THICKNESS MEASUREMENT SPECIFICATION FOR
DNV CONDITION ASSESSMENT PROGRAMME (CAP)
HULL

1. Objective

1.1 This specification describes the extent of thickness measurements required for DNV Condition Assessment Programme (CAP) Hull. Requirements to thickness measurements for class surveys are specified in DNV Rules for Classification of Ships.

1.2 DNV uses thickness measurement data for a statistical analysis of diminution as a basis for the CAP rating. *Representative data for all main structural elements in all tanks/spaces are required*. The main structural elements in a CAP context are deck, shipside, bottom, inner bottom, inner deck, longitudinal bulkhead, transverse bulkhead (i.e. tank/space boundaries with plating and stiffeners) and internal structure (i.e. webframes, stringers, girders, floors etc.)

1.3 Failure to carry out thickness measurements according to this specification may prevent completion of CAP.

2. General

2.1 Thickness measurements shall be carried out by a qualified company approved by DNV.

2.2 A DNV surveyor shall be onboard while the measurements are taken to the extent necessary to control the process.

2.3 The thickness measurements data shall be reported using the "DNV UTM Template". All information required in the template is to be completed by the thickness measurement company. The "DNV UTM Template" is available at http://cap.dnv.com

2.4 One electronic version and one paper version of the thickness measurement report with sketches and relevant documentation is to be submitted to the responsible DNV unit.

2.5 Readings to be included in the thickness measurement report shall be representative for the area measured and shall normally be single point readings. If a single reading is not considered to be representative for the area it represent, additional readings may be carried out in same area and included in the report together with a comment stating that these are additional readings. Alternatively, the average value of several readings in a small area may be included in the report together with a comment stating that this is an average value. In such cases all the readings to be averaged are to be taken within the affected area. Low readings shall not be averaged out by several readings in adjacent uncorroded areas.

2.6 Pits, grooves and local corrosion are to be measured and included in the report with a suitable comment.

2.7 Cracks, buckling and other deficiencies identified are to be reported to the attending CAP surveyor and included as comments/sketches in the thickness measurement report.

3. Standard Extent of Thickness Measurements

3.1 The standard extent of measurements is described in this section. Reductions in the standard extent of measurements are only accepted in accordance with criteria listed in Section 4.

3.2 The following structure is to be completely measured with 5 points per plate:

- Exposed main deck plating
- Bottom plating
- Wind and water strakes
- Inner bottom plating
- Continuous longitudinal stringers and inner deck plating

3.3 Three transverse sections in the cargo area are to be chosen where the largest reductions are suspected to occur or are revealed from deck plating measurements. The transverse sections are normally to be located outside the line of cargo hatch openings if fitted. The complete section is to be measured, including:

- Within 0.15D (where D is the moulded depth of the ship) from deck and bottom every longitudinal and girder shall be measured on the web and flange and every plate shall be measured one point between each longitudinal.
- Between deck and bottom area every longitudinal and girder shall be measured on the web and flange and every plate strake at least one point per plate.

3.4 All tanks in the cargo area are to be measured in three transverse belts for each tank, normally located in the forward, middle and aft parts of the tank. Measurements in two transverse belts are sufficient for tanks of less than 15 metres length. All structure in and adjacent to these belts are to be measured, including:

- Longitudinals and other stiffeners with one representative measurement on both web and flange.
- Ship side (outside wind and water strakes) and longitudinal bulkhead plates (2 points per plate strake).
- Stringer platforms with associated structure (2 points per plate).
- Transverse bulkheads including swash bulkheads with associated structure (plates and stiffeners at three horizontal levels).
- Web frames with flanges, stiffeners and brackets.

3.5 The following structure is to be measured in fore and aft peak tanks:

- All transverse webs with associated plating and longitudinals.
- Transverse bulkhead complete with associated structure.
- Deckhead (tanktop) and stringers with associated structure.
- Bottom and shipside with stiffeners.

3.6 Any other ballast tanks outside of cargo area are to be measured as described in Section 3.4.

3.7 For cofferdams, voids and other spaces in the cargo area, representative thickness data for all main structural elements are required.

3.8 Cargo hatches with coamings and associated structure are to be measured for all holds.

3.9 Additional measurements are to be carried out if one or more readings indicate corrosion exceeding requirement to CAP 2 (67 % of allowable margin). "Requirements for extent of thickness measurements at those areas of substantial corrosion" in DNV Rules for Classification of Ships should be used for guidance.

3.10 Extent of measurements may be increased as considered necessary by the attending CAP surveyor.

4. Reduced Extent of Measurements

4.1 Extent of measurements in shell plating (ref. Section 3.2) and in three transverse sections in cargo area (ref. Section 3.3) is not to be reduced.

4.2 The number of readings may only be reduced if the structure in question is:

- made of solid stainless steel, or
- coated with original coating still intact on both sides of the structure, or
- located within fuel or cargo tank(s)

and

- representative thickness measurements reveal no or negligible steel loss, well within the requirements for CAP 1 (33 % of allowable margin). The representative measurements are to be taken in areas expected to represent worst case corrosion.

4.3 Where the number of thickness measurements is reduced, it is to be ensured that representative measurements are obtained for all main structural elements (ref. Section 1.2) in all tanks/spaces. An absolute minimum of 10 representative readings for each main structural element in all tanks/spaces are required. If measurements reveal that the conditions given in Section 4.2 are not met, the standard extent of measurements as described in Section 3 is to be carried out.

4.4 No reduction in extent of measurements is to be applied unless accepted by the attending CAP surveyor.

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