out.

2.2 Identification of locations, in each ballast tank and cargo hold including hatch covers and coamings, where a close-up survey has been carried out, together with information of the means of access used.

2.3 Identification of locations, in each ballast tank and cargo hold including hatch covers and coamings, where thickness measurement has been carried out.

Note:

As a minimum, the identification of location of close-up survey and thickness measurement is to include a confirmation with description of individual structural members corresponding to the extent of requirements stipulated in this requirement based on type of periodical survey and the ship's age.

Where only partial survey is required, i.e. 25% of shell frames, one transverse web, two selected cargo hold transverse bulkheads, the identification is to include location within each ballast tank and cargo hold by reference to frame numbers.

2.4 For areas in ballast tanks and cargo holds where protective coating is found to be in GOOD condition and the extent of close-up survey and / or thickness measurement has been specially considered, structures subject to special consideration are to be identified.

2.5 Identification of tanks subject to tank testing.

2.6 Identification of piping systems on deck and within cargo holds, ballast tanks, pipe tunnels, cofferdams and void spaces where:

1. Examination including internal examination of piping with valves and fittings and thickness measurement, as relevant, has been carried out

2. Operational test to working pressure has been carried out

3. Result of the survey

3.1 Type, extent and condition of protective coating in each tank, as relevant (rated GOOD, FAIR or POOR).

3.2 Structural condition of each compartment with information on the following, as relevant:

1. Identification of findings, such as:
   - corrosion with description of location, type and extent
   - areas with substantial corrosion
   - cracks / fractures with description of location and extent
   - buckling with description of location and extent
   - indents with description of location and extent

2. Identification of compartments where no structural damages / defects are found

3. The report may be supplemented by sketches / photos.

3.3 Thickness measurement report is to be verified and signed by the surveyor controlling the measurements on board.

3.4 Evaluation result of longitudinal strength of the hull girder of oil tankers of 130 m in length and upwards and over 10 years of age. The following data is to be included, as relevant:

1. measured and as-built transverse sectional areas of deck and bottom flanges;

2. diminution of transverse sectional areas of deck and bottom flanges;

3. details of renewals or reinforcements carried out, as relevant (as per 4.2).

4. Actions taken with respect to findings

4.1 Whenever the attending surveyor is of the opinion that repairs are required, each item to be repaired is to be identified in the survey report. Whenever repairs are carried out, details of the repairs effected are to be reported by making specific reference to relevant items in the survey report.

4.2 Repairs carried out are to be reported with identification of:

1. Compartment
2. Structural member
3. Repair method (i.e. renewal or modification) including:
   1) steel grades and scantlings (if different from the original);
   2) sketches/photos, as appropriate;

4. Repair extent

5. NDT / Tests

4.3 For repairs not completed at the time of survey, condition of class is to be imposed with a specific time limit for the repairs. In order to provide correct and proper information to the surveyor attending for survey of the repairs, condition of class is to be sufficiently detailed with identification of each item to be repaired.For identification of extensive repairs, reference may be given to the survey report.

Report 1
Executive Hull Summary for Oil Tanker/Chemical Tanker
(Issued upon Completion of Renewal Survey)

General particulars

Ship's name		Class identify number	
Port of registry		IMO identify number	
Deadweight (t)		National flag	
Date of build		Gross tonnage	
Date of major conversion		Classification notation	
Type of conversion		Owner	

a) The survey reports and documents listed below have been reviewed by the undersigned and found to be satisfactory

b) A summary of the survey is attached herewith on sheet 2

c) The hull special survey has been completed in accordance with the Rules on [date]

Executive Summary Report completed by:	Name: Signature:	Title:
OFFICE	DATE	
Executive Summary Report verified by:	Name: Signature:	Title:
OFFICE	DATE	

Attached reports and documents:
1)
2)
3)
4)
5)
6)

Executive Hull Summary

A) General Particulars:	-	Refer to previous page
B) Report Review:	-	Where and how survey was done
C) Close-up Survey:	-	Extent (Which tanks)
D) Cargo & ballast piping system:	-	Examined
	-	Operationally tested
E) Thickness measurements:	-	Reference to Thickness Measurement report
	-	Summary of where measured
	-	Separate form indicating the tanks/areas with Substantial Corrosion, and corresponding ▪ Thickness diminution ▪ Corrosion pattern
F) Tank Protection:		Separate form indicating:
	-	Location of coating
	-	Condition of coating (if applicable)
G) Repairs:	-	Identification of tanks/areas
H) Conditions of Class:		
I) Memoranda:	-	Acceptable defects
	-	Any points of attention for future surveys, e.g. for Suspect Areas.
	-	Extended Annual/Intermediate survey due to coating breakdown
J) Evaluation results of the ship's longitudinal strength (for oil tankers of 130 m in length and upwards and of over 10 years of age)		
K) Conclusion:	-	Statement on evaluation/verification of Survey report

Extract of Thickness Measurements (NON-CSR SHIPS)

(Reference is made to the thickness measurements report)

Positions of substantially corroded tanks/areas or areas with deep pitting[1]	Thickness diminution [%]	Corrosion pattern[2]	Remarks: e.g. ref. attached sketches

Remarks:

[1] Substantial corrosion, i.e. 75% to 100% of acceptable margins wasted.

[2] P = Pitting;
C = Corrosion in general.
Any bottom plating with a pitting intensity of 20% or more, with wastage in the substantial corrosion range or having an average depth of pitting of 1/3 or more of actual plate thickness is to be noted.

Extract of Thickness Measurements (CSR SHIPS)

(Reference is made to the thickness measurements report)

Positions of substantially corroded tanks/areas or areas with deep pitting[1]	$t_m - t_{ren}$ [mm]	Corrosion pattern[2]	Remarks: e.g. ref. attached sketches

Remarks:

[1] Substantial corrosion, an extent of corrosion such that the assessment of the corrosion pattern indicates a measured thickness between t_{ren} + 0.5mm and t_{ren}.

[2] P = Pitting C = Corrosion in general
Areas with deep pitting assessed according to Rules for Bulk Carrier and Oil Tanker (Pt.1, Vol.XVII.A) Sec.1.E.6 are to be recorded in this column.

Tank Protection

Tank Nos[1]	Tank protection[2]	Coating condition[3]	Remarks

Note:

[1] All segregated ballast tanks and combined cargo/ballast tanks to be listed.

[2] C = Coating; NP = No Protection.

[3] Coating condition according to the following standard:

GOOD condition with only minor spot rusting;

FAIR condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition;

POOR condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.

If coating condition less than "GOOD" is given, extended annual surveys are to be introduced. This is to be noted in Section 4.I.B.4.3 of the Executive Hull Summary.

Evaluation result of longitudinal strength of the hull girder of oil tankers of 130 m in length and upwards and of over 10 years of age (Of sections 1, 2 and 3 below, only one applicable section is to be completed)

1. This section applies to ships regardless of the date of construction: Transverse sectional areas of deck flange (deck plating and deck longitudinals) and bottom flange (bottom shell plating and bottom longitudinals) of the ship's hull girder have been calculated by using the thickness measured, renewed or reinforced, as appropriate, during the special survey most recently conducted after the ship reached 10 years of age, and found that the diminution of the transverse sectional area does not exceed 10% of the as-built area, as shown in Table B 12.1:

Table B.12.1 Transverse Sectional Area of Hull Girder Flange

		Measured	As-built	Diminution
Tranverse section 1	Deck flange	cm^2	cm^2	cm^2 (%)
	Bottom flange	cm^2	cm^2	cm^2 (%)
Transverse section 2	Deck flange	cm^2	cm^2	cm^2 (%)
	Bottom flange	cm^2	cm^2	cm^2 (%)
Transverse section 3	Deck flange	cm^2	cm^2	cm^2 (%)
	Bottom flange	cm^2	cm^2	cm^2 (%)

2. This section applies to ships constructed on or after 1 July 2002: Section moduli of transverse section of the ship's hull girder have been calculated by using the thickness of structural members measured, renewed or reinforced, as appropriate, during the special survey most recently conducted after the ship reached 10 years of age in accordance with the provisions of Annex B.10, B.2.2 and are found to be within their diminution limits determined by BKI[2], as shown in Table B.12.2:

Table B.12.2 Transverse Section Modulus of Hull Girder

		W_{act} (cm^3)[1]	W_{req} (cm^3)[2]	Remarks
Tranverse section 1	Upper deck			
	Bottom			
Transverse section 2	Upper deck			
	Bottom			
Transverse section 3	Upper deck			
	Bottom			

Notes:

[1] W_{act} means the actual section moduli of the transverse section of the ship's hull girder calculated by using the thickness of structural members measured, renewed or reinforced, as appropriate, during the special survey, in accordance with the provisions of Annex B.10,B.2.2

[2] W_{req} means diminution limit of the longitudinal bending strength of ships, as calculated in accordance with the provisions of Annex B.10, B.2.2. The calculation sheets for W_{act} are to be attached to this report.

3. This section applies to ships constructed before 1 July 2002: Section moduli of transverse section of the ship's hull girder have been calculated by using the thickness of structural members measured, renewed or reinforced, as appropriate, during the

[2] The actual transverse section modulus of the hull girder of oil tankers calculated under Annex B.10, B.2.2 is not to be less than 90% of the required section modulus for new buildings specified in IACS Unified Requirements S7 (C = 1.0 C_n is to be used for the purpose of this calculation.) or S11, whichever is the greater.

special during the special survey most recently conducted after the ship reached 10 years of age in accordance with the provisions of Annex B.10, B.2.1.2, and found to meet the criteria required by BKI and that W_{act} is not less than W_{mc} (defined in note 2 of Table B.12.3) as specified in Rules for Hull (Pt.1, Vol.II) Sec.5, C.2, as shown in Table B.12.3. Describe the criteria for acceptance of the minimum section moduli of the ship's hull girder for ships in service required by CCS

Table B.12.3 Transverse Section Modulus of Hull Girder

		W_{act} (cm^3)[1]	W_{req} (cm^3)[2]	Remarks
Tranverse section 1	Upper deck			
	Bottom			
Transverse section 2	Upper deck			
	Bottom			
Transverse section 3	Upper deck			
	Bottom			

Notes:

1 As defined in note 1 of Table B.12.2.

2 W_{mc} means the diminution limit of minimum section modulus calculated in accordance with provisions of Annex B.10, B.2.1.2.

Report 2
Executive Hull Summary for Bulk Carrier
(Issued upon Completion of Special Survey)

General particulars

Ship's name		Class identify number	
Port of registry		IMO identify number	
Deadweight (t)		National flag	
Date of build		Gross tonnage	
Date of major conversion		Classification notation	
Type of conversion		Owner	

a) The survey reports and documents listed below have been reviewed by the undersigned and found to be satisfactory

b) A summary of the survey is attached herewith on sheet 2

c) The hull special survey has been completed in accordance with the Rules on [date]

Executive Summary Report completed by:	Name: Signature:	Title:
OFFICE	DATE	
Executive Summary Report verified by:	Name: Signature:	Title:
OFFICE	DATE	

Attached reports and documents:
1)
2)
3)
4)
5)
6)

Executive Hull Summary

A)	General Particulars:	- Refer to previous page
B)	Report Review:	- Where and how survey was done
C)	Close-up Survey:	- Extent (Which tanks)
D)	Thickness measurements:	- Reference to Thickness Measurement report - Summary of where measured - Separate form indicating the tanks/areas with Substantial Corrosion, and corresponding ▪ Thickness diminution ▪ Corrosion pattern
E)	Tank Protection:	Separate form indicating: - Location of coating - If coating condition "POOR" is given, extended annual surveys are to be introduced. This is to be noted in part G) of the Executive Hull Summary.
F)	Repairs:	- Identification of tanks/areas
G)	Conditions of Class:	
H)	Memoranda:	- Acceptable defects - Any points of attention for future surveys, e.g. for Suspect Areas. - Extended Annual/Intermediate survey due to coating breakdown
I)	Conclusion:	- Statement on evaluation/verification of survey Report

Extract of Thickness Measurements (NON-CSR SHIPS)

(Reference is made to the thickness measurements report)

Positions of substantially corroded tanks/areas or areas with deep pitting[1]	Thickness diminution [%]	Corrosion pattern[2]	Remarks: e.g. ref. attached sketches

Remarks:

[1] Substantial corrosion, i.e. 75% to 100% of acceptable margins wasted.

[2] P = Pitting;
C = Corrosion in general.

Any bottom plating with a pitting intensity of 20% or more, with wastage in the substantial corrosion range or having an average depth of pitting of 1/3 or more of actual plate thickness is to be noted.

Extract of Thickness Measurements (CSR SHIPS)

(Reference is made to the thickness measurements report)

Positions of substantially corroded tanks/areas or areas with deep pitting[1]	$t_m - t_{ren}$ [mm]	Corrosion pattern[2]	Remarks: e.g. ref. attached sketches

Note:

[1] Substantial corrosion, an extent of corrosion such that the assessment of the corrosion pattern indicates a measured thickness between t_{ren} + 0.5 mm and t_{ren}.

[2] P = Pitting C = Corrosion in general
Areas with deep pitting assessed according to Rules for Bulk Carrier and Oil Tanker (Pt.1, Vol.XVII.A) Sec.1.E.6 are to be recorded in this column.

Tank Protection

Tank Nos[1]	Tank protection[2]	Coating condition[3]	Remarks

Remark:

[1] All ballast tanks and cargo holds to be listed.

[2] C = Coating; NP = No Protection.

[3] Coating condition according to the following standard:

GOOD condition with only minor spot rusting;

FAIR condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition;

POOR condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.

If coating condition "POOR" is given, extended annual surveys are to be introduced. This is to be noted in part H) of the Executive Hull Summary.

----------*end*----------

B.13 Recommended Procedures for Thickness Measurements[1]

13.1A Recommended Procedures for Thickness Measurements of Ships

Notes

1.1 This document is to be used for recording thickness measurements for all ships as required by Section 3, D.

1.2 Reporting forms TM1-G, TM2-G (i) and (ii), TM3-G, TM4-G, TM5-G (sheets 4 to 9) are to be used for recording thickness measurements and the maximum allowable diminution is to be stated. The maximum allowable diminution is to be stated in an attached document.

GENERAL PARTICULARS

Ship's name:
IMO number:
Class identity number:
Port of registry:
Gross tons:
Deadweight:
Date of build:
Classification society:

Name of Company performing thickness measurement:
Thickness measurement company certified by:
Certificate No:
Certificate valid from.....to.....
Place of measurement:
First date of measurement:
Last date of measurement:
Special survey/intermediate survey due:*
Details of measurement equipment:
Qualification of operators:

Report number: consisting of Sheets

Name of operator:	Name of surveyor:
Signature of operator:	Signature of surveyor:
Company official stamp:	Classification society official stamp:

[1] This Appendix is recommendatory. For ESP ships, IMO No. is to be marked in the general particulars.
* Delete as appropriate.

Sheet 4

TM1-G Report on Thickness Measurement of All Deck Plating, All Bottom Shell Plating or Side Shell Plating*

(*delete as appropriate)

Ship's name..... Class identity No. ..... Report No. .....

STRAKE POSITION																	
PLATE POSITION	No. or Letter	Org. Thk. mm	Forward Reading						Aft Reading						Mean Diminution %		Maximum Allowable Diminution
			Gauged		Diminution P		Diminution S		Gauged		Diminution P		Diminution S				
			P	S	mm	%	mm	%	P	S	mm	%	mm	%	P	S	mm
12th forward																	
11th																	
10th																	
9th																	
8th																	
7th																	
6th																	
5th																	
4th																	
3rd																	
2nd																	
1st																	
Amidships																	
1st aft																	
2nd																	
3rd																	
4th																	
5th																	
6th																	
7th																	
8th																	
9th																	
10th																	
11th																	
12th																	

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   A – All strength deck plating within the cargo length area.
   B – All keel, bottom shell plating and bilge plating within the cargo length area.
   C – Side shell plating that is all wind and water strakes within the cargo length area.
   D – Side shell plating that is selected wind and water strakes outside the cargo length area.
2. *The strake position is to be clearly indicated as follows:*
   2.1 *For strength deck indicate the number of the strake of plating inboard from the stringer plate.*
   2.2 *For bottom plating indicate the number of the strake of plating outboard from the keel plate.*
   2.3 *For side shell plating give number of the strake of plating below sheer strake and letter as shown on shell expansion.*
3. *Only the deck plating strakes outside line of openings are to be recorded.*
4. *Measurements are to be taken at the forward and aft areas of all plates, and the single measurements recorded are to represent the average of multiple measurements.*
5. *The maximum allowable diminution could be stated in an attached document.*

Sheet 5
TM2-G(i)

Report on Thickness Measurement of Shell and Deck Plating (one, two or three transverse sections)

Ship's name..... Class identity No. ..... Report No. .....

STRENGTH DECK AND SHEERSTRAKE PLATING																											
	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
STRAKE POSITION	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution *P*		Diminution *S*		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution *P*		Diminution *S*		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution *P*		Diminution *S*	
		mm	mm	*P*	*S*	mm	%	mm	%		mm	mm	*P*	*S*	mm	%	mm	%		mm	mm	*P*	*S*	mm	%	mm	%
Stringer Plate																											
1st strake inboard																											
2nd																											
3rd																											
4th																											
5th																											
6th																											
7th																											
8th																											
9th																											
10th																											
11th																											
12th																											
13th																											
14th																											
Centre strake																											
Sheer strake																											
TOPSIDE TOTAL																											

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: Strength deck plating and sheer strake plating transverse sections: Two or three sections within the cargo length area, comprising of the structural items.*
2. *Only the deck plating strakes outside the line of openings are to be recorded.*
3. *The topside area comprises deck plating, stringer plate and sheerstrake (including rounded gunwales).*
4. *The exact frame station of measurement is to be stated.*
5. *The single measurements recorded are to represent the average of multiple measurements.*
6. *The maximum allowable diminution could be stated in an attached document.*

Sheet 6
TM2-G(ii)

Report on Thickness Measurement of Shell and Deck Plating (one, two or three transverse sections)

Ship's name..... Class identity No. ..... Report No. .....

SHELL PLATING																													
	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER										
STRAKE POSITION	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution *P*		Diminution *S*		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution *P*		Diminution *S*		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution *P*		Diminution *S*			
		mm	mm	*P*	*S*	mm	%	mm	%		mm	mm	*P*	*S*	mm	%	mm	%		mm	mm	*P*	*S*	mm	%	mm	%		
1st below Sheer strake																													
2nd																													
3rd																													
4th																													
5th																													
6th																													
7th																													
8th																													
9th																													
10th																													
11th																													
12th																													
13th																													
14th																													
15th																													
16th																													
17th																													
18th																													
19th																													
20th																													
Keel strake																													
BOTTOM TOTAL																													

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: Shell plating transverse sections: Two* or three sections within the cargo length area, comprising of the structural items.
2. *The bottom area comprises keel, bottom and bilge plating.*
3. *The exact frame station of measurement is to be stated.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The maximum allowable diminution could be stated in an attached document.*

Sheet 7
TM3-G

Report on Thickness Measurement of Longitudinal Members (one, two or three transverse sections)

Ship's name..... Class identity No. ..... Report No. .....

STRUCTURAL MEMBER	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution *P*		Diminution *S*		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution *P*		Diminution *S*		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution *P*		Diminution *S*	
		mm	mm	*P*	*S*	mm	%	mm	%		mm	mm	*P*	*S*	mm	%	mm	%		mm	mm	*P*	*S*	mm	%	mm	%

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: Longitudinal members at transverse sections: Two or three sections within the cargo length area, comprising of the appropriate structural items.*
2. *The exact frame station of measurement is to be stated.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 8
TM4-G

Report on Thickness Measurement of Transverse Bulkheads

Ship's name..... Class identity No. ..... Report No. .....

LOCATION OF STRUCTURE:							FRAME NO.:	
STRUCTURAL COMPONENT (PLATING/STIFFENER)								
	Original Thickness mm	Max. Alwb. Dim.mm	Gauged		Diminution *P*		Diminution *S*	
			Port	Starboard	mm	%	mm	%

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of cargo hold transverse bulkheads.*
2. *The single measurements recorded are to represent the average of multiple measurements.*
3. *The maximum allowable diminution could be stated in an attached document.*

Sheet 9
TM5-G

Report on Thickness Measurement of Miscellaneous Structural Members

Ship's name..... Class identity No. ..... Report No. .....

STRUCTURAL MEMBER:									SKETCH
LOCATION OF STRUCTURE:									
Description	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged		Diminution *P*		Diminution *S*		
			P	*S*	mm	%	mm	%	

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of miscellaneous structural members.*
2. *The single measurements recorded are to represent the average of multiple measurements.*
3. *The maximum allowable diminution could be stated in an attached document.*

13.1B Recommended Procedures for Thickness Measurements of Ships Built According to The Net Scantling Approach[1]

Notes:

1. This document is to be used for recording thickness measurements of ships built according to the net scantling approach as required by Section 3, D.

2. Reporting forms TM1-G(NSD), TM2-G(NSD) (i) and (ii), TM3-G(NSD), TM4-G(NSD), TM5-G(NSD) (sheets 4 to 9) are to be used for recording thickness measurements. The as-built thickness, the voluntary thickness addition and renewal thickness (minimum allowable thickness) are to be stated in the said forms.

GENERAL PARTICULARS

Ships name:
IMO number:
Class identity number:
Port of registry:
Gross tons:
Deadweight:
Date of build:
Classification society:

Name of Company performing thickness measurement:
Thickness measurement company certified by:
Certificate No:
Certificate valid from.....to.....
Place of measurement:
First date of measurement:
Last date of measurement:
Special survey/intermediate survey due:*
Details of measurement equipment:
Qualification of operators:

Report Number: consisting of Sheets

Names of operator:..... Name of surveyor:.....
Signature of operator:..... Signature of surveyor:.....
Company official stamp: Classification society official stamp:

[1] This Appendix is recommendatory.
* Delete as appropriate.

Sheet 4
TM1-G(NSD)

Report on Thickness Measurement of All Deck Plating, All Bottom Plating or Side Shell Plating*

(* delete as appropriate)

Ship's name..... Class identity No. ..... Report No. .....

STRAKE POSITION																		
PLATE POSITION	No. or Letter	As Built Thk. mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Forward Reading						Aft Reading						Mean Remaining Corr. Addition, mm [(c1)+(c2)]/2	
					Gauged Thk. mm (b1)		Remaining Corr. Addition, mm (c1)=(b1)-(a)				Gauged Thk. mm (b2)		Remaining Corr. Addition, mm (c2)=(b2)-(a)					
					P	*S*	*P*		*S*		*P*	*S*	*P*		*S*		*P*	*S*
12th																		
11th																		
10th																		
9th																		
8th																		
7th																		
6th																		
5th																		
4th																		
3rd																		
2nd																		
1st forward																		
Amidships																		
1st aft																		
2nd																		
3rd																		
4th																		
5th																		
6th																		
7th																		
8th																		
9th																		
10th																		
11th																		
12th																		

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   A – All strength deck plating within the cargo length area.
   B – All keel, bottom shell plating and bilge plating within the cargo length area.
   C – Side shell plating that is all wind and water strakes within the cargo length area.
   D – Side shell plating that is selected wind and water strakes outside the cargo length area.
2. *The strake position is to be clearly indicated as follows:*
   - 2.1 *For strength deck indicate the number of the strake of plating inboard from the stringer plate.*
   - 2.2 *For bottom plating indicate the number of the strake of plating outboard from the keel plate.*
   - 2.3 *For side shell plating give number of the strake of plating sheer strake and letter as shown on shell expansion.*
3. *Only the deck plating strakes outside line of openings are to be recorded.*
4. *Measurements are to be taken at the forward and aft areas of all plates and the single measurements recorded are to represent the average of multiple measurements.*
5. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and substantial corrosion allowable limits, the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 5
TM2-G(NSD)(i) Report on Thickness Measurement of Shell and Deck Plating (one, two or three transverse sections)

Ship's name..... Class identity No. ..... Report No. .....

STRENGTH DECK AND SHEERSTRAKE PLATING																								
	FIRST TRANSVERSE SECTION AT FRAME NUMBER								SECOND TRANSVERSE SECTION AT FRAME NUMBER								THIRD TRANSVERSE SECTION AT FRAME NUMBER							
STRAKE POSITION	No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)		No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)		No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr Addition, mm (b)-(a)	
					P	*S*	*P*	*S*					*P*	*S*	*P*	*S*					*P*	*S*	*P*	*S*
Stringer plate																								
1st strake inboard																								
2nd																								
3rd																								
4th																								
5th																								
6th																								
7th																								
8th																								
9th																								
10th																								
11th																								
12th																								
13th																								
14th																								
Centre strake																								
Sheer strake																								
TOPSIDE TOTAL																								

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: Strength deck plating and sheer strake plating transverse sections: One, two or three sections within the cargo length area, comprising of the structural items.*
2. *Only the deck plating strakes outside the line of openings are to be recorded.*
3. *The topside area comprises deck plating, stringer plate and sheer strake (including rounded gunwales).*
4. *The exact frame station of measurement is to be stated.*
5. *The single measurements recorded are to represent the average of multiple measurements.*
6. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and substantial corrosion allowable limits, the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 6
TM2-G(NSD)(ii) Report on Thickness Measurement of Shell Plating (one, two or three transverse sections)

Ship's name..... Class identity No. ..... Report No. .....

SHELL PLATING																															
	FIRST TRANSVERSE SECTION AT FRAME NUMBER										SECOND TRANSVERSE SECTIONAT FRAME NUMBER										THIRD TRANSVERSE SECTION AT FRAMENUMBER									
STRAKE POSITION	No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)			
					P	*S*	*P*		*S*						*P*	*S*	*P*		*S*						*P*	*S*	*P*		*S*	
1st below sheer strake																															
2nd																															
3rd																															
4th																															
5th																															
6th																															
7th																															
8th																															
9th																															
10th																															
11th																															
12th																															
13th																															
14th																															
15th																															
16th																															
17th																															
18th																															
19th																															
20th																															
Keel strake																															
BOTTOM TOTAL																															

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: Shell plating transverse sections: One, two or three sections within the cargo length area, comprising of the structural items.*
2. *The bottom area comprises keel, bottom and bilge plating.*
3. *The exact frame station of measurement is to be stated.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and substantial corrosion allowable limits, the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 7
TM3-G(NSD) Report on Thickness Measurement of Longitudinal Members (one, two or three transverse sections)

Ship's name..... Class identity No. ..... Report No. .....

	FIRST TRANSVERSE SECTION AT FRAME NUMBER								SECOND TRANSVERSE SECTIONAT FRAME NUMBER								THIRD TRANSVERSE SECTION AT FRAME NUMBER							
STRUCTURAL MEMBER	Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)		Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)		Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)	
					P	*S*	*P*	*S*					*P*	*S*	*P*	*S*					*P*	*S*	*P*	*S*

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: Longitudinal Members at transverse sections: One, two or three sections within the cargo length area, comprising of the appropriate structural items.*
2. *The exact frame station of measurement is to be stated.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and substantial corrosion allowable limits, the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 8
TM4-G(NSD) Report on Thickness Measurement of Transverse Bulkheads

Ship's name..... Class identity No. ..... Report No. .....

LOCATION OF STRUCTURE:						FRAME NO.:			
STRUCTURAL COMPONENT (PLATING/STIFFENER)									
STRUCTURAL COMPONENT (PLATING/STIFFENER)	As Built Thickness mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)			
				P	*S*	*P*		*S*	

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of cargo hold transverse bulkheads.*
2. *The single measurements recorded are to represent the average of multiple measurements.*
3. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and substantial corrosion allowable limits, the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 9
TM5-G(NSD) Report on Thickness Measurement of Miscellaneous Structural Members

Ship's name..... Class identity No. ..... Report No. .....

STRUCTURAL COMPONENT:										SKETCH
LOCATION OF STRUCTURE:										
Description	As Built Thk. mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)				
				P	*S*	*P*		*S*		

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of miscellaneous structural members.*
2. *The single measurements recorded are to represent the average of multiple measurements.*
3. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and substantial corrosion allowable limits, the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

13.1B.1 Recommended Procedures for Thickness Measurements of Oil Tankers, Ore/Oil Ships, etc.[1]

Notes

1.1. This document is to be used for recording thickness measurements for oil tanks as required by Section 4, B.

1.2. Sheets TM1-T, TM2-T, TM3-T, TM4-T, TM5-T and TM6-T (sheets 4 to 10) are to be used for recording thickness measurements and the maximum allowable diminution is to be stated.

The maximum allowable diminution could be stated in an attached document.

1.3. The remaining sheets 11 to 15 are guidance diagrams and notes relating to the reporting format and the procedure for the thickness measurements.

GENERAL PARTICULARS

Ship's name:
IMO number:
Class identity number:
Port of registry:
Gross tons:
Deadweight:
Date of build:
Classification society:

Name of company performing thickness measurement:
Thickness measurement company certified by:
Certificate No.
Certificate valid from_____to _____
Place of measurement:
First date of measurement:
Last date of measurement:
Special survey/intermediate survey due*:
Details of measurement equipment:
Qualification of operator:

Report number: consisting of Sheets

Name of operator: _____
Signature of operator:___
Company official stamp:_
Official Stamp:

Name of surveyor: _____
Signature of surveyor: _____
Classification society
_____

[1] The Recommended Procedures for Thickness Measurements are also applicable to chemical tankers.
* Delete as appropriate.

Sheet 4
TM1-T

Report on Thickness Measurement of All Deck Plating, All Bottom Shell Plating orSide Shell Plating*

(*delete as appropriate)

Ship's name..... Class Identity No. ..... Report No. .....

STRAKE POSITION																	
PLATE POSITION	No. or Letter	Org. Thk. mm	Forward Reading						Aft Reading						Mean Diminution %		Maximum Allowable Diminution
			Gauged		Diminution P		Diminution S		Gauged		Diminution P		Diminution S				
			P	S	mm	%	mm	%	P	S	mm	%	mm	%	P	S	mm
12th forward																	
11th																	
10th																	
9th																	
8th																	
7th																	
6th																	
5th																	
4th																	
3rd																	
2nd																	
1st																	
Amidships																	
1st aft																	
2nd																	
3rd																	
4th																	
5th																	
6th																	
7th																	
8th																	
9th																	
10th																	
11th																	
12th																	

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   A – All strength deck plating within the cargo area.
   B – All keel, bottom shell plating and bilge plating within the cargo area.
   C – Side shell plating including selected wind and water strakes outside cargo area.
   D – All wind and water strakes within cargo area.
2. *The strake position is to be clearly indicated as follows:*
3. *For strength deck indicate the number of the strake of plating inboard from the stringer plate.*
4. *For bottom plating indicate the number of the strake of plating outboard from the keel plate.*
5. *For side shell plating give number of the strake of plating below sheer strake and letter as shown on shell expansion.*
6. *For oil tankers all deck plating strakes are to be recorded, for ore/oil ships only the deck plating strakes outside line of openings are to be recorded.*
7. *Measurements are to be taken at the forward and aft areas of all and where plates cross ballast/cargo tank boundaries separate measurements for the area of plating in way of each type of tank are to be recorded.*
8. *The single measurements recorded are to represent the average of multiple measurements.*
9. *The maximum allowable diminution could be stated in an attached document.*

Sheet 5
TM2-T(i)

Report on Thickness Measurement of Shell and Deck Plating (one, two or three transverse sections)

Ship's name..... Class identity No. ..... Report No. .....

STRENGTH DECK AND SHEERSTRAKE PLATING																											
	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
STRAKE POSITION	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%
Stringer Plate																											
1st strake inboard																											
2nd																											
3rd																											
4th																											
5th																											
6th																											
7th																											
8th																											
9th																											
10th																											
11th																											
12th																											
13th																											
14th																											
centre strake																											
sheer strake																											
TOPSIDE TOTAL																											

Operators signature:.....

Notes:

1. *This report form is to be used for recording the thickness measurements of: Strength deck plating and sheer strake plating transverse sections:*
   One, two or three sections within the cargo area comprising of the structural items (1), (2) and (3) as shown on the diagrams of typical transverse sections.
2. *For oil tankers all deck plating strakes are to be recorded and for ore/oil ships only the deck plating strakes outside the line of openings are to be recorded.*
3. *The topside area comprises deck plating, stringer plate and sheer strake (including rounded gunwales).*
4. *The exact frame station of measurement is to be stated.*
5. *The single measurements recorded are to represent the average of multiple measurements.*
6. *The maximum allowable diminution could be stated in an attached document.*

Sheet 6
TM2-T(ii)

Report on Thickness Measurement of Shell and Deck Plating (one, two or three transverse sections)

Ship's name..... Class Identity No. ..... Report No. .....

SHELL PLATING																											
	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
STRAKE POSITION	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%
1st below sheer strake																											
2nd																											
3rd																											
4th																											
5th																											
6th																											
7th																											
8th																											
9th																											
10th																											
11th																											
12th																											
13th																											
14th																											
15th																											
16th																											
17th																											
18th																											
19th																											
20th																											
keel strake																											
BOTTOM TOTAL																											

Operators signature:.....

Notes:

1. *This report form is to be used for recording the thickness measurements of: Shell plating transverse sections:*
   One, two or three sections within the cargo area comprising of the structural items (4), (5) and (6) and (7) as shown on the diagrams of typical transverse sections.
2. *The bottom area comprises keel, bottom and bilge plating.*
3. *The exact frame station of measurement is to be stated.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The maximum allowable diminution could be stated in an attached document.*

Sheet 7
TM3-T

Report on Thickness Measurement of Longitudinal Members (one, two or three transverse sections)

Ship's name..... Class identity No. ..... Report No. .....

	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER										THIRD TRANSVERSE SECTION AT FRAME NUMBER									
STRUCTURAL MEMBER	Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S			Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%			mm	mm	P	S	mm	%	mm	%	

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurements of: Longitudinal members at transverse sections:*
   One, two or three sections within the cargo area comprising of the appropriate structural items (8) to (20) as shown on the diagrams of typical transverse sections.
2. *The exact frame station of measurement is to be stated.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 8
TM4-T

Report on Thickness Measurement of Transverse Structural Members
In the cargo oil and water ballast tanks within the cargo tank length

Ship's name..... Class identity No. ..... Report No. .....

TANK DESCRIPTION:											
LOCATION OF STRUCTURE:											
STRUCTURAL MEMBER	ITEM	Original Thickness mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S			
				P	S	mm	%	mm	%		

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurements of transverse structural members, comprising of the appropriate structural items (25) to (33) as shown on diagrams of typical transverse section.*
2. *Guidance for areas of measurement is indicated on Sheet 15 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 9
TM5-T

Report on Thickness of W.T./O.T. Transverse Bulkheads
Within the cargo tank or cargo hold spaces

Ship's name..... Class Identity No. ..... Report No. .....

TANK/HOLD DESCRIPTION:								
LOCATION OF STRUCTURE:					FRAME NO.:			
STRUCTURAL COMPONENT (PLATING/STIFFENER)	Original Thickness mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S	
			Port	Starboard	mm	%	mm	%

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of W.T./O.T. transverse bulkheads.*
2. *Guidance for areas of measurement is indicated on Sheet 15 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 10
TM6-T

Report on Thickness measurement of Miscellaneous Structural Members

Ship's name..... Class Identity No. ..... Report No. .....

STRUCTURAL MEMBER:									SKETCH
LOCATION OF STRUCTURE:									
Description	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S		
			P	S	mm	%	mm	%	

Operators signature:.....

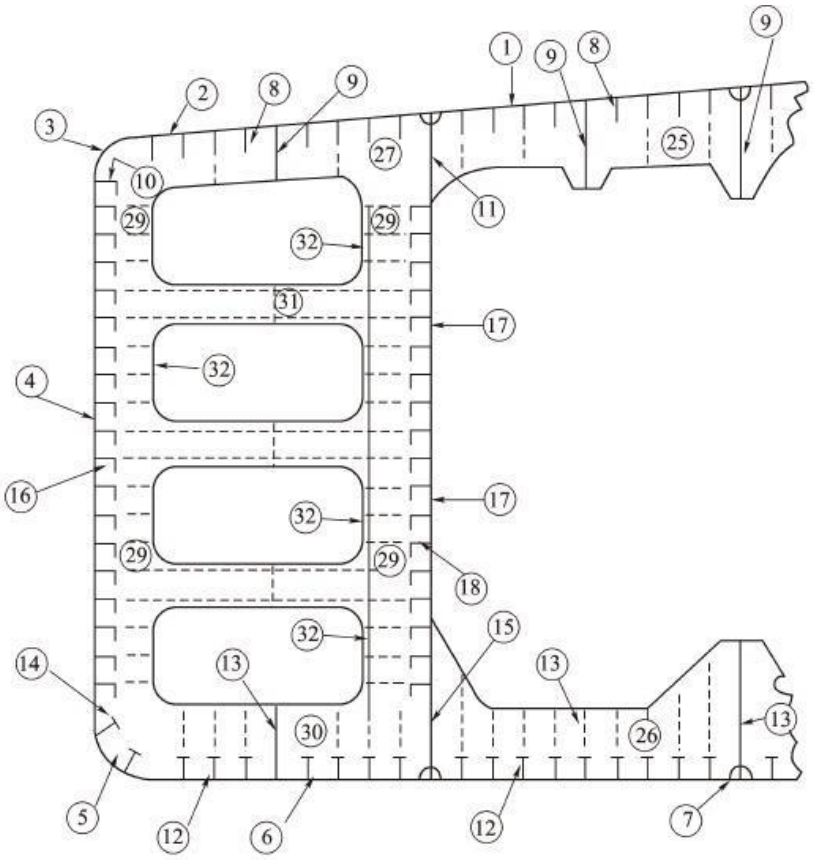
Notes:

1. *This report is to be used for recording the thickness measurement of miscellaneous structural members including the structural items (36), (37) and (38).*
2. *The single measurements recorded are to represent the average of multiple measurements.*
3. *The maximum allowable diminution could be stated in an attached document.*

Sheet 11

Thickness Measurement - Oil Tankers, Ore/Oil Ships and etc.

Oil Tanker - Typical Transverse Section Indicating Longitudinal and Transverse Members

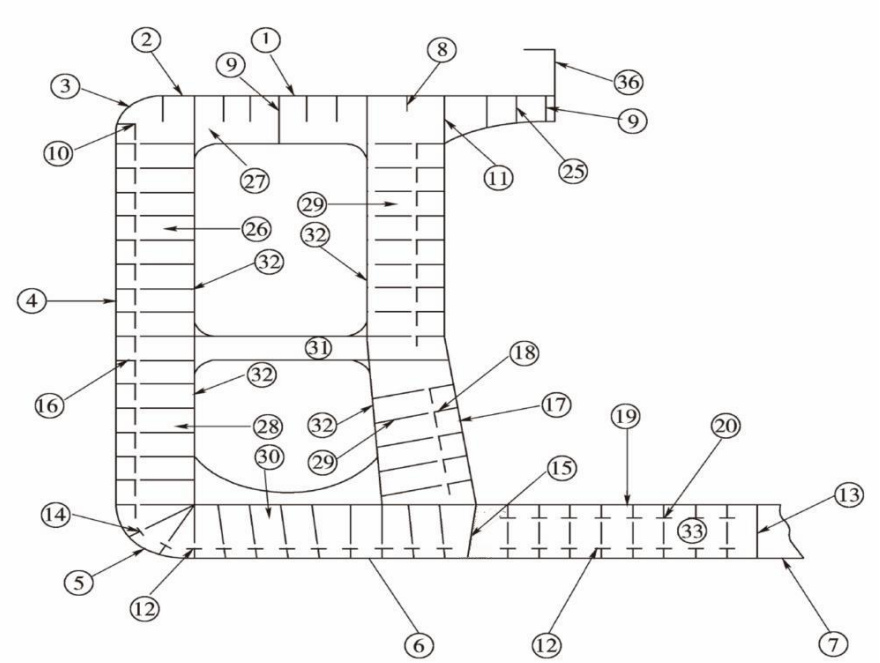


Report on TM2-T(1) & (2)	Report on TM3-T	Report on TM4-T
1. Strength deck plating 2. Stringer plate 3. Sheer strake 4. Side shell plating 5. Bilge plating 6. Bottom shell plating 7. Keel plate	8. Deck longitudinals 9. Deck girders 10. Sheer strake longitudinals 11. Longitudinal bulkhead top strake 12. Bottom longitudinals 13. Bottom girders 14. Bilge longitudinals 15. Longitudinal bulkhead lower strake 16. Side shell longitudinals 17. Longitudinal bulkhead plating (remainder) 18. Longitudinal bulkhead longitudinals 19. Inner bottom plating 20. Inner bottom longitudinals 21. 22. 23. 24.	25. Deck transverse centre tank 26. Bottom transverse centre tank 27. Deck transverse wing tank 28. Side shell vertical web 29. Longitudinal bulkhead vertical web 30. Bottom transverse wing tank 31. Struts 32. Transverse web face plate 33. D.B.Floors 34. 35.
		Report on TM6-T
		36. Hatch coamings 37. Deck plating between hatches 38. Hatch covers 39. 40.

Sheet 12

Thickness Measurement - Oil Tankers, Ore/Oil Ships and etc.

Oil/Ore Ship - Typical Transverse Section Indicating Longitudinal and Transverse Members



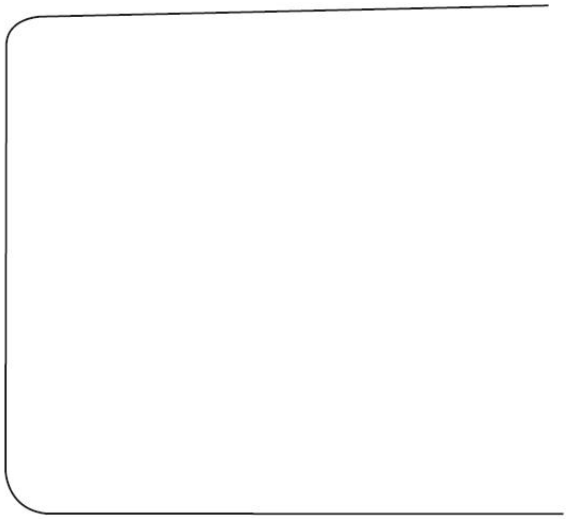
Report on TM2-T(1) & (2)	Report on TM3-T	Report on TM4-T
1. Strength deck plating 2. Stringer plate 3. Sheer strake 4. Side shell plating 5. Bilge plating 6. Bottom shell plating 7. Keel plate	8. Deck longitudinals 9. Deck girders 10. Sheer strake longitudinals 11. Longitudinal bulkhead top strake 12. Bottom longitudinals 13. Bottom girders 14. Bilge longitudinals 15. Longitudinal bulkhead lower strake 16. Side shell longitudinals 17. Longitudinal bulkhead plating (remainder) 18. Longitudinal bulkhead longitudinals 19. Inner bottom plating 20. Inner bottom longitudinals 21. 22. 23. 24.	25. Deck transverse centre tank 26. Bottom transverse centre tank 27. Deck transverse wing tank 28. Side shell vertical web 29. Longitudinal bulkhead vertical web 30. Bottom transverse wing tank 31. Struts 32. Transverse web face plate 33. D.B.Floors 34. 35.
		Report on TM6-T
		36. Hatch coamings 37. Deck plating between hatches 38. Hatch covers 39. 40.

Sheet 13

Thickness Measurement - Oil Tankers, Ore/Oil Ships and etc.

Transverse Section Outline

To be used for longitudinal and transverse members where typical oil tanker or oil/ore ship sections are not applicable

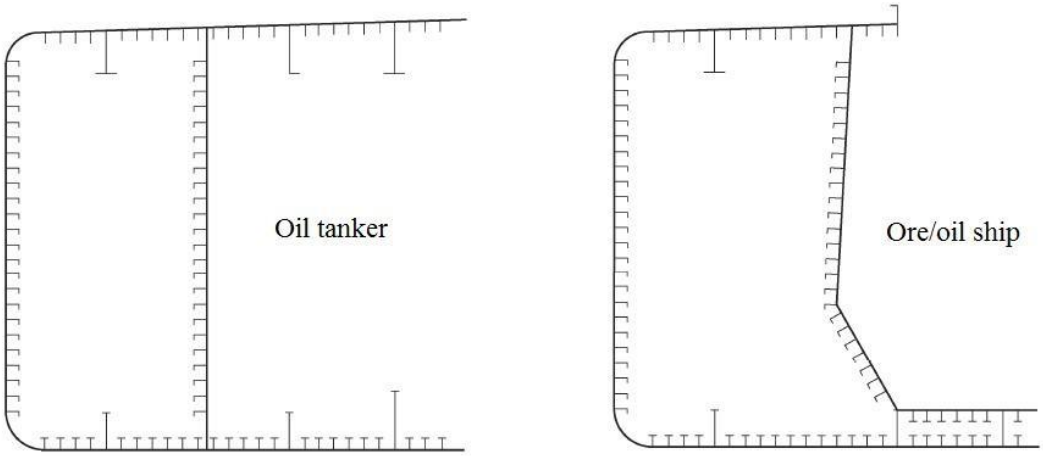


Report on TM2-T(1) & (2)	Report on TM3-T	Report on TM4-T
1. Strength deck plating 2. Stringer plate 3. Sheer strake 4. Side shell plating 5. Bilge plating 6. Bottom shell plating 7. Keel plate	8. Deck longitudinals 9. Deck girders 10. Sheer strake longitudinals 11. Longitudinal bulkhead top strake 12. Bottom longitudinals 13. Bottom girders 14. Bilge longitudinals 15. Longitudinal bulkhead lower strake 16. Side shell longitudinals 17. Longitudinal bulkhead plating (remainder) 18. Longitudinal bulkhead longitudinals 19. Inner bottom plating 20. Inner bottom longitudinals 21. 22. 23. 24.	25. Deck transverse centre tank 26. Bottom transverse centre tank 27. Deck transverse wing tank 28. Side shell vertical web 29. Longitudinal bulkhead vertical web 30. Bottom transverse wing tank 31. Struts 32. Transverse web face plate 33. D.B. floors 34. 35.
		Report on TM6-T
		36. Hatch coamings 37. Deck plating between hatches 38. Hatch covers 39. 40.

Sheet 14

Thickness Measurement - Oil Tankers, Ore/Oil Ships and etc.

Typical Transverse Section Showing All Longitudinal Members to be Reported on TM2-T and TM3-T

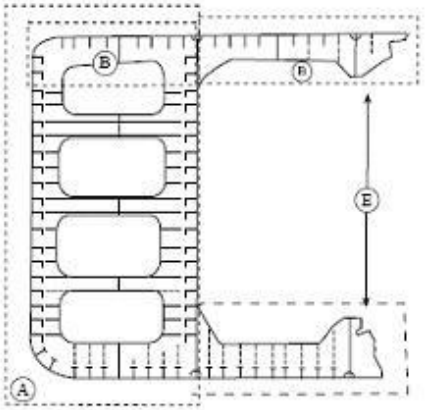


Sheet 15

Thickness Measurement - Oil Tankers, Ore/Oil Ships and etc.

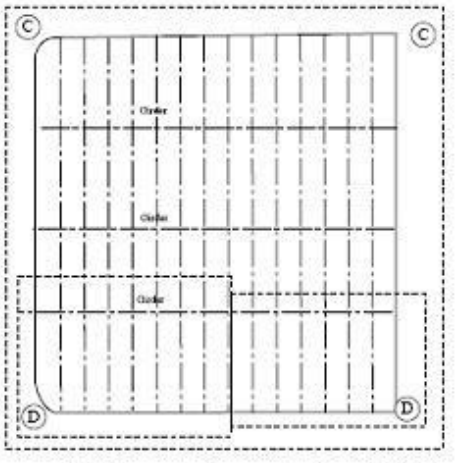
Close-up Survey Requirements

Oil Tanker
Typical transverse section close-up survey



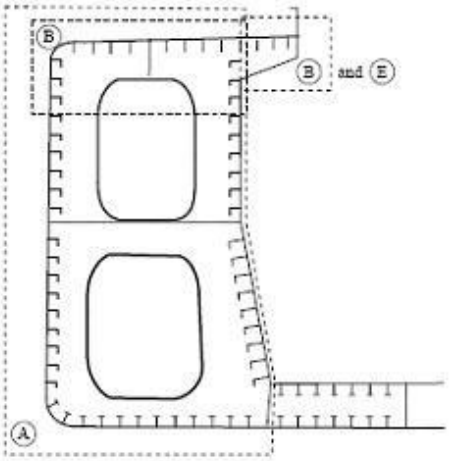
Thickness to be reported on
TM3-T and TM4-T as appropriate

Oil Tanker
Typical transverse bulkhead



Thickness to be reported on TM5-T

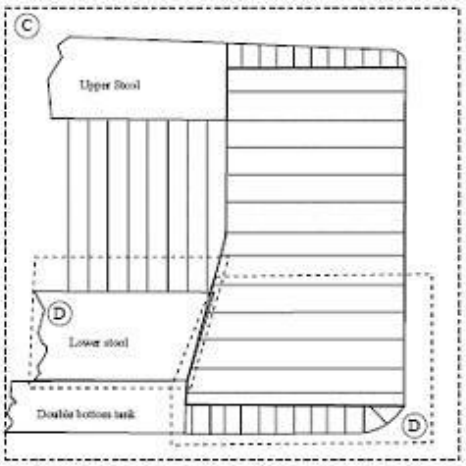
Oil/Ore ship
Typical transverse section close-up survey



Thickness to be reported on
TM3-T and TM4-T as appropriate

Close-up survey area

Oil/Ore ship
Typical transverse bulkhead



Thickness to be reported on TM5-T

13.2A Recommended Procedures for Thickness Measurements of Bulk Carriers

Notes:

1. This document is to be used for recording thickness measurements of single side skin bulk carriers as required by Section 4.

2. Reporting forms TM1-BC, TM2-BC, TM3-BC, TM4-BC, TM5-BC, TM6-BC and TM7-BC (Sheets 4 to 11) are to be used for recording thickness measurements and the minimum allowable diminution is to be stated.

The minimum allowable diminution could be stated in an attached document.

3. The remaining Sheets 12 to 14 are guidance diagrams and notes relating to the reporting forms and the IACS Unified Requirements for thickness measurement.

4. The reporting forms are where appropriate, to be supplemented by data presented on structural sketches.

GENERAL PARTICULARS

Ship's name:
IMO number:
Class identity number:
Port of registry:
Gross tons:
Deadweight:
Date of build:
Classification society:

Name of company performing thickness measurement:
Thickness measurement company certified by:
Certificate No:
Certificate valid from_____to _____
Place of measurement:
First date of measurement:
Last date of measurement:
Special survey/intermediate survey due* :
Details of measurement equipment:
Qualification of operators:

Report number: consisting of Sheets

Name of operator: _____
Signature of operator: _____
Company official stamp: _____

Name of surveyor: _____
Signature of surveyor: _____
Classification society
Official Stamp: _____

* Delete as appropriate.

Sheet 4
TM1-BC

Report on Thickness Measurement of All Deck Plating, All Bottom Shell Plating or Side Shell Plating*

(*delete as appropriate)

Ship's name..... Class Identity No. ..... Report No. .....

STRAKE POSITION																	
PLATE POSITION	No. or Letter	Org. Thk. mm	Forward Reading						Aft Reading						Mean Diminution %		Maximum Allowable Diminution
			Gauged		Diminution P		Diminution S		Gauged		Diminution P		Diminution S				
			P	S	mm	%	mm	%	P	S	mm	%	mm	%	P	S	mm
12th forward																	
11th																	
10th																	
9th																	
8th																	
7th																	
6th																	
5th																	
4th																	
3rd																	
2nd																	
1st																	
Amidships																	
1st aft																	
2nd																	
3rd																	
4th																	
5th																	
6th																	
7th																	
8th																	
9th																	
10th																	
11th																	
12th																	

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   A – All strength deck plating within cargo length area.
   B – Keel, bottom shell plating and bilge plating within the cargo length area.
   C – Side shell plating that is selected wind and water strakes within the cargo length area.
   D – Side shell plating that is all wind and water strakes outside the cargo length area.
2. *The strake position is to be clearly indicated as follows:*
   1.1. *For strength deck indicate the number of the strake of plating inboard from the stringer plate.*
   1.2. *For bottom plating indicate the number of the strake of plating outboard from the keel plate.*
   1.3. *For side shell plating give number of the strake of plating sheer strake and letter as shown on shell expansion.*
3. *Only the deck plating strakes outside line of openings are to be recorded.*
4. *Measurements are to be taken at the forward and aft areas of all plates and the single measurements recorded are to represent the average of multiple measurements.*
5. *The maximum allowable diminution could be stated in an attached document.*

Sheet 5

TM2-BC(i) Report on Thickness Measurement of Shell and Deck Plating (one, two orthree transverse sections)

Ship's name..... Class Identity No. ..... Report No. .....

STRENGTH DECK AND SHEERSTRAKE PLATING																											
	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
STRAKE POSITION	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%
Stringer Plate																											
1st strake inboard																											
2nd																											
3rd																											
4th																											
5th																											
6th																											
7th																											
8th																											
9th																											
10th																											
11th																											
12th																											
13th																											
14th																											
centre strake																											
sheer strake																											
TOPSIDE TOTAL																											

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: Strength deck plating and sheer strake plating transverse sections:*
   Two or three sections within the cargo length area, comprising of the structural items (1), (2) and (3) as shown on the diagram of typical transverse section.
2. *Only the deck plating strakes outside the line of openings are to be recorded.*
3. *The topside area comprises deck plating, stringer plate and sheer strake (including rounded gunwales).*
4. *The exact frame station of measurement is to be stated.*
5. *The single measurements recorded are to represent the average of multiple measurements.*
6. *The maximum allowable diminution could be stated in an attached document.*

Sheet 6

TM2-BC(ii) Report on Thickness Measurement of Shell and Deck Plating (one, two or three transverse sections)

Ship's name..... Class Identity No. ..... Report No. .....

SHELL PLATING																											
	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
STRAKE POSITION	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%
1st below sheer strake																											
2nd																											
3rd																											
4th																											
5th																											
6th																											
7th																											
8th																											
9th																											
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13th																											
14th																											
15th																											
16th																											
17th																											
18th																											
19th																											
20th																											
keel strake																											
BOTTOM TOTAL																											

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: Shell plating transverse sections: Two or three sections within cargo length area comprising of the structural (4), (5), (6) and (7) as shown on the diagram of typical transverse section.*
2. *The bottom area comprises keel, bottom and bilge plating.*
3. *The exact frame station of measurement is to be stated.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The maximum allowable diminution could be stated in an attached document.*

Sheet 7
TM3-BC

Report on Thickness Measurement of Longitudinal Members (one, two or three transverse sections)

Ship's name..... Class Identity No. ..... Report No. .....

STRUCTURAL MEMBER	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
	Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: Longitudinal members at transverse sections:*
   One, two or three sections within the cargo length area, comprising of the appropriate structural items (8) to (20) as shown on diagram of typical transverse section.
2. *The exact frame station of measurement is to be stated.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 8
TM4-BC

Report on Thickness Measurement of Transverse Structural Members
In the double bottom, hopper side and topside water ballast tanks

Ship's name..... Class Identity No. ..... Report No. .....

TANK DESCRIPTION:									
LOCATION OF STRUCTURE:									
STRUCTURAL MEMBER	ITEM	Original Thickness mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S	
				P	S	mm	%	mm	%

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of transverse structural members, comprising of the appropriate structural items (23) to (25) as shown on diagram of typical transverse section, Sheet 12 of this document.*
2. *Guidance for areas if measurement is indicated on the diagrams shown on Sheet 14 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 9
TM5-BC

Report on Thickness of Cargo Hold Transverse Bulkheads

Ship's name..... Class Identity No. ..... Report No. .....

LOCATION OF STRUCTURE:					FRAME NO.:			
STRUCTURAL COMPONENT (PLATING/STIFFENER)								
	Original Thickness mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S	
			Port	Starboard	mm	%	mm	%

Operators signature:.....

Notes:

1. *This report form is to be used for recording the thickness measurement of cargo hold transverse bulkheads.*
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 14 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 10
TM6-BC

Report on Thickness Measurement of Miscellaneous Structural Members

Ship's name..... Class Identity No. ..... Report No. .....

STRUCTURAL MEMBER:									SKETCH
LOCATION OF STRUCTURE:									
Description	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S		
			P	S	mm	%	mm	%	

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of miscellaneous structural members including the structural items (28), (29) and (30) as shown on diagram of typical transverse section, Sheet 12 of this document.*
2. *Guidance for areas of measurement is indicated on Sheet 14 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 11
TM7-BC

Report on Thickness Measurement of Cargo Hold Transverse Frames

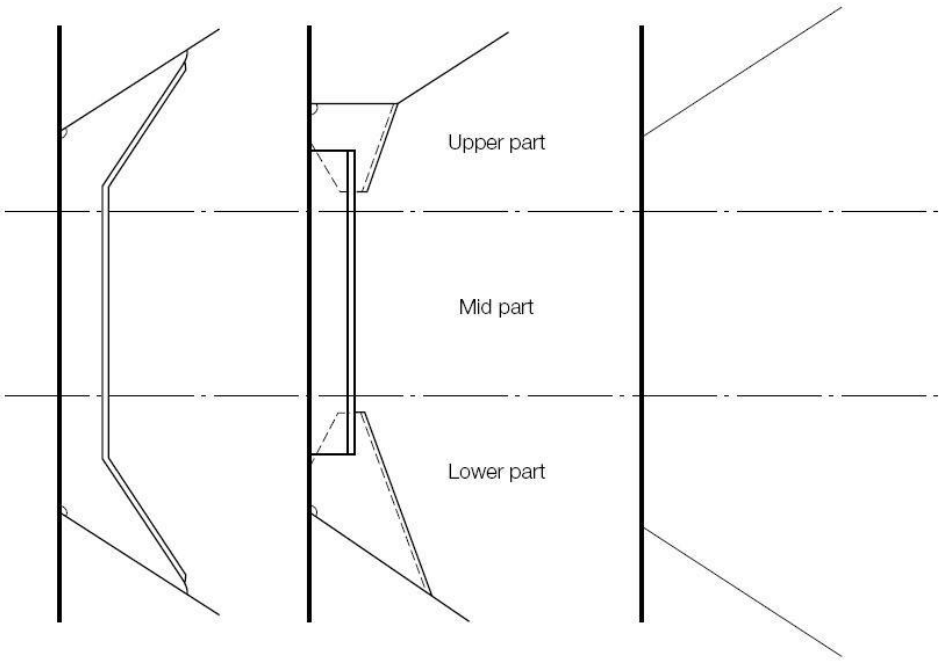
Ship's name..... Class Identity No. ..... Report No. .....

CARGO HOLD NO.																										
	UPPER PART								MID PART								LOWER PART									
FRAME NUMBER	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
	mm	mm	P	S	mm	%	mm	%	mm	mm	P	S	mm	%	mm	%	mm	mm	P	S	mm	%	mm	%

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: Cargo hold transverse frames; Structural item number (34) as shown on the diagram of typical transverse section, Sheet 12 of this document.*
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 14 of this document. The single measurements recorded are to represent the average of multiple measurements.*
3. *The location and pattern of measurements is to be indicated on the sketches of hold frames shown below.*
4. *The maximum allowable diminution could be stated in an attached document.*



Typical transverse frames in cargo hold Thickness gauging area (A)

Non-typical transverse frames in cargo hold Thickness gauging area (A)

Sheet 11(1)
TM7-BC S31

Report on Thickness Measurement of Cargo Hold Side Shell Frames

Ship's name..... Class Identity No. ..... Report No. .....

CARGO HOLD NO.: Side: (Port / stb.)

FRAME NO	ZONE A						ZONE B						ZONE C						ZONE D					
	Org. Thk.	t_{REN}	t_{COAT}	t_M	Diminution		Org. Thk.	t_{REN}	t_{COAT}	t_M	Diminution		Org. Thk.	t_{REN}	t_{COAT}	t_M	Diminution		Org. Thk.	t_{REN}	t_{COAT}	t_M	Diminution	
	mm	mm	mm	mm	mm	%	mm	mm	mm	mm	mm	%	mm	mm	mm	mm	mm	%	mm	mm	mm	mm	mm	%

Operators signature:.....

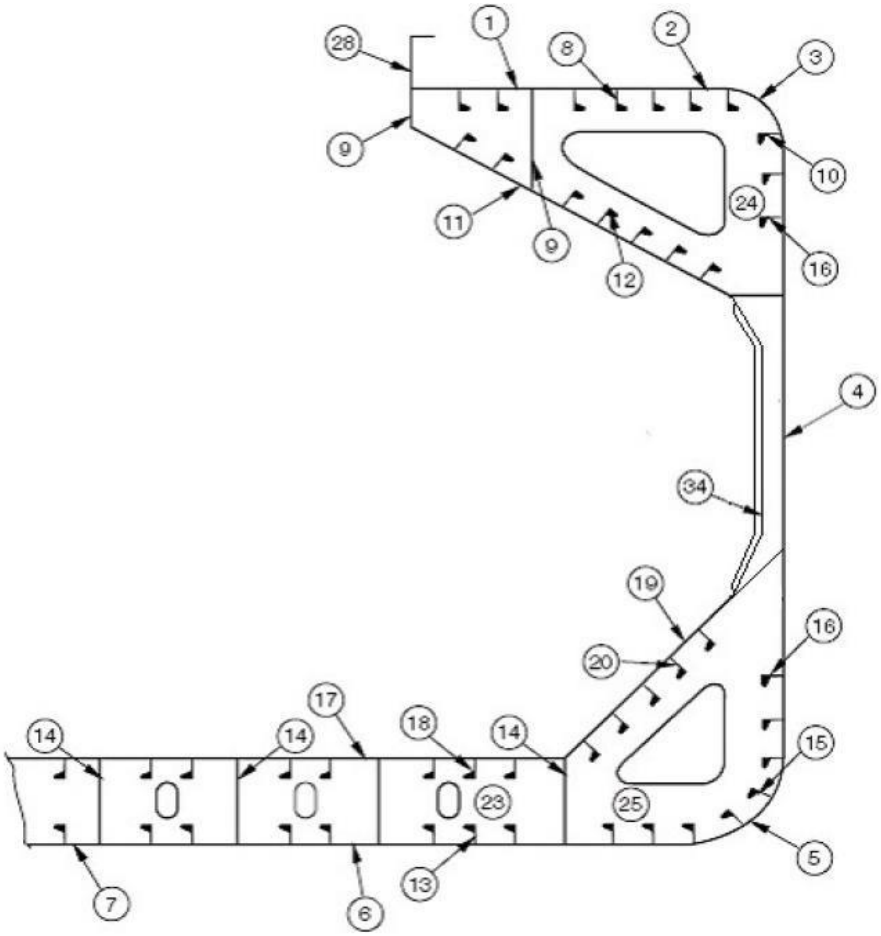
Notes:

1. *This report is to be used for recording the thickness measurement of: Cargo hold transverse frames for application of UR S31.*
2. *Guidance for areas of measurement is provided in Appendix 6 to this Chapter.*
3. *The maximum allowable diminution could be stated in an attached document.*

Sheet 12

Thickness measurement – Bulk Carriers

Typical Transverse Section Indicating Longitudinal and Transverse Members

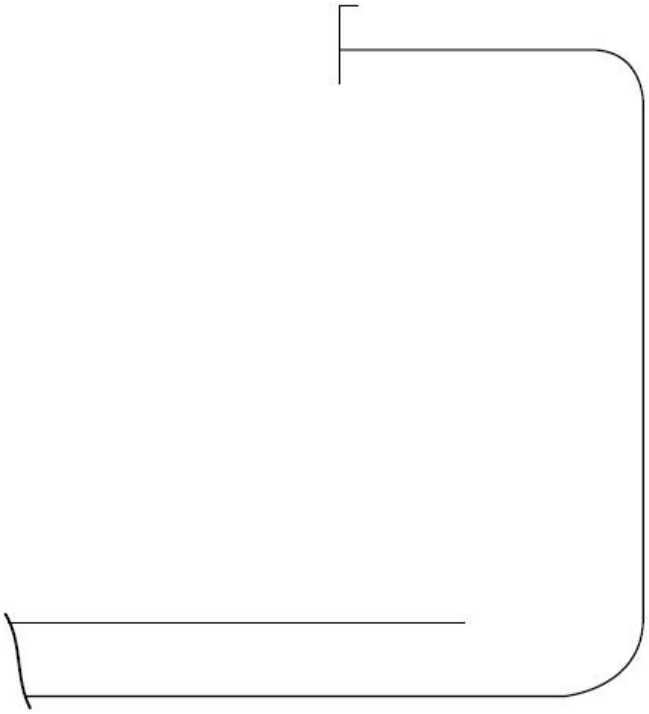


Report on TM2-BC	Report on TM3-BC	Report on TM4-BC
1. Strength deck plating 2. Stringer plate 3. Sheer strake 4. Side shell plating 5. Bilge plating 6. Bottom shell plating 7. Keel plate	8. Deck longitudinals 9. Deck girders 10. Sheer strake longitudinals 11. Topside tank sloping plating 12. Topside tank sloping plating longitudinals 13. Bottom longitudinals 14. Bilge girders 15. Bilge longitudinals 16. Side shell longitudinals 17. Inner bottom plating 18. Inner botom longitudinals 19. Hopper side plating 20. Hopper side longitudinals 21. 22.	23. Double bottom tank floors 24. Topside tank transverses 25. Hopper side tank transverses 26. 27.
Report on TM7-BC		**Report on TM6-BC**
34. Hold frames or diaphragms		28. Hatch coamings 29. Deck plating between hatches 30. Hatch covers 31. 31. 32. 33.

Sheet 13

Thickness Measurement – Bulk Carriers: Typical Transverse Section Outline

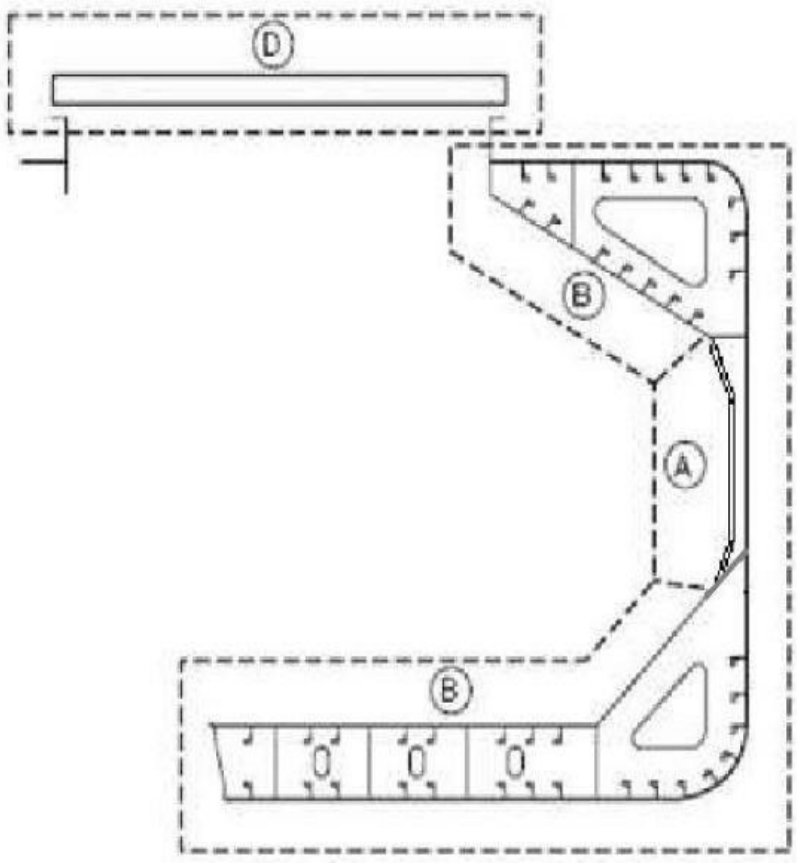
To be used for longitudinal and transverse members where the typical bulk carrier section is not applicable



Report on TM2-BC	Report on TM3-BC	Report on TM4-BC
1. Strength deck plating 2. Stringer plate 3. Sheer strake 4. Side shell plating 5. Bilge plating 6. Bottom shell plating 7. Keel plate	8. Deck longitudinals 9. Deck girders 10. Sheer strake longitudinals 11. Topside tank sloping plating 12. Topside tank sloping plating longitudinals 13. Bottom longitudinals 14. Bilge girders 15. Bilge longitudinals 16. Side shell longitudinals 17. Inner bottom plating 18. Inner botom longitudinals 19. Hopper side plating 20. Hopper side longitudinals 21. 22.	23. Double bottom tank floors 24. Topside tank transverses 25. Hopper side tank transverses 26. 27.
Report on TM7-BC		**Report on TM6-BC**
34. Hold frames or diaphragms		28. Hatch coamings 29. Deck plating between hatches 30. Hatch covers 31. Inner bulkhead plating 32. 33.

Sheet 14

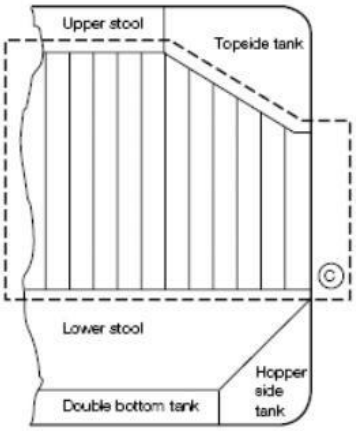
Close-up Survey and Thickness Measurement Areas



Thickness to be reported on TM3-BC, TM4-BC, TM6-BC and TM7-BC as appropriate

A cargo hold, transverse bulkhead

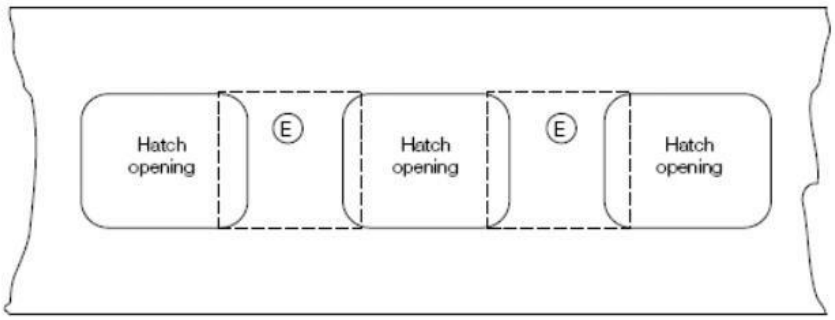
Area Ⓒ



Thickness to be reported on TM5-BC

Typical areas of deck plating inside line of hatch openings between cargo hold hatches

Area Ⓔ



Thickness to be reported on TM6-BC

13.2B Recommended Procedures for Thickness Measurements of Bulk Carriers Built under Common Structural Rules[1]

Notes:

1. This document is to be used for recording thickness measurements of bulk carriers built under Rules for Bulk Carrier and Oil Tanker (Pt.1, Vol.XVIIA) Sec 1.E.3 and 4*.

2. Reporting forms TM1-BC(CSR), TM2-BC(CSR) (i) and (ii), TM3-BC(CSR), TM4-BC(CSR), TM5-BC(CSR), TM6-BC(CSR) and TM7-BC(CSR) (Sheets 4 to 11) are to be used for recording thickness measurements. The as-built thickness, the voluntary thickness addition and the renewal thickness (minimum allowable thickness) are to be stated in the said forms.

3. The remaining Sheets 12 to 14 are guidance diagrams and notes relating to the reporting forms and the procedure for the thickness measurement.

GENERAL PARTICULARS

Ship's name:
IMO number:
Class identity number Port of registry:
Gross tons:
Deadweight:

Date of build:
Classification society:

Name of Company performing thickness measurement:
Thickness measurement company certified by:
Certificate No.
Certificate valid from …… to …… Place of measurement:
First date of measurement: Last date of measurement:
Special survey/intermediate survey due:*
Details of measurement equipment:
Qualification of operators:

Report number: consisting of Sheets

Name of operator: ……	Name of surveyor: ……
Signature of operator: ……	Signature of surveyor: ……
Company	Classification society
Official stamp:	Official Stamp:

[1] Rules for Bulk Carrier and Oil Tanker (Pt.1, Vol.XVII.A) Section 1.

* Delete as appropriate

Sheet 4
TM1-BC(CSR) Report on Thickness Measurement of All Deck Plating, All Bottom Plating or Side Shell Plating*
(*delete as appropriate)

Ship's name..... Class Identity No..... Report No.....

STRAKE POSITION																		
PLATE POSITION	No. or Letter	As Built Thk. mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Forward Reading						Aft Reading						Mean Remaining Corr. Addition, mm [(c1)+(c2)]/2	
					Gauged Thk. mm (b1)		Remaining Corr. Addition, mm (c1)=(b1)-(a)				Gauged Thk. mm (b2)		Remaining Corr. Addition, mm (c2)=(b2)-(a)					
					P	S	P		S		P	S	P		S		P	S
12th																		
11th																		
10th																		
9th																		
8th																		
7th																		
6th																		
5th																		
4th																		
3rd																		
2nd																		
1st forward																		
Amidships																		
1st aft																		
2nd																		
3rd																		
4th																		
5th																		
6th																		
7th																		
8th																		
9th																		
10th																		
11th																		
12th																		

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   A – All strength deck plating within cargo length area.
   B – Keel, bottom shell plating and bilge plating within the cargo length area.
   C – Side shell plating that is all wind and water strakes within the cargo length area.
   D – Side shell plating that is selected wind and water strakes outside the cargo length area.
2. *The strake position is to be clearly indicated as follows:*
   2.1 *For strength deck indicate the number of the strake of plating inboard from the stringer plate.*
   2.2 *For bottom plating indicate the number of the strake of plating outboard from the keel plate.*
   2.3 *For side shell plating give number of the strake of plating sheer strake and letter as shown on shell expansion.*
3. *Only the deck plating strakes outside the line of openings are to be recorded.*
4. *Measurements are to be taken at the forward and aft areas of all plates and the single measurements recorded are to represent the average of multiple measurements.*
5. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 5
TM2-BC(CSR)(i) Report on Thickness Measurement of Shell and Deck Plating (one, two or three transverse sections)

Ship's name..... Class Identity No. ..... Report No. .....

STRENGTH DECK AND SHEERSTRAKE PLATING																															
	FIRST TRANSVERSE SECTION AT FRAME NUMBER										SECOND TRANSVERSE SECTION AT FRAME NUMBER										THIRD TRANSVERSE SECTION AT FRAME NUMBER									
STRAKE POSITION	No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)			
					P	S	P		S						P	S	P		S						P	S	P		S	
Stringer Plate																														
1st strake inboard																														
2nd																														
3rd																														
4th																														
5th																														
6th																														
7th																														
8th																														
9th																														
10th																														
11th																														
12th																														
13th																														
14th																														
centre strake																														
sheer strake																														
TOPSIDE TOTAL																														

Operators signature: .....

Notes:

1 *This report is to be used for recording the thickness measurement of: Strength deck plating and sheer strake plating transverse sections:*
One, two or three sections within the cargo length area, comprising the structural items (1), (2) and (3) as shown on the diagram of typical transverse sections.
2 *Only the deck plating strakes outside the line of openings are to be recorded.*
3 *The topside area comprises deck plating, stringer plate and sheer strake (including rounded gunwales).*
4 *The exact frame station of measurement is to be stated.*
5 *The single measurements recorded are to represent the average of multiple measurements.*
6 *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 6
TM2-BC(CSR)(ii) Report on Thickness Measurement of Shell Plating (one, two or three transverse sections)

Ship's name..... Class Identity No. ..... Report No. .....

SHELL PLATING																													
	FIRST TRANSVERSE SECTION AT FRAME NUMBER										SECOND TRANSVERSE SECTION AT FRAME NUMBER										THIRD TRANSVERSE SECTION AT FRAME NUMBER									
STRAKE POSITION	No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)			
					P	S	P		S						P	S	P		S						P	S	P		S	
1st below sheer strake																													
2nd																													
3rd																													
4th																													
5th																													
6th																													
7th																													
8th																													
9th																													
10th																													
11th																													
12th																													
13th																													
14th																													
15th																													
16th																													
17th																													
18th																													
19th																													
20th																													
Keel strake																													
BOTTOM TOTAL																													

Operators signature: .....

Notes:

1 *This report is to be used for recording the thickness measurement of:*
Shell plating transverse sections:
One, two or three sections within the cargo length area, comprising the structural items (4), (5), (6) and (7) as shown on the diagram of typical transverse sections.

2 *The bottom area comprises keel, bottom and bilge plating.*

3 *The exact frame station of measurement is to be stated.*

4 *The single measurements recorded are to represent the average of multiple measurements.*

5 *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 7
TM3-BC(CSR) Report on Thickness Measurement of Longitudinal Members (one, two or three transverse sections)

Ship's name........................ Class Identity No. .... Report No. ....

	FIRST TRANSVERSE SECTION AT FRAME NUMBER								SECOND TRANSVERSE SECTION AT FRAME NUMBER								THIRD TRANSVERSE SECTION AT FRAME NUMBER							
STRUCTURAL MEMBER	Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)		Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)		Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)	
					P	S	P	S					P	S	P	S					P	S	P	S

Operators signature: ....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Longitudinal members at transverse sections:
   One, two or three sections within the cargo length area, comprising the appropriate structural items (8) to (20) as shown on the diagram of typical transverse sections.
2. *The exact frame station of measurement is to be stated.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 8
TM4-BC(CSR)

Report on Thickness Measurement of Transverse Structural Members in Double Bottom, Hopper Side and Topside Water Ballast Tanks

Ship's name..... Class Identity No. ..... Report No. .....

TANK DESCRIPTION:										
LOCATION OF STRUCTURE										
STRUCTURAL MEMBER	ITEM	As Built Thickness mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)			
					P	S	P		S	

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of transverse structural members, comprising the appropriate structural items (23) to (25) as shown on the diagram of typical transverse sections.*
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 14 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 9
TM5-BC(CSR)

Report on Thickness Measurement of Cargo Hold Transverse Bulkheads

Ship's name..... Class Identity No. ..... Report No. .....

HOLD DESCRIPTION:

LOCATION OF STRUCTURE: FRAME NO.:

STRUCTURAL COMPONENT (PLATING/STIFFENER)	As Built Thickness mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)			
				P	S	P		S	

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of cargo hold transverse bulkheads.*
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 14 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 10
TM6-BC(CSR)

Report on Thickness Measurement of Miscellaneous Structural Members

Ship's name..... Class Identity No. ..... Report No. .....

STRUCTURAL MEMBER:										SKETCH
LOCATION OF STRUCTURE:										
Description	As Built Thk. mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)				
				P	S	P		S		

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of miscellaneous structural members including the structural item (28), (29) and (30) as shown on the diagram of typical transverse sections, sheet 12 of this document.*
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 14 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 11
TM7-BC(CSR)

Report on Thickness Measurement of Cargo Hold Transverse Frames

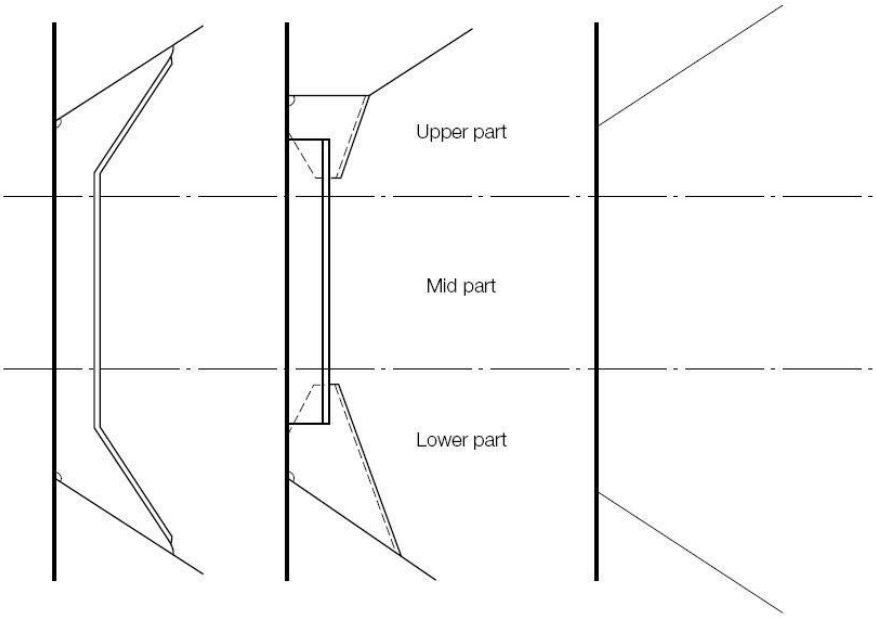
Ship's name..... Class Identity No. ..... Report No. .....

CARGO HOLD NO.																															
	UPPER PART									MID PART								LOWER PART													
FRAME NUMBER	As Built Thk mm	Volun. Thk. Add. mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)				As Built Thk mm	Volun. Thk. Add. mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)				As Built Thk mm	Volun. Thk. Add. mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)						
				P	S	P		S					P	S	P		S							P	S	P		S			

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Cargo hold transverse frames, Structural item number (34) as shown on the diagram of typical transverse sections.
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 14 of this document. The single measurements recorded are to represent the average of multiple measurements.*
3. *The location and pattern of measurements is to be indicated on the sketches of hold frames shown below.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*



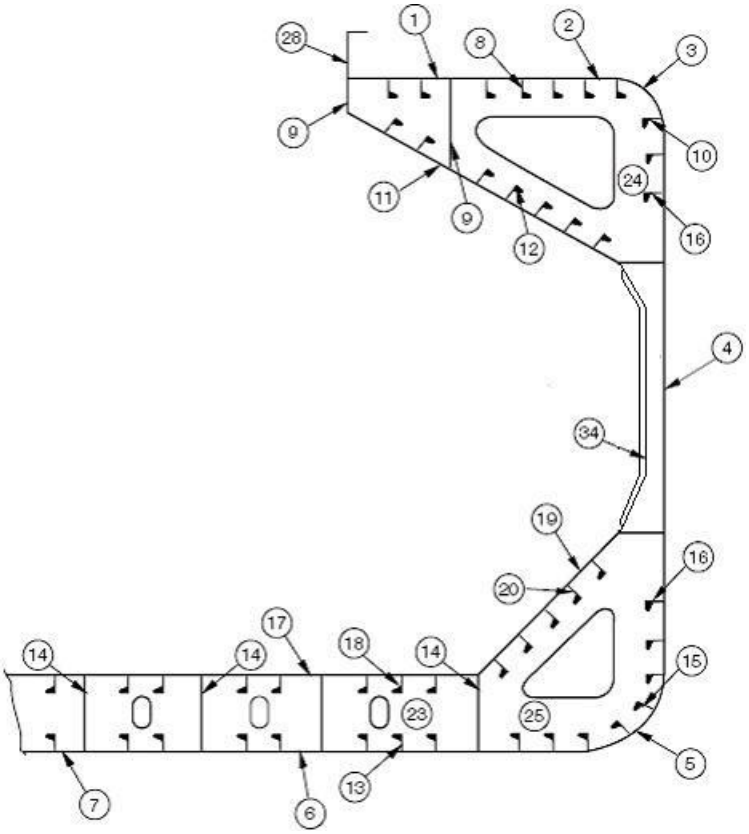
Typical transverse frames in cargo hold Thickness gauging area (A)

Non-typical transverse frames in cargo hold Thickness gauging area (A)

Sheet 12

Thickness Measurement – Bulk Carriers

Typical Transverse Section Indicating Longitudinal and Transverse Members

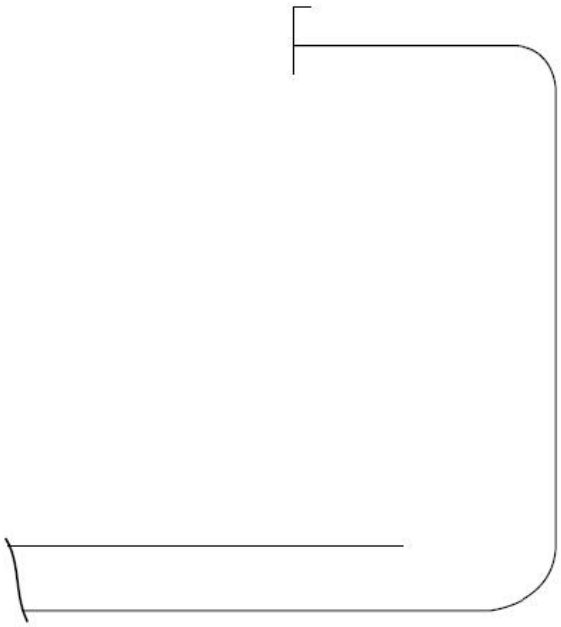


Report on TM2-BC(CSR) (i) & (ii)	Report on TM3-BC(CSR)		Report on TM6-BC(CSR)
1. Strength deck plating 2. Stringer plate 3. Sheerstrake 4. Side shell plating 5. Bilge plating 6. Bottom plating 7. Keel plate	8. Deck longitudinals 9. Deck girders 10. Sheerstrake longitudinals 11. Topside tank sloping plating 12. Topside tank sloping plating longitudinals 13. Bottom longitudinals 14. Bottom girders 15. Bilge longitudinals 16. Side shell longitudinals, if any	17. Inner bottom plating 18. Inner bottom longitudinals 19. Hopper plating 20. Hopper longitudinals 21. 22.	28. Hatch coamings 29. Deck plating between hatches 30. Hatch covers 31. 32. 33.
		Report on TM4-BC(CSR)	
		23. Double bottom tank floors 24. Top side tank transverses 25. Hopper side tank transverses 26. 27.	**Report on TM7-BC(CSR)** 34.Cargo hold frames

Sheet 13

Thickness Measurement – Bulk Carriers

Transverse section outline: The diagram may be used for those ships where the diagrams on Sheet 12 are not suitable.

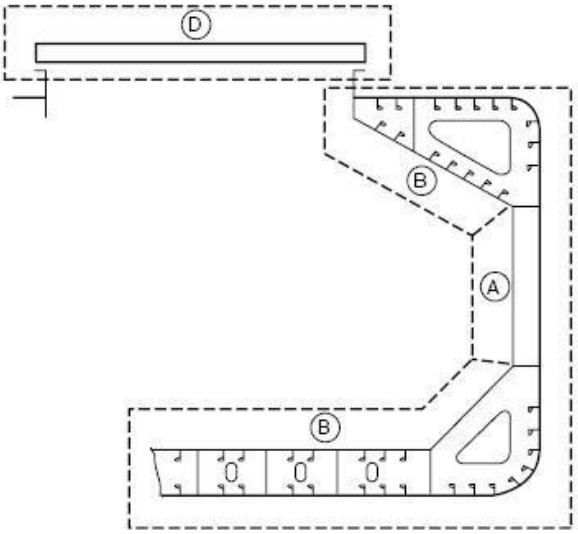


<table>
<tr><th>Report on TM2-BC(CSR) (i) & (ii)</th><th colspan="2">Report on TM3-BC(CSR)</th><th>Report on TM6-BC(CSR)</th></tr>
<tr><td>1. Strength deck plating
2. Stringer plate
3. Sheerstrake
4. Side shell plating
5. Bilge plating
6. Bottom plating
7. Keel plate</td><td>8. Deck longitudinals
9. Deck girders
10. Sheerstrake longitudinals
11. Topside tank sloping plating
12. Topside tank sloping plating longitudinals
13. Bottom longitudinals
14. Bottom girders
15. Bilge longitudinals
16. Side shell longitudinals, if any</td><td>17. Inner bottom plating
18. Inner bottom longitudinals
19. Hopper plating
20. Hopper longitudinals
21.
22.</td><td>28. Hatch coamings
29. Deck plating between hatches
30. Hatch covers
31.
32.
33.</td></tr>
<tr><td rowspan="2"></td><td rowspan="2"></td><td>Report on TM4-BC(CSR)</td><td rowspan="2"></td></tr>
<tr><td>23. Double bottom tank floors
24. Top side tank transverses
25. Hopper side tank transverses
26.
27.</td></tr>
<tr><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td>Report on TM7-BC(CSR)</td></tr>
<tr><td>34. Cargo hold frames</td></tr>
</table>

Sheet 14
Close-up Survey and Thickness Measurement Areas

Typical transverse section

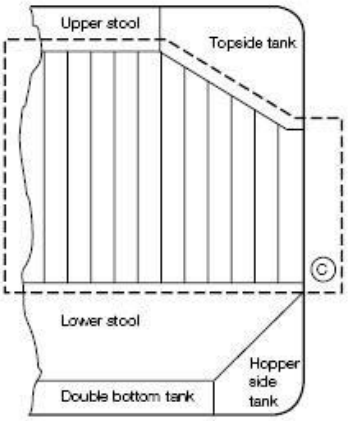
Areas (A), (B) and (D)



Thickness to be reportedd on TM3-BC, TM4-BC, TM6-BC and TM7-BC as appropriate

A cargo hold, transverse bulkhead

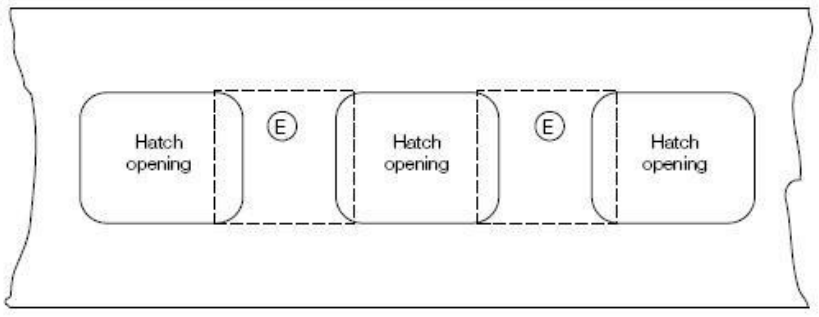
Area (C)



Thickness to be reported on TM5-BC

Typical areas of deck plating inside line of hatch openings between cargo hold hatches

Area (E)



Thickness to be reported on TM6-BC

13.3A Recommended Procedures for Thickness Measurements of Double Hull Oil Tankers

Notes

1. This document is to be used for recording thickness measurements as required by Section 4,I.E.

2. Reporting forms TM1-DHT, TM2-DHT, TM3-DHT, TM4-DHT, TM5-DHT and TM6-DHT (Sheets 4 to 10) are to be used for recording thickness measurements and the maximum allowable diminution is to be stated.

The maximum allowable diminution could be stated in an attached document.

3. The remaining Sheets 11 to 15 are guidance diagrams and notes relating to the reporting forms and the procedure for the thickness measurements.

GENERAL PARTICULARS

Ship's name:
IMO number:
Class identity number:
Port of registry:
Gross tons:
Deadweight:
Date of build:
Classification society:

Name of company performing thickness measurement:
Thickness measurement company certified by:
Certificate No:
Certificate valid from_____to _____
Place of measurement:
First date of measurement:
Last date of measurement:
Special survey/intermediate survey due* :
Details of measurement equipment:
Qualification of operators:

Report number: consisting of Sheets

Name of operator: _____
Signature of operator: _____
Company official stamp: _____

Name of surveyor: _____
Signature of surveyor: _____
Classification society
Official Stamp: _____

* Delete as appropriate.

Sheet 4
TM1-DHT

Report on Thickness Measurement of All Deck Plating, All Bottom Shell Plating or Side Shell Plating*

(*delete as appropriate)

Ship's name..... Class Identity No. ..... Report No. .....

STRAKE POSITION																	
PLATE POSITION	No. or Letter	Org. Thk. mm	Forward Reading						Aft Reading						Mean Diminution %		Maximum Allowable Diminution
			Gauged		Diminution P		Diminution S		Gauged		Diminution P		Diminution S				
			P	S	mm	%	mm	%	P	S	mm	%	mm	%	P	S	mm
12th forward																	
11th																	
10th																	
9th																	
8th																	
7th																	
6th																	
5th																	
4th																	
3rd																	
2nd																	
1st																	
Amidships																	
1st aft																	
2nd																	
3rd																	
4th																	
5th																	
6th																	
7th																	
8th																	
9th																	
10th																	
11th																	
12th																	

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   - 1.1 *All strength deck plating within the cargo area.*
   - 1.2 *All keel, bottom shell plating and bilge plating within the cargo area.*
   - 1.3 *Side shell plating including selected wind and water strakes outside cargo area.*
   - 1.4 *All wind and water strakes within cargo area.*
2. *The strake position is to be clearly indicated as follows:*
   - 2.1 *For strength deck indicate the number of the strake of plating inboard from the stringer plate.*
   - 2.2 *For bottom plating indicate the number of the strake of plating outboard from the keel plate.*
   - 2.3 *For side shell plating give number of the strake of plating below sheer strake and letter as shown on shell expansion.*
   - 2.4 *Measurements are to be taken at the forward and aft areas of all and where plates cross ballast/cargo tank boundaries separate measurements for the area of plating in way of each type of tank are to be recorded.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 5
TM2-DHT(i) Report on Thickness Measurement of Shell and Deck Plating (one, two or three transversesections)

Ship's name..... Class Identity No. ..... Report No. .....

STRENGTH DECK AND SHEERSTRAKE PLATING																											
	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
STRAKE POSITION	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%
Stringer Plate																											
1st strake inboard																											
2nd																											
3rd																											
4th																											
5th																											
6th																											
7th																											
8th																											
9th																											
10th																											
11th																											
12th																											
13th																											
14th																											
centre strake																											
sheer strake																											
TOPSIDE TOTAL																											

Operators signature: .....

Notes:

1. *This report form is to be used for recording the thickness measurements of:*
   Strength deck plating and sheer strake plating transverse sections:
   One, two or three sections within the cargo area comprising of the structural items (0), (1) and (2) as shown on the diagrams of typical transverse sections illustrated on Sheets 11 and 12 of this document.
2. *The topside area comprises deck plating, stringer plate and sheer strake (including rounded gunwales).*
3. *The exact frame station of measurement is to be stated.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The maximum allowable diminution could be stated in an attached document.*

Sheet 6
TM2-DHT(ii) Report on Thickness Measurement of Shell and Deck Plating (one, two or three transverse sections)

Ship's name..... Class Identity No. ..... Report No. .....

SHELL PLATING																											
	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
STRAKE POSITION	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%
1st below sheer strake																											
2nd																											
3rd																											
4th																											
5th																											
6th																											
7th																											
8th																											
9th																											
10th																											
11th																											
12th																											
13th																											
14th																											
15th																											
16th																											
17th																											
18th																											
19th																											
20th																											
keel strake																											
BOTTOM TOTAL																											

Operators signature: .....

Notes:

1. *This report form is to be used for recording the thickness measurements of:*
   Shell plating transverse sections:
   One, two or three sections within the cargo area comprising of the structural items (3), (4) and (5) and (6) as shown on the diagrams of typical transverse sections illustrated on Sheets 11 and 12 of this document.
2. *The bottom area comprises keel, bottom and bilge plating.*
3. *The exact frame station of measurement is to be stated.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The maximum allowable diminution could be stated in an attached document.*

Sheet 7
TM3-DHT

Report on Thickness Measurement of Longitudinal Members (one, two or three transverse sections)

Ship's name..... Class Identity No. ..... Report No. .....

STRUCTURAL MEMBER	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
	Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurements of:*
   Longitudinal members at transverse sections:
   One, two or three sections within the cargo area comprising of the appropriate structural items (10) to (29) as shown on the diagrams of typical transverse sections illustrated on Sheets 11 and 12 of this document.
2. *The exact frame station of measurement is to be stated.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 8
TM4-DHT

Report on Thickness Measurement of Transverse Structural Members
In the cargo oil and water ballast tanks within the cargo tank length

Ship's name..... Class Identity No. ..... Report No. .....

TANK DESCRIPTION:

LOCATION OF STRUCTURE:

STRUCTURAL MEMBER	ITEM	Original Thickness mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S	
				P	S	mm	%	mm	%

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurements of:*
   Transverse structural members, comprising of the appropriate structural items (30) to (36) as shown on diagrams of typical transverse sections illustrated on Sheets 11 and 12 of this document.
2. *Guidance for areas of measurement is indicated on Sheets 14 and 15 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 9
TM5-DHT

Report on Thickness of W.T./O.T. Transverse Bulkheads
Within the cargo tank or cargo hold spaces

Ship's name..... Class Identity No. ..... Report No. .....

TANK/HOLD DESCRIPTION:								
LOCATION OF STRUCTURE:					FRAME NO.:			
STRUCTURAL COMPONENT (PLATING/STIFFENER)	Original Thickness mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S	
			Port	Starboard	mm	%	mm	%

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of: W.T./O.T. transverse bulkheads.*
2. *Guidance for areas of measurement is indicated on Sheet 14 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 10
TM6-DHT

Report on Thickness Measurement of Miscellaneous Structural Members

Ship's name..... Class Identity No. ..... Report No. .....

STRUCTURAL MEMBER:									SKETCH
LOCATION OF STRUCTURE:									
Description	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S		
			P	S	mm	%	mm	%	

Operators signature:.....

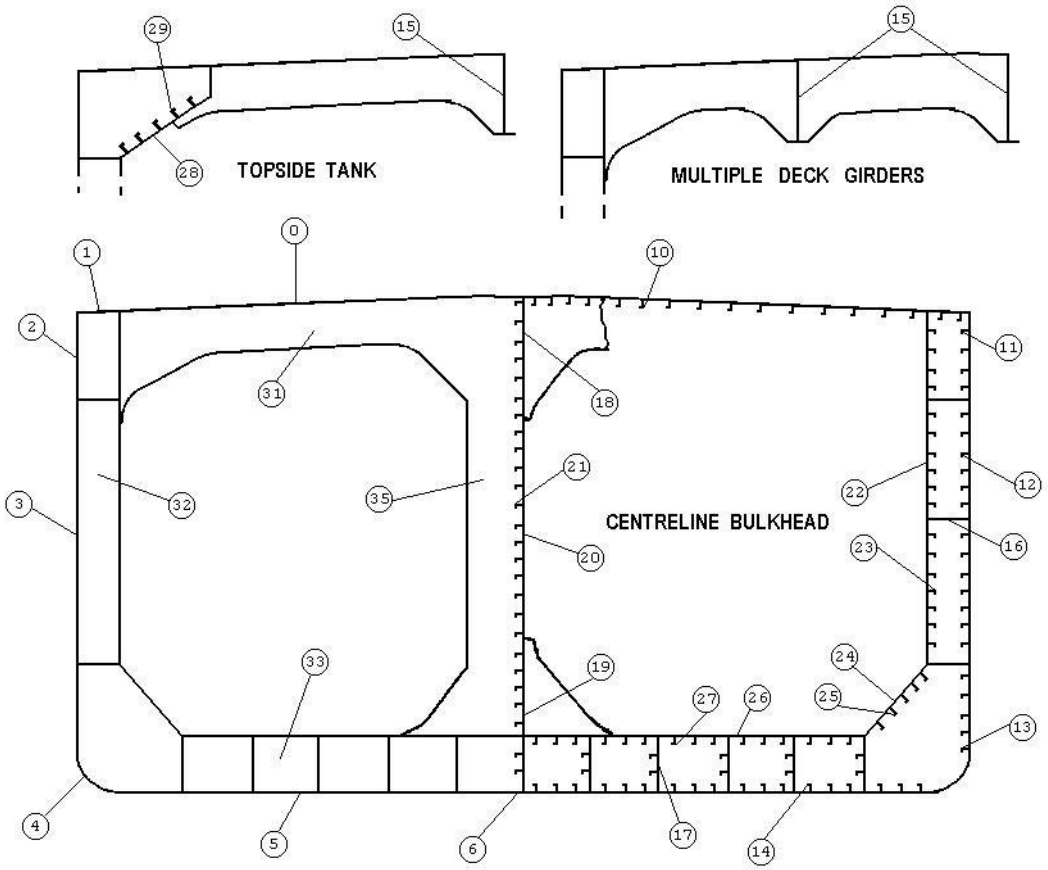
Notes:

1. *This report is to be used for recording the thickness measurement of: Miscellaneous structural members.*
2. *The single measurements recorded are to represent the average of multiple measurements.*
3. *The maximum allowable diminution could be stated in an attached document.*

Sheet 11

Thickness Measurement – Double Hull Oil Tankers

Typical Transverse Section of a Double Hull Tanker up to 150,000 dwt with Indication of Longitudinal and Transverse Members

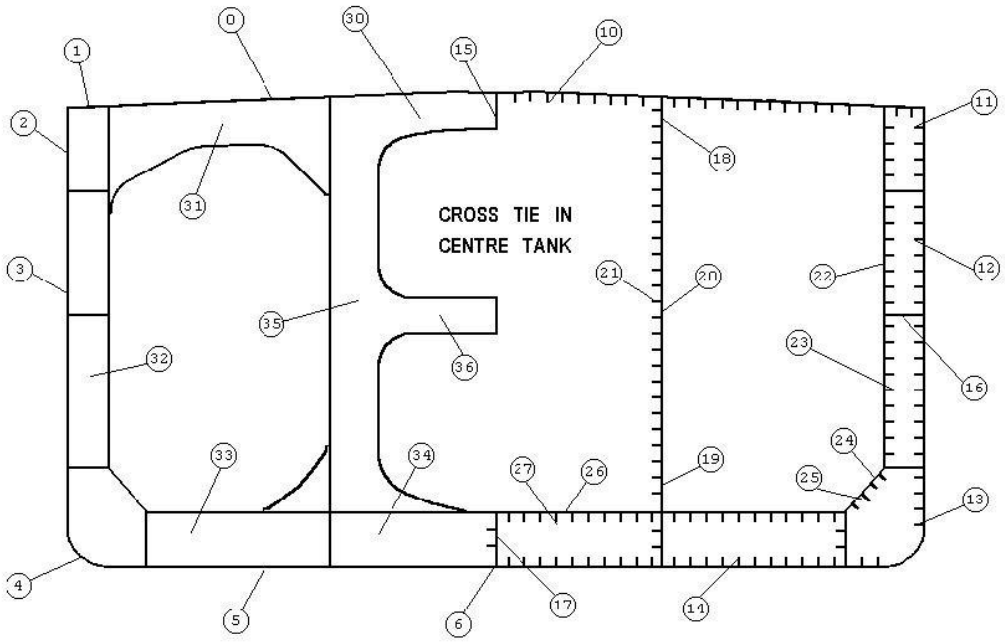


Report on TM2-DHT (i) & (ii)	Report on TM3-DHT		Report on TM4-DHT
0. Strength deck plating 1. Stringer plate 2. Sheer strake 3. Side shell plating 4. Bilge plating 5. Bottom shell plating 6. Keel plate	10. Deck longitudinals 11. Sheer strake longitudinals 12. Side shell longitudinals 13. Bilge longitudinals 14. Bottom longitudinals 15. Deck girders 16. Horizontal girders in wing ballast tanks 17. Bottom girders 18. Longitudinal bulkhead top strake 19. Longitudinal bulkhead bottom strake	20. Longitudinal bulkhead plating (remainder) 21. Longitudinal bulkhead longitudinals 22. Inner side plating 23. Inner side longitudinals 24. Hopper plating 25. Hopper longitudinals 26. Inner bottom plating 27. Inner bottom longitudinals 28. Topside tank plating 29. Topside tank longitudinals	30. Deck transverse (centre tank) 31. Deck transverse (wing tank) 32. Vertical web in wing ballast tank 33. Double bottom floor – wing tank 34. Double bottom floor – centre tank 35. Longitudinal bulkhead vertical web 36. C rossties

Sheet 12

Thickness Measurement – Double Hull Oil Tankers

Typical Transverse Section of a Double Hull Tanker above 150,000 dwt with Indication of Longitudinal and Transverse Members



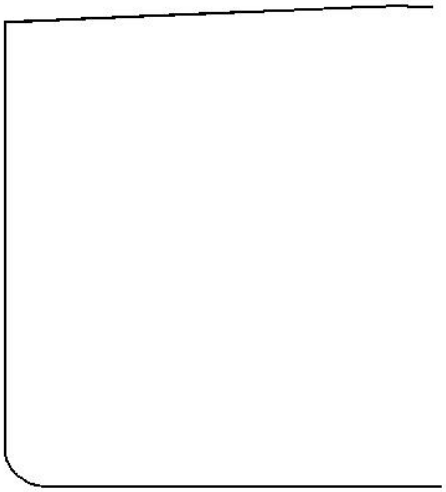
Report on TM2-DHT (i) & (ii)	Report on TM3-DHT		Report on TM4-DHT
0. Strength deck plating 1. Stringer plate 2. Sheer strake 3. Side shell plating 4. Bilge plating 5. Bottom shell plating 6. Keel plate	10. Deck longitudinals 11. Sheer strake longitudinals 12. Side shell longitudinals 13. Bilge longitudinals 14. Bottom longitudinals 15. Deck girders 16. Horizontal girders in wing ballast tanks 17. Bottom girders 18. Longitudinal bulkhead top strake 19. Longitudinal bulkhead bottom strake	20. Longitudinal bulkhead plating (remainder) 21. Longitudinal bulkhead longitudinals 22. Inner side plating 23. Inner side longitudinals 24. Hopper plating 25. Hopper longitudinals 26. Inner bottom plating 27. Inner bottom longitudinals 28. Topside tank plating 29. Topside tank longitudinals	30. Deck transverse (centre tank) 31. Deck transverse (wing tank) 32. Vertical web in wing ballast tank 33. Double bottom floor – wing tank 34. Double bottom floor – centre tank 35. Longitudinal bulkhead vertical web 36. Cross ties

Sheet 13

Thickness Measurement – Double Hull Oil Tankers

Transverse Section Outline

The diagram may be used for those ships where the diagrams on Sheets 11 and 12 are not suitable.

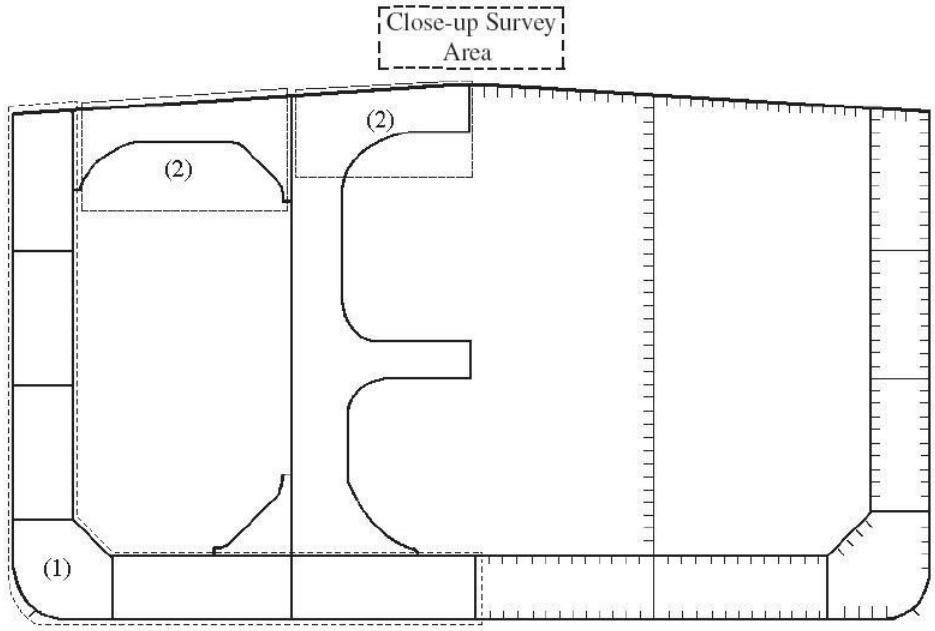


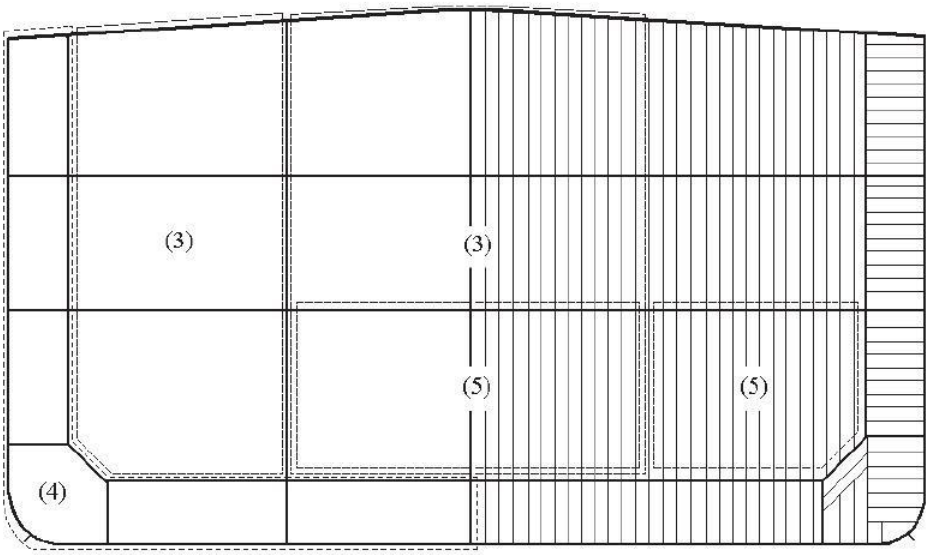
Report on TM2-DHT (i) & (ii)	Report on TM3-DHT		Report on TM4-DHT
0. Strength deck plating 1. Stringer plate 2. Sheer strake 3. Side shell plating 4. Bilge plating 5. Bottom shell plating 6. Keel plate	10. Deck longitudinals 11. Sheer strake longitudinals 12. Side shell longitudinals 13. Bilge longitudinals 14. Bottom longitudinals 15. Deck girders 16. Horizontal girders in wing ballast tanks 17. Bottom girders 18. Longitudinal bulkhead top strake 19. Longitudinal bulkhead bottom strake	20. Longitudinal bulkhead plating (remainder) 21. Longitudinal bulkhead longitudinals 22. Inner side plating 23. Inner side longitudinals 24. Hopper plating 25. Hopper longitudinals 26. Inner bottom plating 27. Inner bottom longitudinals 28. Topside tank plating 29. Topside tank longitudinals	30. Deck transverse (centre tank) 31. Deck transverse (wing tank) 32. Vertical web in wing ballast tank 33. Double bottom floor – wing tank 34. Double bottom floor – centre tank 35. Longitudinal bulkhead vertical web 36. Cross ties

Sheet 14

Thickness Measurement – Double Hull Oil Tankers

Areas subject to close-up survey and thickness measurements - Thickness to be reported on TM3-DHT, TM4-DHT and TM5-DHT as appropriate

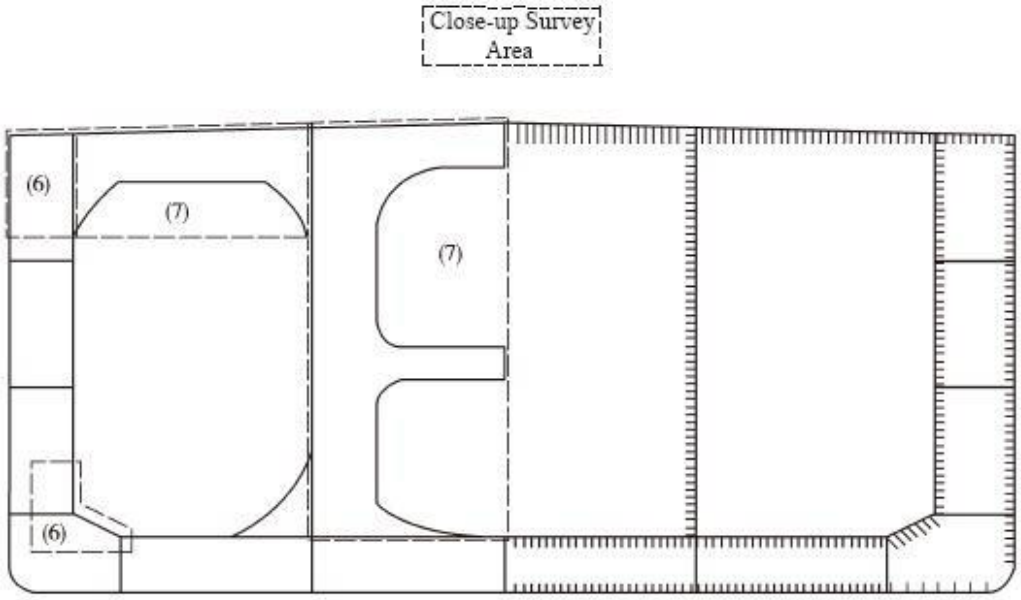




Sheet 15

Thickness Measurement – Double Hull Oil Tankers

Areas subject to close-up survey and thickness measurements - Thickness to be reported on TM3-DHT and TM4-DHT as appropriate



13.3B Recommended Procedures for Thickness Measurements of Double Hull Oil Tankers Built under Common Structural Rules[1]

Notes:

1. This document is to be used for recording thickness measurements of double hull oil tankers built under Rules for Bulk Carrier and Oil tanker (Pt.1, Vol.XVII.A) Sec.1, E.3 and 4.

2. Reporting forms TM1-DHT(CSR), TM2-DHT(CSR)(i) and (ii), TM3-DHT(CSR), TM4-DHT(CSR), TM5-DHT(CSR) and TM6-DHT(CSR) (Sheets 4 to 10) are to be used for recording thickness measurements. The as-built thickness, the voluntary thickness addition and the renewal thickness (minimum allowable thickness) are to be stated in the said forms.

3. The remaining Sheets 11 to 15 are guidance diagrams and notes relating to the reporting forms and the procedure for the thickness measurement.

GENERAL PARTICULARS

Ship's name:
IMO number:
Class identity number:
Port of registry:
Gross tons:
Deadweight:
Date of build:
Classification society:

Name of Company performing thickness measurement:
Thickness measurement company certified by:
Certificate No.
Certificate valid from …… to ……
Place of measurement:
First date of measurement:
Last date of measurement:
Special survey/intermediate survey due:*
Details of measurement equipment:
Qualification of operators:

Report number: consisting of Sheets

Name of operator: ……	Name of surveyor: ……
Signature of operator: ……	Signature of surveyor: ……
Company	Classification society
Official stamp:	Official Stamp:

[1] Rules for Bulk Carrier and Oil tanker (Pt.1, Vol.XVIIA) Section 1 (including amendments).

* Delete as appropriate

Sheet 4
TM1-DHT(CSR)

Report on Thickness Measurement of All Deck Plating, All Bottom Plating or Side Shell Plating*

(*delete as appropriate)

Ship's name..... Class Identity No..... Report No.....

STRAKE POSITION																
PLATE POSITION	No. or Letter	As Built Thk. mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Forward Reading						Aft Reading						Mean Remaining Corr. Addition, mm [(c1)+(c2)]/2	
					Gauged Thk. mm (b1)		Remaining Corr. Addition, mm (c1)=(b1)-(a)				Gauged Thk. mm (b2)		Remaining Corr. Addition, mm (c2)=(b2)-(a)					
					P	S	P		S		P	S	P		S		P	S
12th																		
11th																		
10th																		
9th																		
8th																		
7th																		
6th																		
5th																		
4th																		
3rd																		
2nd																		
1st forward																		
Amidships																		
1st aft																		
2nd																		
3rd																		
4th																		
5th																		
6th																		
7th																		
8th																		
9th																		
10th																		
11th																		
12th																		

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   - 1.1 *All strength deck plating within the cargo length area.*
   - 1.2 *All keel, bottom shell plating and bilge plating within the cargo length area.*
   - 1.3 *Side shell plating including selected wind and water strakes outside the cargo length area.*
   - 1.4 *All wind and water strakes within the cargo length area.*
2. *The strake position is to be clearly indicated as follows:*
   - 2.1 *For strength deck indicate the number of the strake of plating inboard from the stringer plate.*
   - 2.2 *For bottom plating indicate the number of the strake of plating outboard from the keel plate.*
   - 2.3 *For side shell plating give number of the strake of plating sheer strake and letter as shown on shell expansion.*
3. *Measurements are to be taken at the forward and aft areas of all plates cross ballast/cargo tank boundaries, separate measurements for the area of plating in way of each type of tank are to be recorded.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 5
TM2-DHT(CSR)(i) Report on Thickness Measurement of Shell and Deck Plating (one, two or three transverse sections)

Ship's name..... Class Identity No..... Report No.....

STRENGTH DECK AND SHEERSTRAKE PLATING																															
	FIRST TRANSVERSE SECTION AT FRAME NUMBER										SECOND TRANSVERSE SECTION AT FRAME NUMBER										THIRD TRANSVERSE SECTION AT FRAME NUMBER									
STRAKE POSITION	No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)			
					P	S	P		S						P	S	P		S						P	S	P		S	
Stringer Plate																														
1st strake inboard																														
2nd																														
3rd																														
4th																														
5th																														
6th																														
7th																														
8th																														
9th																														
10th																														
11th																														
12th																														
13th																														
14th																														
centre strake																														
sheer strake																														
TOPSIDE TOTAL																														

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Strength deck plating and sheer strake plating transverse sections:
   One, two or three sections within the cargo length area, comprising the structural items (0), (1) and (2) as shown on the diagram of typical transverse sections, illustrated on Sheets 11 and 12 of this document.
2. *The topside area comprises deck plating, stringer plate and sheer strake (including rounded gunwales).*
3. *The exact frame station of measurement is to be stated.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 6
TM2-DHT(CSR)(ii) Report on Thickness Measurement of Shell Plating (one, two or three transverse sections)

Ship's name..... Class Identity No..... Report No.....

SHELL PLATING																													
	FIRST TRANSVERSE SECTION AT FRAME NUMBER										SECOND TRANSVERSE SECTION AT FRAME NUMBER										THIRD TRANSVERSE SECTION AT FRAME NUMBER									
STRAKE POSITION	No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)			
					P	S	P		S						P	S	P		S						P	S	P		S	
1st below sheer strake																													
2nd																													
3rd																													
4th																													
5th																													
6th																													
7th																													
8th																													
9th																													
10th																													
11th																													
12th																													
13th																													
14th																													
15th																													
16th																													
17th																													
18th																													
19th																													
20th																													
Keel strake																													
BOTTOM TOTAL																													

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Shell plating transverse sections:
   One, two or three sections within the cargo length area, comprising the structural items (3), (4), (5) and (6) as shown on the diagram of typical transverse sections, illustrated on Sheets 11 and 12 of this document.
2. *The bottom area comprises keel, bottom and bilge plating.*
3. *The exact frame station of measurement is to be stated.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 7
TM3-DHT(CSR) Report on Thickness Measurement of Longitudinal Members (one, two or three transverse sections)

Ship's name........................ Class Identity No........................ Report No.......................

	FIRST TRANSVERSE SECTION AT FRAME NUMBER										SECOND TRANSVERSE SECTION AT FRAME NUMBER										THIRD TRANSVERSE SECTION AT FRAME NUMBER									
STRUCTURAL MEMBER	Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)			
					P	S	P		S						P	S	P		S						P	S	P		S	

Operators signature: ....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Longitudinal members at transverse sections:
   One, two or three sections within the cargo length area, comprising the appropriate structural items (10) to (29) as shown on the diagram of typical transverse sections, illustrated on Sheets 11 and 12 of this document.
2. *The exact frame station of measurement is to be stated.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 8
TM4-DHT(CSR)

Report on Thickness Measurement of Transverse Structural Members In the Cargo Oil and Water Ballast Tanks within the Cargo Tank Length

Ship's name..... Class Identity No..... Report No.....

TANK DESCRIPTION:

LOCATION OF STRUCTURE

STRUCTURAL MEMBER	ITEM	As Built Thickness mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)			
					P	S	P		S	

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Transverse structural members, comprising the appropriate structural items (30) to (36) as shown on the diagram of typical transverse sections, illustrated on Sheets 11 and 12 of this document.
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 14 and 15 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 9
TM5-DHT(CSR)

Report on Thickness Measurement of W.T./O.T. Transverse Bulkheads Within the Cargo and Ballast Tanks

Ship's name..... Class Identity No..... Report No.....

TANK DESCRIPTION:

LOCATION OF STRUCTURE: FRAME NO.:

STRUCTURAL COMPONENT (PLATING/STIFFENER)	As Built Thickness mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)	
				P	S	P	S

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of: W.T./O.T. transverse bulkheads.*
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 14 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 10
TM6-DHT(CSR)

Report on Thickness Measurement of Miscellaneous Structural Members

Ship's name..... Class Identity No..... Report No.....

STRUCTURAL MEMBER:										SKETCH
LOCATION OF STRUCTURE:										
Description	As Built Thk. mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)				
				P	S	P		S		

Operators signature: .....

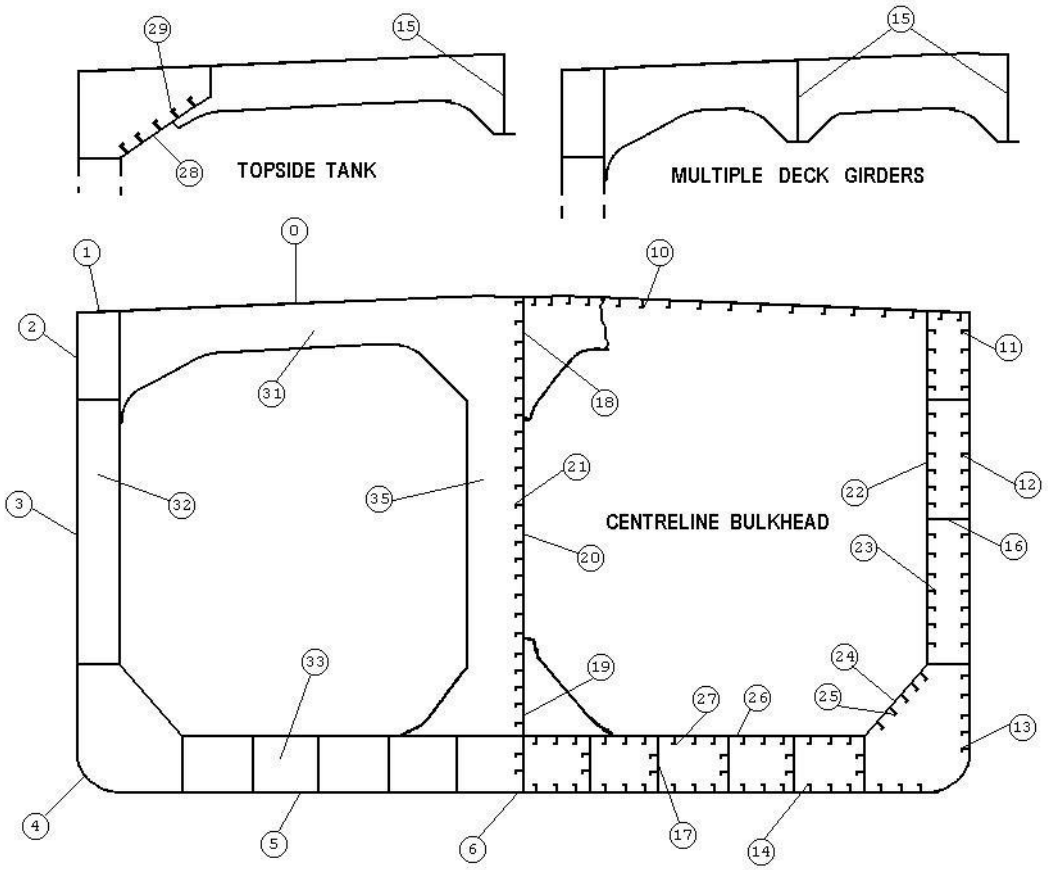
Notes:

1. *This report is to be used for recording the thickness measurement of miscellaneous structural members.*
2. *The single measurements recorded are to represent the average of multiple measurements.*
3. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 11

Thickness Measurement – Double Hull Oil Tankers

Typical Transverse Section of a Double Hull Oil Tanker Up to 150,000 dwt with Indication of Longitudinal and Transverse Members

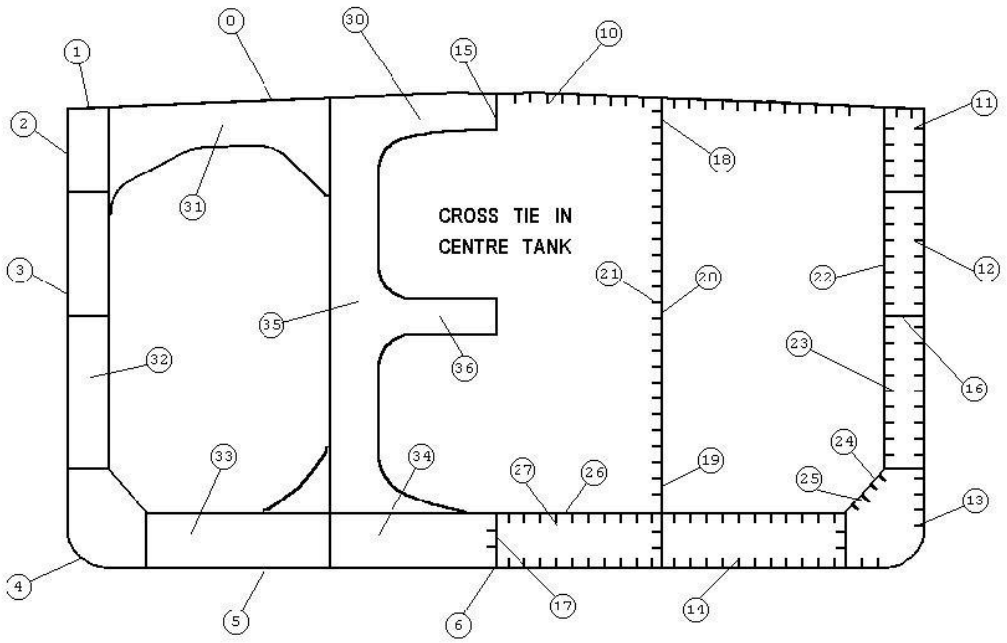


Report on TM2-DHT(CSR)(i) & (ii)	Report on TM3-DHT(CSR)		Report on TM4-DHT(CSR)
0. Strength deck plating 1. Stringer plate 2. Sheer strake 3. Side shell plating 4. Bilge plating 5. Bottom shell plating 6. Keel plate	10. Deck longitudinals 11. Sheer strake longitudinals 12. Side shell longitudinals 13. Bilge longitudinals 14. Bottom longitudinals 15. Deck girders 16. Horizontal girders in wing ballast tanks 17. Bottom girders 18. Longitudinal bulkhead top strake 19. Longitudinal bulkhead bottom strake	20. Longitudinal bulkhead plating (remainder) 21. Longitudinal bulkhead longitudinals 22. Inner side plating 23. Inner side longitudinal 24. Hopper plating 25. Hopper longitudinal 26. Inner bottom plating 27. Inner bottom longitudinals 28. Topside tank plating 29. Topside tank longitudinals	30. Deck transverse – centre tank 31. Deck transverse – wing tank 32. Vertical web in wing ballast tank 33. Double bottom floor – wing tank 34. Double bottom floor – centre tank 35. Longitudinal bulkhead vertical web 36. Cross ties

Sheet 12

Thickness Measurement – Double Hull Oil Tankers

Typical Transverse Section of a Double Hull Oil Tanker above 150,000 dwt with Indication of Longitudinal and Transverse Members

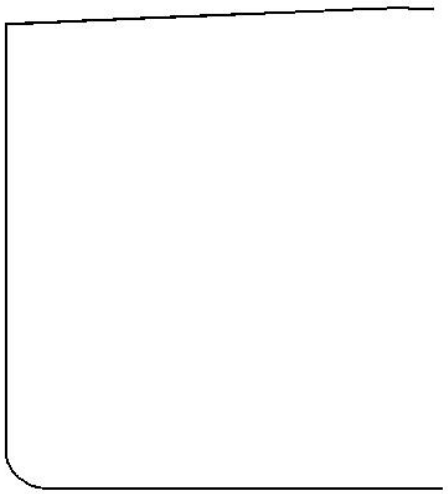


Report on TM2-DHT(CSR)(i) & (ii)	Report on TM3-DHT(CSR)		Report on TM4-DHT(CSR)
0. Strength deck plating 1. Stringer plate 2. Sheer strake 3. Side shell plating 4. Bilge plating 5. Bottom shell plating 6. Keel plate	10. Deck longitudinals 11. Sheer strake longitudinals 12. Side shell longitudinals 13. Bilge longitudinals 14. Bottom longitudinals 15. Deck girders 16. Horizontal girders in wing ballast tanks 17. Bottom girders 18. Longitudinal bulkhead top strake 19. Longitudinal bulkhead bottom strake	20. Longitudinal bulkhead plating (remainder) 21. Longitudinal bulkhead longitudinals 22. Inner side plating 23. Inner side longitudinal 24. Hopper plating 25. Hopper longitudinal 26. Inner bottom plating 27. Inner bottom longitudinals 28. Topside tank plating 29. Topside tank longitudinals	30. Deck transverse – centre tank 31. Deck transverse – wing tank 32. Vertical web in wing ballast tank 33. Double bottom floor – wing tank 34. Double bottom floor – centre tank 35. Longitudinal bulkhead vertical web 36. Cross ties

Sheet 13

Thickness Measurement – Double Hull Oil Tankers

The diagram may be used for those ships where the diagrams on Sheets 11 and 12 are not suitable.



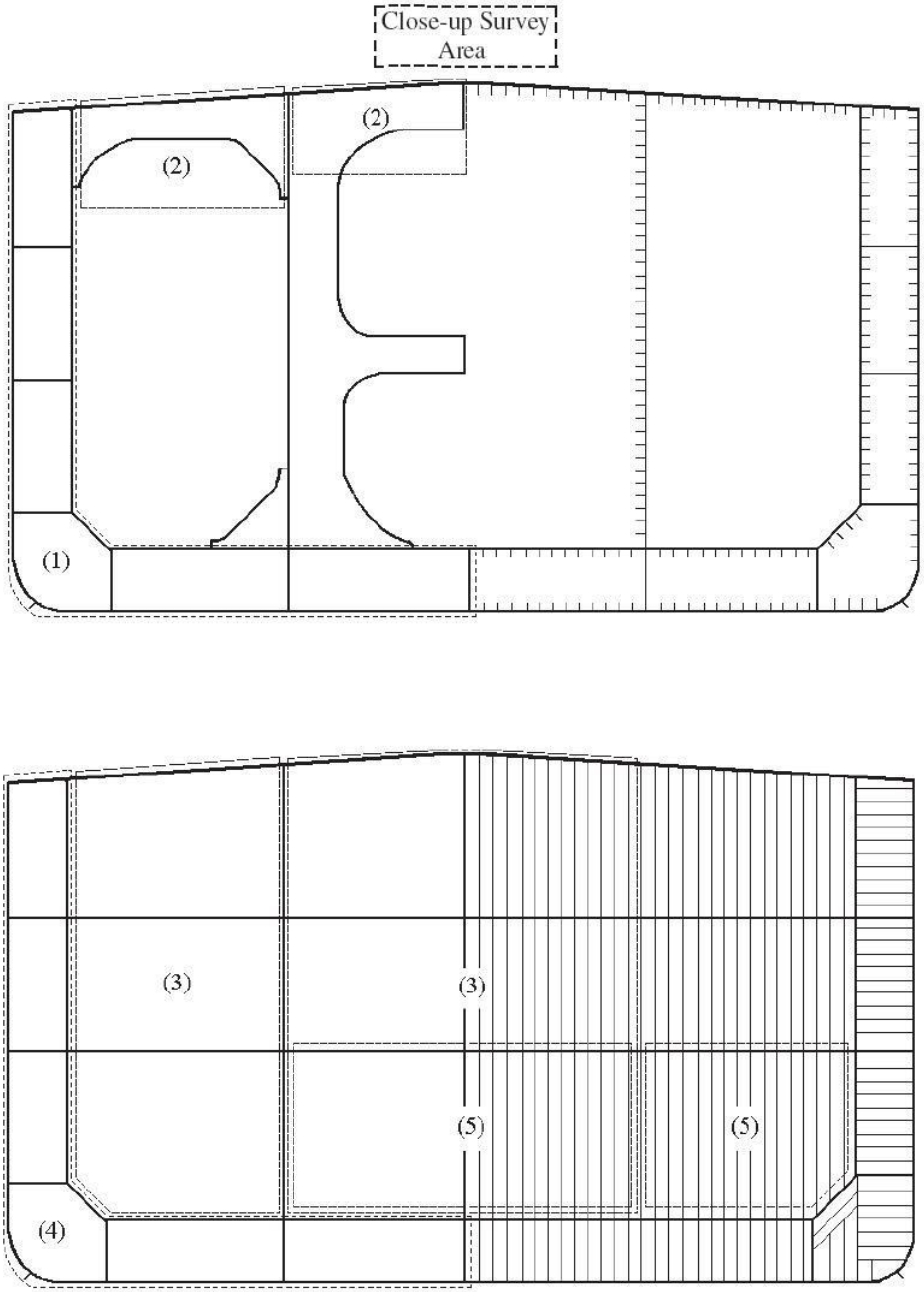
Transverse Section Outline

Report on TM2-DHT(CSR)(i) & (ii)	Report on TM3-DHT(CSR)		Report on TM4-DHT(CSR)
0. Strength deck plating 1. Stringer plate 2. Sheer strake 3. Side shell plating 4. Bilge plating 5. Bottom shell plating 6. Keel plate	10. Deck longitudinals 11. Sheer strake longitudinals 12. Side shell longitudinals 13. Bilge longitudinals 14. Bottom longitudinals 15. Deck girders 16. Horizontal girders in wing ballast tanks 17. Bottom girders 18. Longitudinal bulkhead top strake 19. Longitudinal bulkhead bottom strake	20. Longitudinal bulkhead plating (remainder) 21. Longitudinal bulkhead longitudinals 22. Inner side plating 23. Inner side longitudinal 24. Hopper plating 25. Hopper longitudinal 26. Inner bottom plating 27. Inner bottom longitudinals 28. Topside tank plating 29. Topside tank longitudinals	30. Deck transverse – centre tank 31. Deck transverse – wing tank 32. Vertical web in wing ballast tank 33. Double bottom floor – wing tank 34. Double bottom floor – centre tank 35. Longitudinal bulkhead vertical web 36. Cross ties

Sheet 14

Close-up Survey and Thickness Measurement Areas

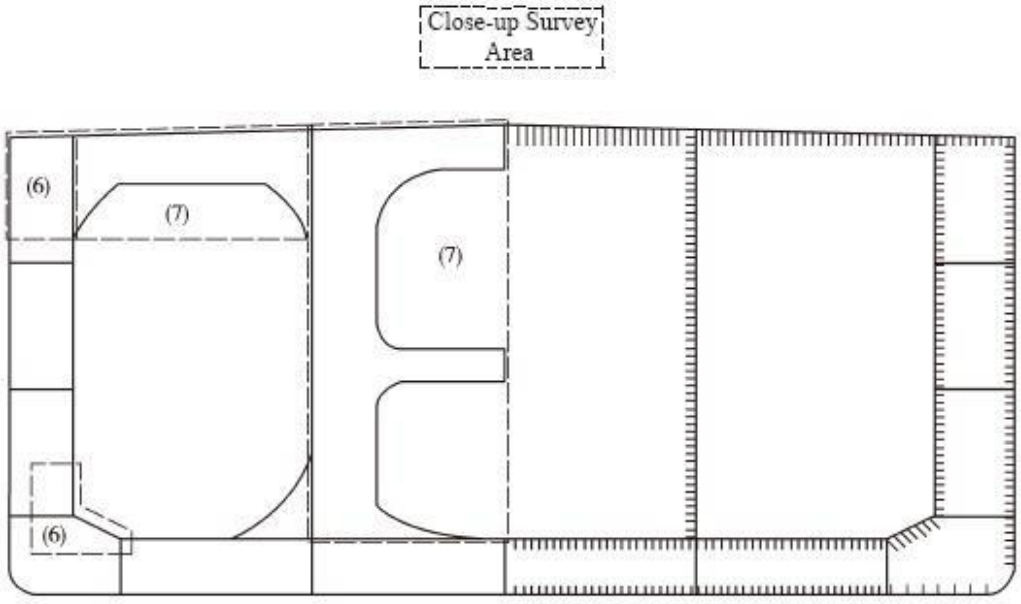
Areas subject to close-up survey and thickness measurements – areas (1) to (5) as defined in Section 4 Table 4-I.1 – Thickness to be reported on TM3-DHT(CSR), TM4-DHT(CSR) and TM5-DHT(CSR) as appropriate.



Sheet 15

Close-up Survey and Thickness Measurement Areas

Areas subject to close-up survey and thickness measurements – areas (6) to (7) as defined in Section 4 Table 4-I.1 – Thickness to be reported on TM3-DHT(CSR) and TM4-DHT(CSR) as appropriate.



13.4A Recommended Procedures for Thickness Measurements of Double Skin Bulk Carriers

Notes:

1. This document is to be used for recording thickness measurements as required by Section 4-I.E.

2. Reporting forms TM1-DSBC, TM2-DSBC, TM3-DSBC, TM4-DSBC, TM5-DSBC and TM6-DSBC (Sheets 4 to 10) are to be used for recording thickness measurements and the maximum allowable diminution should be stated.

The maximum allowable diminution could be stated in an attached document.

3. The remaining Sheets 11 to 14 are guidance diagrams and notes relating to the reporting forms and the procedure for the thickness measurements as required by IACS Unified Requirement.

GENERAL PARTICULARS

Ship's name:
IMO number:
Class identity number:
Port of registry:
Gross tons:
Deadweight:
Date of build:
Classification society:

Name of company performing thickness measurement:
Thickness measurement company certified by:
Certificate No.
Certificate valid from_____to _____
Place of measurement:
First date of measurement:
Last date of measurement:
Special survey/intermediate survey due*:
Details of measurement equipment:
Qualification of operator:

Report number: consisting of Sheets

Name of operator: _____
Signature of operator:___
Company official stamp:__
Official Stamp:

Name of surveyor: _____
Signature of surveyor: _____
Classification society
_____

* Delete as appropriate.

Sheet 4
TM1-DSBC

Report on Thickness Measurement of All Deck Plating, All Bottom Shell Plating and Side Shell Plating*

(*delete as appropriate)

Ship's name..... Class Identity No. ..... Report No. .....

STRAKE POSITION																	
PLATE POSITION	No. or Letter	Org. Thk. mm	Forward Reading						Aft Reading						Mean Diminution %		Maximum Allowable Diminution
			Gauged		Diminution P		Diminution S		Gauged		Diminution P		Diminution S				
			P	S	mm	%	mm	%	P	S	mm	%	mm	%	P	S	mm
12th forward																	
11th																	
10th																	
9th																	
8th																	
7th																	
6th																	
5th																	
4th																	
3rd																	
2nd																	
1st																	
Amidships																	
1st aft																	
2nd																	
3rd																	
4th																	
5th																	
6th																	
7th																	
8th																	
9th																	
10th																	
11th																	
12th																	

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   - 1.1 *All strength deck plating within cargo length area.*
   - 1.2 *All keel, bottom shell plating and bilge plating within the cargo length area.*
   - 1.3 *Side shell plating including selected wind and water strakes outside cargo length area.*
   - 1.4 *All wind and water strakes within cargo length area.*
2. *The strake position is to be clearly indicated as follows:*
   - 2.1 *For strength deck indicate the number of the strake of plating inboard from the stringer plate.*
   - 2.2 *For bottom plating indicate the number of the strake of plating outboard from the keel plate.*
   - 2.3 *For side shell plating give number of the strake of plating sheer strake and letter as shown on shell expansion.*
3. *Only the deck plating strakes outside line of openings are to be recorded.*
4. *Measurements are to be taken at the forward and aft areas of all plates and where plates cross ballast/cargo tank boundaries separate measurements for the area of plating in way of each type of tank are to be recorded.*
5. *The single measurements recorded are to represent the average of multiple measurements.*
6. *The maximum allowable diminution could be stated in an attached document.*

Sheet 5

TM2-DSBC(i) Report on Thickness Measurement of Shell and Deck Plating at Transverse Sections (one, two or three transverse sections)

Ship's name..... Class identity No. ..... Report No. .....

STRENGTH DECK AND SHEERSTRAKE PLATING																											
	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
STRAKE POSITION	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%
Stringer Plate																											
1st strake inboard																											
2nd																											
3rd																											
4th																											
5th																											
6th																											
7th																											
8th																											
9th																											
10th																											
11th																											
12th																											
13th																											
14th																											
centre strake																											
sheer strake																											
TOPSIDE TOTAL																											

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Strength deck plating and sheer strake plating transverse sections:
   One, two or three sections within the cargo length area, comprising the structural items (0), (1) and (2) as shown on the diagrams of typical transverse sections illustrated on Sheets 11, 12 and 13 of this document.
2. *Only the deck plating strakes outside line of hatch openings are to be recorded.*
3. *The top side area comprises deck plating, stringer plate and sheer strake (including rounded gunwales).*
4. *The exact frame station of measurement is to be stated.*
5. *The single measurements recorded are to represent the average of multiple measurements.*
6. *The maximum allowable diminution could be stated in an attached document.*

Sheet 6

TM2-DSBC (ii) Report on Thickness Measurement of Shell and Deck Plating at Transverse Sections (one, two or three transverse sections)

Ship's name..... Class identity No. ..... Report No. .....

SHELL PLATING																											
	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
STRAKE POSITION	No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		No. or Letter	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%
1st below sheer strake																											
2nd																											
3rd																											
4th																											
5th																											
6th																											
7th																											
8th																											
9th																											
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13th																											
14th																											
15th																											
16th																											
17th																											
18th																											
19th																											
20th																											
keel strake																											
BOTTOM TOTAL																											

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Shell plating at transverse sections:
   One, two or three sections within the cargo length area, comprising the structural items (3), (4), (5) and (6) as shown on the diagrams of typical transverse sections illustrated on Sheets 11, 12 and 13 of this document.
2. *The bottom area comprises keel, bottom and bilge plating.*
3. *The exact frame station of measurement is to be stated.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The maximum allowable diminution could be stated in an attached document.*

Sheet 7

TM3-DSBC **Report on Thickness Measurement of Longitudinal Members at Transverse Sections (one, two or three transverse sections)**

Ship's name..... Class identity No. ..... Report No. .....

	FIRST TRANSVERSE SECTION AT FRAME NUMBER									SECOND TRANSVERSE SECTION AT FRAME NUMBER									THIRD TRANSVERSE SECTION AT FRAME NUMBER								
STRUCTURAL MEMBER	Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S		Item No.	Org. Thk.	Max. Alwb. Dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%		mm	mm	P	S	mm	%	mm	%

Operators signature:.....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Longitudinal members at transverse sections:
   One, two or three sections within the cargo length area comprising the appropriate structural items (10) to (25) as shown on diagrams of typical transverse sections illustrated on Sheets 11, 12 and 13 of this document.
2. *The exact frame station of measurement is to be stated.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 8
TM4-DSBC

Report on Thickness Measurement of Transverse Structural Members
In the double bottom, hopper side and topside water ballast tanks

Ship's name..... Class identity No. ..... Report No. .....

TANK DESCRIPTION:										
LOCATION OF STRUCTURE:										
STRUCTURAL MEMBER	ITEM	Original Thickness mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S		
				P	S	mm	%	mm	%	

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Transverse structural members, comprising the appropriate structural items (30) to (34) as shown on diagrams of typical transverse sections illustrated on Sheets 11, 12 and 13 of this document.
2. *Guidance for areas of measurements is indicated on Sheet 14 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 9
TM5-DSBC

Report on Thickness of Watertight Transverse Bulkheads in Cargo Holds

Ship's name..... Class identity No. ..... Report No. .....

LOCATION OF STRUCTURE:					FRAME NO.:			
STRUCTURAL COMPONENT (PLATING/STIFFENER)								
	Original Thickness mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S	
			Port	Starboard	mm	%	mm	%

Operators signature:.....

Notes:

1. *This report form is to be used for recording the thickness measurement of:*
2. *W.T. transverse bulkheads in cargo holds.*
3. *Guidance for areas of measurements is indicated on Sheet 14 of this document.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The maximum allowable diminution could be stated in an attached document.*

Sheet 10
TM6-DSBC

Report on Thickness Measurement of Miscellaneous Structural Members

Ship's name..... Class identity No. ..... Report No. .....

STRUCTURAL MEMBER:									SKETCH
LOCATION OF STRUCTURE:									
Description	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged		Diminution P		Diminution S		
			P	S	mm	%	mm	%	

Operators signature: .....

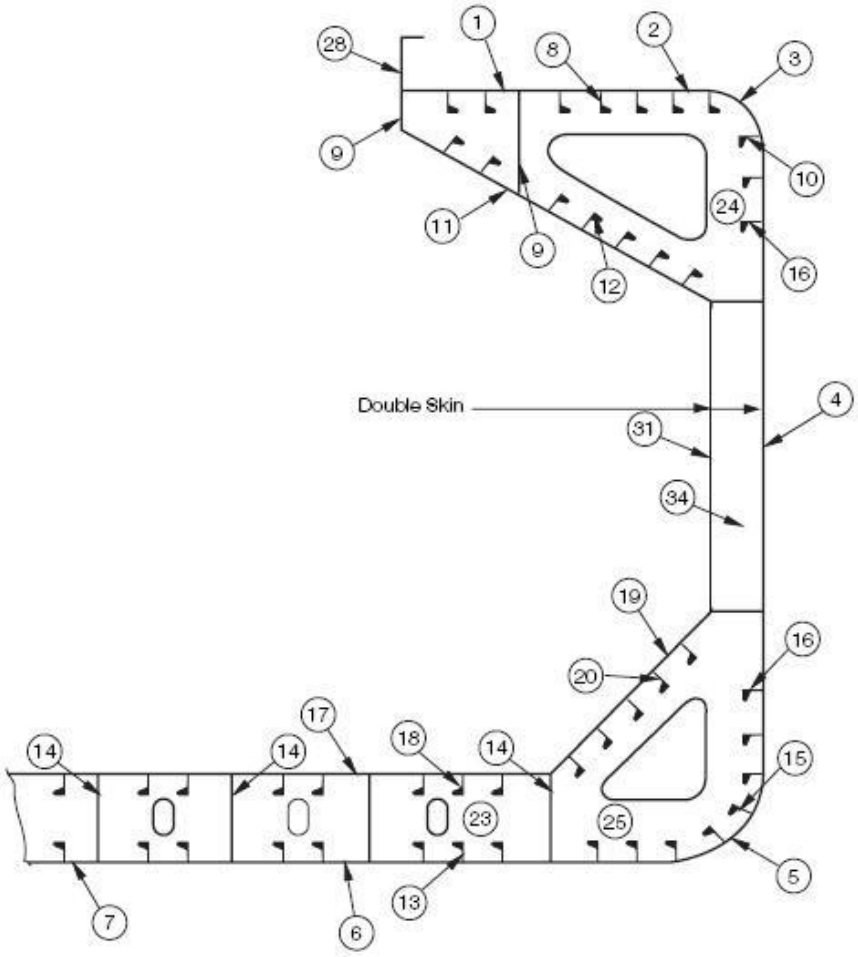
Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Miscellaneous structural members including the structural items (40), (41) and (42) as shown on diagrams of typical transverse sections illustrated on Sheets 11, 12 and 13 of this document.
2. *Guidance for areas of measurement is indicated on Sheet 14 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The maximum allowable diminution could be stated in an attached document.*

Sheet 11

Thickness Measurement – Double Skin Bulk Carriers

Typical Transverse Section of a Double Skin Bulk Carrier with Indication of Longitudinal and Transverse Members

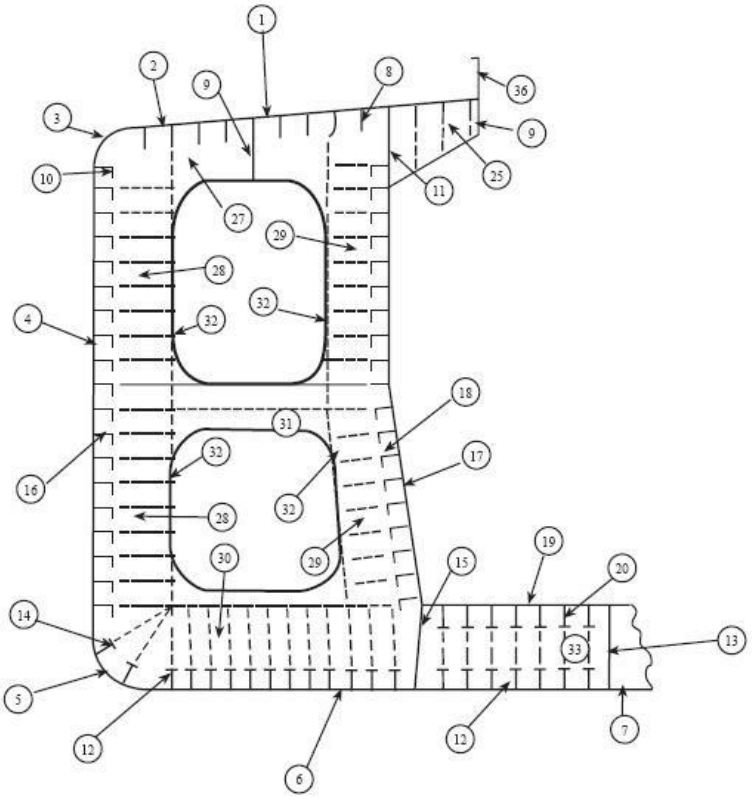


Report on TM2-DSBC(i) & (ii)	18. Inner bottom longitudinals 19. Hopper plating 20. Hopper longitudinals 31. Inner side plating – Inner side longitudinals, if any – Horizontal girders in wing ballast tanks
1. Strength deck plating 2. Stringer plate 3. Sheer strake 4. Side shell plating 5. Bilge plating 6. Bottom shell plating 7. Keel plate	**Report on TM4-DSBC** 23. Double bottom tank floors 25. Hopper side tank transverses 34. Transverse web frame – Topside tank transverses
Report on TM3-DSBC 8. Deck longitudinals 9. Deck girders 10. Sheer strake longitudinals 11. Topside tank sloping plating 12. Topside tank sloping plating longitudinals 13. Bottom longitudinals 14. Bottom girders 15. Bilge longitudinals 16. Side shell longitudinals, if any 17. Inner bottom plating	**Report on TM6-DSBC** 28. Hatch coamings – Deck plating between hatches – Hatch covers

Sheet 12

Thickness Measurement – Ore Carriers

Typical Transverse Section of an Ore Carrier with Indication of Longitudinal and Transverse Members

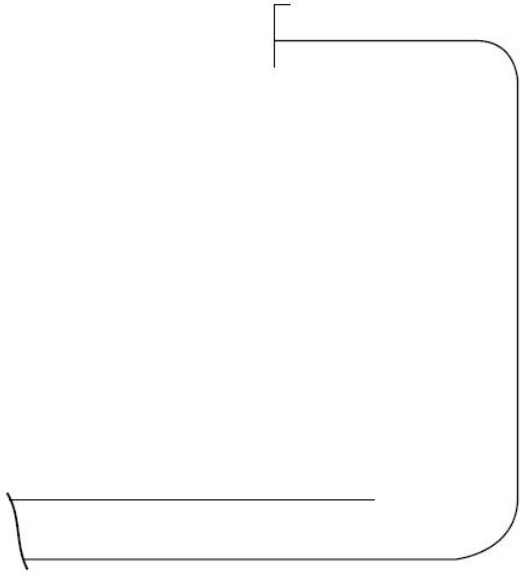


Report on TM2-DSBC(i) & (ii)	Report on TM4-DSBC
1. Strength deck plating 2. Stringer plate 3. Sheer strake 4. Side shell plating 5. Bilge plating 6. Bottom shell plating 7. Keel plate	25. Deck transverse (centre tank) 26. Bottom transverse (centre tank) 27. Deck transverse (wing tank) 28. Side shell vertical web 29. Longitudinal bulkhead vertical web 30. Bottom transverse (wing tank) 31. Struts 32. Transverse web face plate 33. D.B. floors 34. 35.
Report on TM3-DSBC	**Report on TM6-DSBC**
8. Deck longitudinals 9. Deck girders 10. Sheer strake longitudinals 11. Longitudinal bulkhead top strake 12. Bottom longitudinals 13. Bottom girders 14. Bilge longitudinals 15. Longitudinal bulkhead lower strake 16. Side shell longitudinals 17. Longitudinal bulkhead plating (remainder) 18. Longitudinal bulkhead longitudinals 19. Inner bottom plating 20. Inner bottom longitudinals 21. 22. 23. 24.	36. Hatch coamings 37. Deck plating between hatches 38. Hatch covers 39. 40.

Sheet 13

Thickness Measurement – Double Skin Bulk Carriers

Transverse section outline: The diagram may be used for those ships where the diagrams on Sheets 11 and 12 are not suitable.



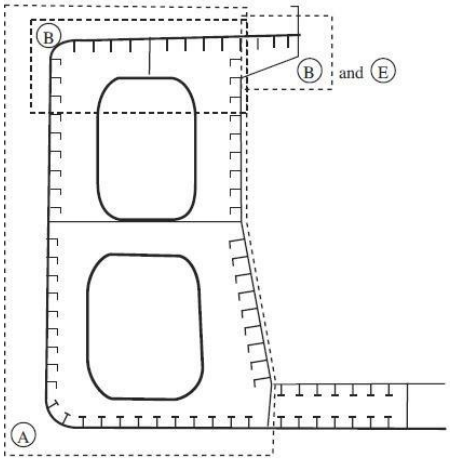
Report on TM2-DSBC(i) & (ii)	17. Inner bottom plating 18. Inner bottom longitudinals 19. Hopper plating 20. Hopper longitudinals 31. Inner side plating – Inner side longitudinals, if any – Horizontal girders in wing ballast tanks
1. Strength deck plating 2. Stringer plate 3. Sheer strake 4. Side shell plating 5. Bilge plating 6. Bottom shell plating 7. Keel plate	**Report on TM4-DSBC** 23. Double bottom tank floors 25. Hopper side tank transverses 34. Transverse web frame – Topside tank transverses
Report on TM3-DSBC 8. Deck longitudinals 9. Deck girders 10. Sheer strake longitudinals 11. Topside tank sloping plating 12. Topside tank sloping plating longitudinals 13. Bottom longitudinals 14. Bottom girders 15. Bilge longitudinals 16. Side shell longitudinals, if any	**Report on TM6-DSBC** 28. Hatch coamings – Deck plating between hatches – Hatch covers

Sheet 14

Thickness Measurement – Ore Carriers

Areas Subject to Close up Survey and Thickness Measurements - Thickness to be Reported on TM3-DSBC, TM4-DSBC, TM5-DSBC and TM6-DSBC as appropriate

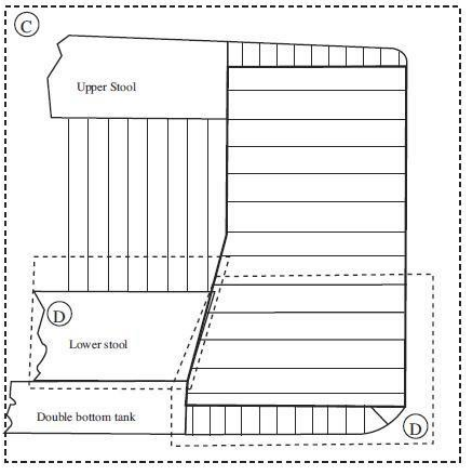
Typical transverse section close-up survey



Thickness to be reported on
TM3-DSBC and TM4-DSBC as appropriate

Close-up survey area

Typical transverse bulkhead



Thickness to be reported on TM5-DSBC

13.4B Recommended Procedures for Thickness Measurements of Double Skin Bulk Carriers Built under Common Structural Rules[1]

Notes:

1. This document is to be used for recording thickness measurements of double skin bulk carriers built under Rules for Bulk Carrier and Oil Tanker (Pt.1, Vol.XVII.A) Sec.1, E.3 and 4.

2. Reporting forms TM1-DSBC(CSR), TM2-DSBC(CSR) (i) and (ii), TM3-DSBC(CSR), TM4-DSBC(CSR), TM5-DSBC(CSR) and TM6-DSBC(CSR) (Sheets 4 to 10) are to be used for recording thickness measurements. The as-built thickness, the voluntary thickness addition and the renewal thickness (minimum allowable thickness) are to be stated in the said forms.

3. The remaining Sheets 11 to 13 are guidance diagrams and notes relating to the reporting forms and the procedure for the thickness measurement.

GENERAL PARTICULARS

Ship's name:
IMO number:
Class identity number:
Port of registry:
Gross tons:
Deadweight:
Date of build:
Classification society:

Name of Company performing thickness measurement:
Thickness measurement company certified by:
Certificate No.
Certificate valid from …… to ……
Place of measurement:
First date of measurement:
Last date of measurement:
Special survey/intermediate survey due:*
Details of measurement equipment:
Qualification of operators:

Report number: consisting of Sheets

Name of operator: ……	Name of surveyor: ……
Signature of operator: ……	Signature of surveyor: ……
Company	Classification society
Official stamp:	Official Stamp:

[1] Rules for Bulk Carrier and Oil tanker (Pt.1, Vol.XVII.A) Sec.1, E.3 and 4 (including amendments).

* Delete as appropriate.

Sheet 4
TM1-DSBC(CSR)

Report on Thickness Measurement of All Deck Plating, All Bottom Plating or Side Shell Plating*

(*delete as appropriate)

Ship's name..... Class Identity No..... Report No.....

STRAKE POSITION																		
PLATE POSITION	No. or Letter	As Built Thk. mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Forward Reading						Aft Reading						Mean Remaining Corr. Addition, mm [(c1)+(c2)]/2	
					Gauged Thk. mm (b1)		Remaining Corr. Addition, mm (c1)=(b1)-(a)				Gauged Thk. mm (b2)		Remaining Corr. Addition, mm (c2)=(b2)-(a)					
					P	S	P		S		P	S	P		S		P	S
12th																		
11th																		
10th																		
9th																		
8th																		
7th																		
6th																		
5th																		
4th																		
3rd																		
2nd																		
1st forward																		
Amidships																		
1st aft																		
2nd																		
3rd																		
4th																		
5th																		
6th																		
7th																		
8th																		
9th																		
10th																		
11th																		
12th																		

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   - 1.1 *All strength deck plating within the cargo length area.*
   - 1.2 *All keel, bottom shell plating and bilge plating within the cargo length area.*
   - 1.3 *Side shell plating including selected wind and water strakes outside the cargo length area.*
   - 1.4 *All wind and water strakes within the cargo length area.*
2. *The strake position is to be clearly indicated as follows:*
   - 2.1 *For strength deck indicate the number of the strake of plating inboard from the stringer plate.*
   - 2.2 *For bottom plating indicate the number of the strake of plating outboard from the keel plate.*
   - 2.3 *For side shell plating give number of the strake of plating sheer strake and letter as shown on shell expansion.*
3. *Only the deck plating strakes outside the line of openings are to be recorded.*
4. *Measurements are to be taken at the forward and aft areas of all plates and the single measurements recorded are to represent the average of multiple measurements.*
5. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 5

TM2-DSBC(CSR)(i) Report on Thickness Measurement of Shell and Deck Plating (one, two or three transverse sections)

Ship's name..... Class Identity No..... Report No.....

STRENGTH DECK AND SHEERSTRAKE PLATING																															
	FIRST TRANSVERSE SECTION AT FRAME NUMBER										SECOND TRANSVERSE SECTION AT FRAME NUMBER										THIRD TRANSVERSE SECTION AT FRAME NUMBER									
STRAKE POSITION	No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)			
					P	S	P		S						P	S	P		S						P	S	P		S	
Stringer Plate																														
1st strake inboard																														
2nd																														
3rd																														
4th																														
5th																														
6th																														
7th																														
8th																														
9th																														
10th																														
11th																														
12th																														
13th																														
14th																														
centre strake																														
sheer strake																														
TOPSIDE TOTAL																														

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Strength deck plating and sheer strake plating transverse sections:
   One, two or three sections within the cargo length area, comprising the structural items (1), (2) and (3) as shown on the diagram of typical transverse sections, illustrated on Sheets 11 and 12 of this document.
2. *Only the deck plating strakes outside the line of openings are to be recorded.*
3. *The topside area comprises deck plating, stringer plate and sheer strake (including rounded gunwales).*
4. *The exact frame station of measurement is to be stated.*
5. *The single measurements recorded are to represent the average of multiple measurements.*
6. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 6
TM2-DSBC(CSR)(ii) Report on Thickness Measurement of Shell Plating (one, two or three transverse sections)

Ship's name..... Class Identity No..... Report No.....

SHELL PLATING																													
	FIRST TRANSVERSE SECTION AT FRAME NUMBER										SECOND TRANSVERSE SECTION AT FRAME NUMBER										THIRD TRANSVERSE SECTION AT FRAME NUMBER									
STRAKE POSITION	No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				No. or Letter	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)			
					P	S	P		S						P	S	P		S						P	S	P		S	
1st below sheer strake																													
2nd																													
3rd																													
4th																													
5th																													
6th																													
7th																													
8th																													
9th																													
10th																													
11th																													
12th																													
13th																													
14th																													
15th																													
16th																													
17th																													
18th																													
19th																													
20th																													
Keel strake																													
BOTTOM TOTAL																													

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Shell plating at transverse sections:
   One, two or three sections within the cargo length area, comprising the structural items (4), (5), (6) and (7) as shown on the diagram of typical transverse sections, illustrated on Sheets 11 and 12 of this document.
2. *The bottom area comprises keel, bottom and bilge plating.*
3. *The exact frame station of measurement is to be stated.*
4. *The single measurements recorded are to represent the average of multiple measurements.*
5. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 7
TM3-DSBC(CSR) Report on Thickness Measurement of Longitudinal Members (one, two or three transverse sections)

Ship's name..... Class Identity No..... Report No.....

	FIRST TRANSVERSE SECTION AT FRAME NUMBER										SECOND TRANSVERSE SECTION AT FRAME NUMBER										THIRD TRANSVERSE SECTION AT FRAME NUMBER									
STRUCTURAL MEMBER	Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)				Item No.	As Built Thk. mm	Vol. Thk. Add. mm	Ren. Thk. mm (a)	Gauged Thk. mm (b)		Remaining Corr. Addition, mm (b)-(a)			
					P	S	P		S						P	S	P		S						P	S	P		S	

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of:*
   Longitudinal members at transverse sections:
   One, two or three sections within the cargo length area, comprising the appropriate structural items (8) to (20) and (31) as shown on the diagram of typical transverse sections, illustrated on Sheets 11 and 12 of this document.
2. *The exact frame station of measurement is to be stated.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 8
TM4-DSBC(CSR)

Report on Thickness Measurement of Transverse Structural Members In Double Bottom, Hopper Side and Topside Water Ballast Tanks

Ship's name..... Class Identity No..... Report No.....

TANK DESCRIPTION:

LOCATION OF STRUCTURE

STRUCTURAL MEMBER	ITEM	As Built Thickness mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)	
					P	S	P	S

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of transverse structural members, comprising the appropriate structural items (23) to (25) and (34) as shown on the diagram of typical transverse sections, illustrated on Sheets 11 and 12 of this document.*
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 13 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 9
TM5-DSBC(CSR)

Report on Thickness Measurement of Cargo Hold Transverse Bulkheads

Ship's name..... Class Identity No..... Report No.....

HOLD DESCRIPTION:

LOCATION OF STRUCTURE: FRAME NO.:

STRUCTURAL COMPONENT (PLATING/STIFFENER)	As Built Thickness mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)	
				P	S	P	S

Operators signature: .....

Notes:

1. *This report is to be used for recording the thickness measurement of W.T. transverse bulkheads in cargo holds.*
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 13 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 10
TM6-DSBC(CSR)

Report on Thickness Measurement of Miscellaneous Structural Members

Ship's name..... Class Identity No..... Report No.....

STRUCTURAL MEMBER:

LOCATION OF STRUCTURE:

SKETCH

Description	As Built Thk. mm	Voluntary Thickness Addition mm	Renewal Thickness mm (a)	Gauged Thickness mm (b)		Remaining Corr. Addition mm (b)-(a)			
				P	S	P		S	

Operators signature: .....

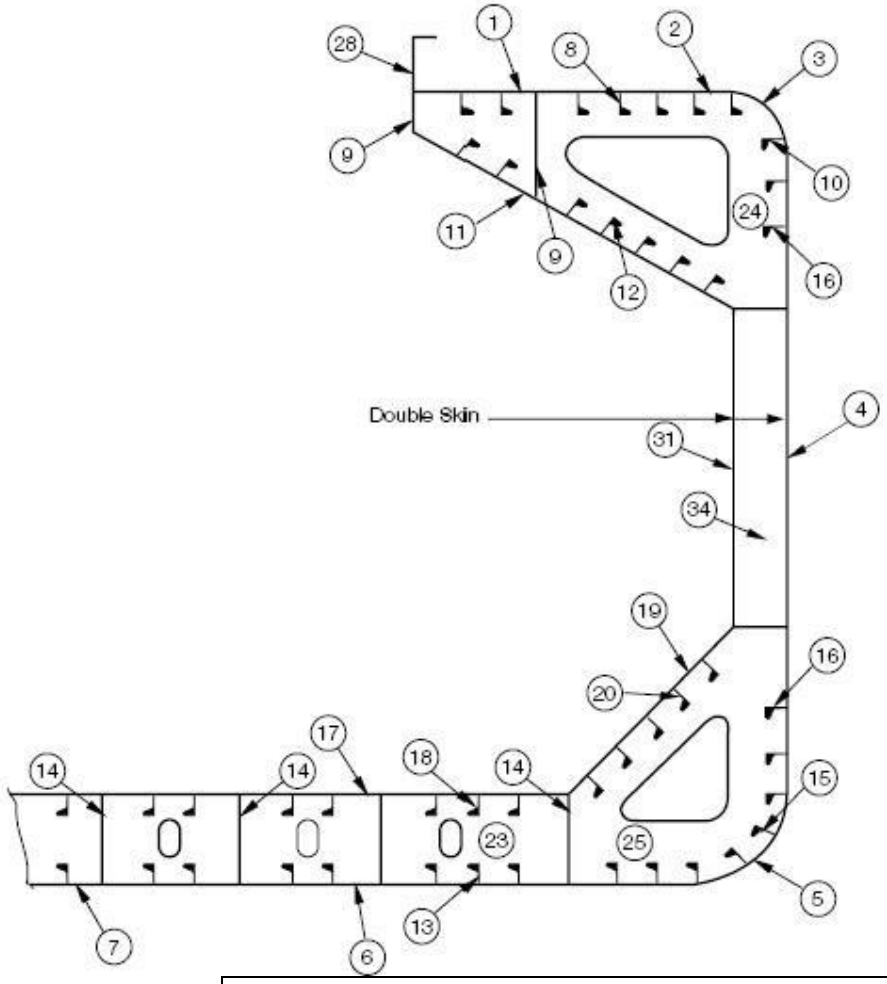
Notes:

1. *This report is to be used for recording the thickness measurement of miscellaneous structural members including the structural items (28) as shown on the diagram of typical transverse sections, illustrated on Sheets 11 and 12 of this document.*
2. *Guidance for areas of measurement is indicated on the diagrams shown on Sheet 13 of this document.*
3. *The single measurements recorded are to represent the average of multiple measurements.*
4. *The remaining corrosion addition is to be recorded with result of gauged thickness minus renewal thickness. If the result is negative, the structure in way is to be renewed, and the mark "R" is to be indicated in the right-hand column. If the result is between 0 and 0.5 mm (0 included), the structure in way is to be additionally gauged, and the mark "S" is to be indicated in the right-hand column.*

Sheet 11

Thickness Measurement – Double Skin Bulk Carriers

Typical Transverse Section of a Double Skin Bulk Carrier with Indication of Longitudinal and Transverse Members



Report on TM2-DSBC(CSR)(i) & (ii)
1. Strength deck plating
2. Stringer plate
3. Sheerstrake
4. Side shell plating
5. Bilge plating
6. Bottom plating
7. Keel plate

Report on TM3-DSBC(CSR)	
8. Deck longitudinals	17. Inner bottom plating
9. Deck girders	18. Inner bottom longitudinals
10. Sheerstrake longitudinals	19. Hopper plating
11. Topside tank sloping plate	20. Hopper longitudinals
12. Topside tank sloping plate longitudinals	31. Inner side plating – Inner side longitudinals, if any – Horizontal girders in wing ballast tanks
13. Bottom longitudinals	
14. Bottom girders	
15. Bilge longitudinals	
16. Side shell longitudinals, if any	

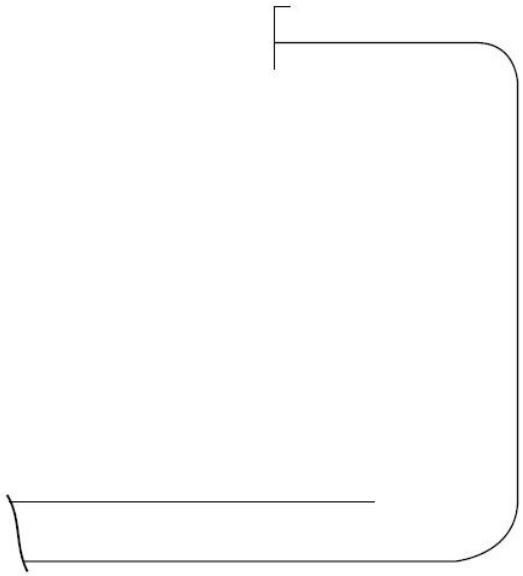
Report on TM4-DSBC(CSR)
23. Double bottom tank floors
24. Topside tank transverses
25. Hopper side tank transverses
34. Transverse web frame – Ordinary transverse frame in double skin tank

Report on TM6-DSBC(CSR)
28. Hatch coamings – Deck plating between hatches – Hatch covers

Sheet 12

Thickness Measurement – Double Skin Bulk Carriers

Transverse section outline: This diagram may be used for those ships where the diagram on Sheet 11 is not suitable



Report on TM2-DSBC(CSR)(i) & (ii)
1. Strength deck plating 2. Stringer plate 3. Sheer strake 4. Side shell plating 5. Bilge plating 6. Bottom plating 7. Keel plate

Report on TM3-DSBC(CSR)	
8. Deck longitudinals 9. Deck girders 10. Sheer strake longitudinals 11. Topside tank sloping plating 12. Topside tank sloping plating longitudinals 13. Bottom longitudinals 14. Bottom girders 15. Bilge longitudinals 16. Side shell longitudinals, if any	17. Inner bottom plating 18. Inner bottom longitudinals 19. Hopper plating 20. Hopper longitudinals 31. Inner side plating – Inner side longitudinals, if any – Horizontal girders in wing ballast tanks

Report on TM4-DSBC(CSR)
23. Double bottom tank floors 24. Topside tank transverses 25. Hopper side tank transverses 34. Transverse web frame – Ordinary transverse frame in double skin tank

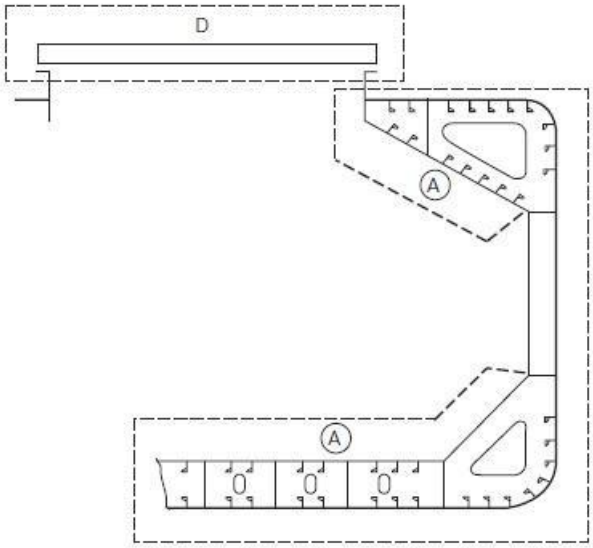
Report on TM6-DSBC(CSR)
28. Hatch coamings – Deck plating between hatches – Hatch covers

Sheet 13

Close-up Survey and Thickness Measurement Areas

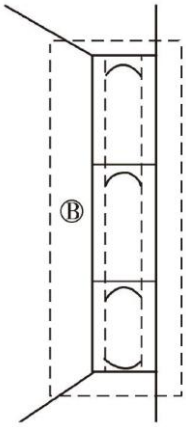
Typical transverse section

Areas (A) and (D)

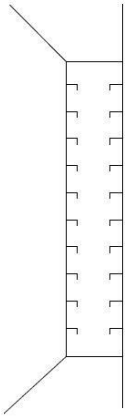


Thickness to be reported on TM3-DSBC(CSR), TM4-DSBC(CSR) and TM6-DSBC(CSR), as appropriate

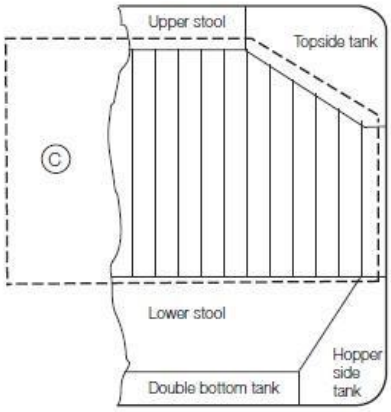
Framing in double-side tanks Area B



Ordinary longitudinal structure in double skin



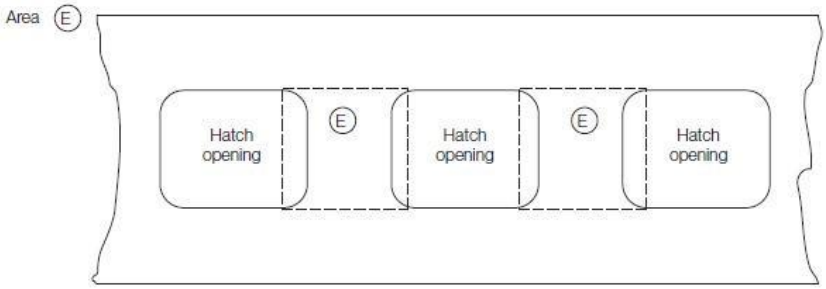
A cargo hold, transverse bulkhead



Ordinary transverse frame in double skin tank
Thickness to be reported on TM4-DSBC(CSR)

Thickness to be reported on TM5-DSBC(CSR)

Typical areas of deck plating and underdeck structure inside line of hatch openings between cargo hold hatches



Thickness to be reported on TM6-DSBC(CSR)

end