



Ref. T5/1.01

MEPC/Circ.390
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**CONDITION ASSESSMENT SCHEME
(adopted by Resolution MEPC.94(46))**

1 The Marine Environment Protection Committee at its forty-seventh session, pursuant to operative paragraph 1 of resolution MEPC.94(46), considered proposals for a Model Survey Plan for CAS to be incorporated in the Condition Assessment Scheme (CAS) and adopted:

- .1 the Model Survey Plan for CAS, which is contained in Annex 1 to this circular;
- .2 the Guidance Note for the Safe Conduct of CAS surveys, which is contained in Annex 2 to this circular; and
- .3 the CAS Schedule, which is contained in Annex 3 to this circular.

2 The Committee recognised, however, that the CAS can only be amended in accordance with the provisions of article 16 of MARPOL 73/78 upon entry into force of the 2001 amendments to MARPOL 73/78 on the 1 September 2002. For the benefit of Parties to MARPOL 73/78, Administrations, Companies and Recognised Organisations, the Committee agreed to disseminate the above mentioned documents for their use pending adoption of amendments to the CAS.

3 Paragraph 6.1.2.1 of CAS states that “the Survey Plan for CAS shall be developed by the Company in co-operation with the Recognised Organisation”. In an effort to assist the preparations of the CAS Survey Plans, the Committee has identified, in the Model Survey Plan for CAS, which is contained in Annex 1 to this circular, a number of items of the CAS Survey Plan that are to be provided by the Company, or by the Recognised Organisation, or by both.

4 The CAS contains no explicit provisions or guidance on the safe conduct of CAS surveys. The only requirements which exist are those set out in paragraphs 5.2 to 5.5.4 of Annex B to Resolution A.744(18) as amended. The Committee has developed the Guidance Note for the Safe Conduct of CAS surveys, which is contained in Annex 2 to this circular and recommends its use.

5 With respect to the CAS Schedule the Committee recognised and draws attention to the fact that this schedule does not cover all the activities and milestones specified in the CAS. The CAS Schedule, contained in Annex 3 to this circular, has been developed for the sole purpose of providing a schedule to aid Companies and Recognised Organisation in the preparation of the CAS Survey and shall be read and used for this purpose only.

6 The Committee, recalling operative paragraph 6.2 of resolution MEPC.94(46), invites those concerned with the CAS to make use of the Annexes to this circular for the implementation of the provisions of regulation 13G(7) of Annex I of MARPOL 73/78.

ANNEX 1

MODEL SURVEY PLAN FOR CAS

Basic Information and Particulars

Name of Ship	:
IMO Number	:
Flag State	:
Port of Registry	:
Gross Tonnage	:
Deadweight (metric tonnes)	:
Length Between Perpendiculars (m)	:
Breadth (m)	:
Depth (m)	:
Summer load line draught (m)	:
Builder	:
Hull Number	:
Recognised Organisation (RO)	:
RO Identity	:
Class Notation	:
Date of delivery	:
Category of Ship (1 or 2)	:
Date for compliance with Regulation 13F	:
Company	:
Thickness Measurement Firm	:

1 Preamble**1.1 Scope**

1.1.1 The present CAS Survey Plan covers the minimum extent of overall surveys, close-up surveys, thickness measurements and pressure testing within the cargo area, ballast tanks, including fore and aft peak tanks, required by the CAS adopted by resolution MEPC.94(46) for this ship.

1.1.2 The practical aspects of any part of the CAS survey should be acceptable to the attending surveyor^o (s).

1.2 Documentation

Paragraph 6.2.1 of the CAS requires all documents used in the development of the CAS survey plan to be available onboard during the CAS survey.

2 Arrangement of Tanks

This section of the Plan should provide information (either in the form of plans or text) on the arrangement of tanks that fall within the scope of the CAS survey.

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

This section of the Plan should indicate any changes relating to (and should update) the information on the use of the tanks of the ship, the extent of coatings and the corrosion protective system provided in the Survey Planning Questionnaire.

4 Conditions for survey (e.g. information regarding tank cleaning, gas freeing, ventilation, lighting etc.)

This section of the Plan should indicate any changes relating to (and should update) the information on the conditions for survey provided in the Survey Planning Questionnaire.

5 Provisions and method of access to structures

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

Further guidance on the provisions and methods of access is given in the Guidance Note for the Safe Conduct of CAS Surveys contained in Appendix 3 to this Plan.

6 List of equipment for survey (to be provided by the Company and supplemented by the Recognised Organisation, as necessary)

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

7 Survey requirements

7.1 Overall survey

The CAS requirements

Paragraph 7.2.1 (and 5.2) of the CAS requires that the hull structures in way of cargo tanks, pump rooms, cofferdams, pipe tunnels, void spaces within the cargo area and all ballast tanks shall undergo an overall survey.

The Plan

This section of the Plan should identify and list the spaces that should undergo an overall survey for this ship.

7.2 Close up survey

The CAS requirements

Paragraph 7.2.2 (and Table 7.2.2) of the CAS state the hull structures that shall undergo a close up survey. These are:

Close up survey requirements
All web frame rings, in all ballast tanks (see note 1)
All web frame rings, in a cargo wing tank, (see note 1)
A minimum of 30% of all web frame rings, in each remaining cargo wing tank (see notes 1 and 3)
All transverse bulkheads, in all cargo and ballast tanks (see note 2)
A minimum of 30 % of the deck and bottom transverses, including adjacent structural members, in each cargo centre tank (see note 3)
Additional complete transverse web frame rings or deck and bottom transverse including adjacent structural members as considered necessary by the surveyor

Notes:

- 1 Complete transverse web frame ring including adjacent structural member.
- 2 Complete transverse bulkhead, including girder and stiffener systems and adjacent members
- 3 The 30% should be rounded up to the next whole integer.*

In addition paragraphs 7.2.3 and 7.2.4 of the CAS provides further guidance as far as the extent and scope of the close up survey.

The Plan

This section of the Plan should identify and list, using paragraph 7.2.2 (and Table 7.2.2) of the CAS, the hull structures that should undergo a close up survey for this ship. In particular it should:

- .1 identify the cargo wing tank in which all web frame rings will undergo close up survey and indicate the number of web frame rings involved;
- .2 identify the remaining cargo wing tanks in which a minimum of 30% of the web frame rings will undergo a close up survey and indicate, for each tank, the number of web frame rings involved; and
- .3 identify the cargo centre tanks in which a minimum of 30% of the deck and bottom transverses, including adjacent structural members, in each cargo centre tank will undergo close up survey and indicate, for each tank, the number of the deck and bottom transverses, including adjacent structural members involved.

8 Identifications of tanks for tank testing

The CAS requirements

Paragraph 6.2.2.9 of the CAS states that the tank testing should be as per annex 3 of Annex B of resolution A.744(18) as amended.

* This note is not included in the CAS but it has been agreed in order to avoid any ambiguity and to provide the required guidance.

The Plan

This section of the Plan should identify and list the tanks that should undergo tank testing for this ship.

9 Identification of areas and sections for thickness measurements

The CAS requirements

Paragraph 7.3.3 (and Table 7.3.3) of the CAS specify the minimum requirements for thickness measurements for CAS survey. These are as follows:

Thickness measurement requirements
1. Within the cargo area: .1 Each deck plate .2 Three transverse sections .3 Each bottom plate
2. Measurements of structural members subject to close-up survey according to the table above (for close up survey), for general assessment and recording of corrosion pattern
3. Suspect areas
4. Selected wind and water strakes outside the cargo area.
5. All wind and water strakes within the cargo area.
6. Internal structure in the fore and aft peak tanks
7. All exposed main deck plates outside the cargo area and all exposed first tier superstructure deck plates

Guidance Notes:

- 1 The attending surveyor may increase the extent of thickness measurements as deemed necessary (see paragraph 7.3.5 of the CAS).
- 2 Transverse sections for thickness measurements should be chosen where the largest material reductions are expected to occur or are revealed from deck plating measurements (see section 7.3.8 of the CAS).
- 3 Where substantial corrosion is found, the extent of thickness measurements should be increased accordingly (see paragraph 7.3.4 of the CAS).

In addition paragraphs 7.3.4 to 7.3.8 of the CAS provide further guidance on the extent and increase of the thickness measurements to be taken.

The Plan

This section of the Plan should identify and list, using paragraph 7.3.3 (and Table 7.3.3) of the CAS, the areas and sections where thickness measurements should be taken.

10 Hull Materials (to be specified by the Recognised Organisation)

This section of the Plan should identify, using a format similar to that of the table below, the materials used in the hull structures that fall within the scope of the CAS for the purpose of providing a concise reference.

Location	Plating	Longitudinals and Stiffeners	Longitudinal Girders / Stringers	Transverse Girders / Web Frames / Stringers / Floors
Deck				
Bottom				
Inner bottom				
Side shell				
Longitudinal bulkhead				
Transverse bulkheads				
Fore Peak				
Aft Peak				

Guidance Notes:

- 1 Material grade is Mild Steel (MS) where not shown otherwise.
- 2 Material grade HTS indicates High Tensile Steel; SS indicates Stainless Steel; and CS indicates Clad Steel.
- 3 In case of repairs material, grade, type and the extent should be verified from drawings.

11 Minimum thickness of hull structures (to be specified by the Recognised Organisation)

This section of the Plan should specify the minimum thickness for hull structures of this ship that are subject to the CAS (indicate either (a) or preferably (b), if such information are available):

- (a) Determined from the attached** wastage allowance table and the original thickness according to the hull structure plans of the ship;
- (b) Given in the following table(s)

Area or Location	Original Thickness (mm)	Minimum Thickness (mm)	Substantial Corrosion Thickness (mm)
Deck			
Plating			
Longitudinals			
Longitudinal girders			
Bottom			
Plating			
Longitudinals			
Longitudinal girders			
Ship side			
Plating			
Longitudinals			
Longitudinal girders			
Longitudinal bulkhead			
Plating			
Longitudinals			
Longitudinal girders			
Inner bottom			
Plating			
Longitudinals			
Longitudinal girders			

** The wastage allowance tables should be attached to the CAS Survey Plan.

Transverse bulkheads			
Plating			
Stiffeners			
Transverse web frames, floors and stringers			
Plating			
Flanges			
Stiffeners			
Cross ties			
Flanges			
Webs			

12 Thickness Measurement (TM) Firm

This section of the Plan should identify changes, if any, relating to the information on the Thickness Measurement (TM) Firm provided in the Survey Planning Questionnaire.

13 Damage experience related to the ship

This section of the Plan should, using the tables provided below, provide details of the hull damages for at least the last three years in way of the cargo and ballast tanks areas and void spaces within the cargo area. These damages are subject to CAS survey.

Hull damages sorted by location for this ship
 (to be provided by the Company and supplemented by the Recognised Organisation, as necessary)

Tank Number or Area	Possible cause, if known	Description of the damages	Location	Repair	Date of repair

Hull damages for sister or similar ships (if available) in the case of design related damage
 (to be provided by the Company and supplemented by the Recognised Organisation, as necessary)

Tank Number or Area	Possible cause if known	Description of the damages	Location	Repair	Date of repair

Tank Number or Area	Possible cause if known	Description of the damages	Location	Repair	Date of repair

14 Areas identified with substantial corrosion from previous surveys (to be provided by the Recognised Organisation)

This section of the Plan should identify and list the areas of substantial corrosion from previous surveys.

15 Critical structural areas and suspect areas (to be provided by Company and supplemented by the Recognised Organisation, as necessary)

This section of the Plan should identify and list the critical structural areas and the suspect areas, when such information is available.

16 Other relevant comments and information (to be provided by the Company and supplemented by the Recognised Organisation)

This section of the Plan should provide any other relevant, to the CAS survey, comments and information.

Appendices

Appendix 1 - List of Plans

Paragraph 6.2.2.2 of CAS requires that main structural plans of cargo and ballast tanks (scantling drawings), including information on regarding use of high tensile steel (HTS) to be provided.

This Appendix of the Plan should identify and list the main structural plans which form part of the Plan and which are attached to the Plan.

Appendix 2 - Survey Planning Questionnaire

The Survey Planning Questionnaire, which has been submitted by the Company, should be appended to the Plan.

Appendix 3 – Guidance Note for the Safe Conduct of CAS Surveys

The Guidance Note for the Safe Conduct of CAS Surveys, which is contained in Annex 2 to this Circular should be appended to the Plan.

Appendix 4 - CAS Schedule

The CAS Schedule, which is contained in Annex 3 to this Circular should be appended to the Plan.

Appendix 5 - Other documentation

This part of the Plan should identify and list any other documentation that forms part of the Plan.

Prepared on behalf of the Company by

Date:.....

.....
(name and signature of authorised representative)

Reviewed by the Recognized Organization for compliance with paragraph 6.2.2 of the CAS.

Date:.....

.....
(name and signature of authorised representative)

ANNEX 2

GUIDANCE NOTE FOR THE SAFE CONDUCT OF CAS SURVEYS

1 General

1.1 The present Guidance Note has been developed for the safe conduct of CAS Surveys. Although this Guidance Note makes explicit reference to the CAS survey and to attending surveyor(s) it should be used also in connection with any thickness measurement work required by the CAS.

2 Conditions for survey

2.1 The Company should provide the necessary facilities for a safe conduct of the CAS survey.

2.2 In cases where the provisions of safety and required access are judged by the attending surveyor(s) not to be adequate, the CAS survey of the spaces involved should not proceed.

2.3 In order to enable the attending surveyor(s) to carry out the CAS survey, provisions for proper and safe access should be agreed between Company and Recognised Organisation.

2.4 Details of the means of access are provided in the Survey Planning Questionnaire.

2.5 Tanks and spaces should be safe for access*. Tanks and spaces should be gas free and should be ventilated. Prior to entering a tank, void or enclosed space, it should be verified that the atmosphere in the tank is free from hazardous gas and contains sufficient oxygen.

2.6 Tanks and spaces should be sufficiently clean and free from water, scale, dirt, oil residues, corrosion scale, sediments etc., to reveal significant corrosion, deformation, fractures, damages or other structural deterioration as well as the condition of the coating. In particular this applies to areas that are subject to thickness measurement.

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

2.8 Where soft coatings have been applied, safe access should be provided for the attending surveyor(s) to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures, which may include spot removal of the coating. When safe access cannot be provided, the soft coating should be removed.

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

* Reference is made to chapter 10 of the International Safety Guide for Oil Tankers and Terminals (ISGOTT) - Entry into and working in enclosed spaces.

3 Access to structures

3.1 For overall survey, means should be provided to enable the attending surveyor(s) to examine the structure in a safe and practical way.

3.2 For close-up survey, one or more of the following means for access, acceptable to the attending surveyor(s), should be provided:

- permanent staging and passages through structures
- temporary staging and passages through structures
- lifts and moveable platforms
- rafts or boats
- other equivalent means.

3.3 Surveys of tanks or spaces by means of rafts or boats may only be undertaken with the agreement of the attending surveyor(s), who should take into account the safety arrangements provided, including weather forecasting and ship response in reasonable sea conditions.

3.4 When rafts or boats will be used for close up survey the following conditions should be observed:

- .1 Only rough duty, inflatable rafts or boats, having satisfactory residual buoyancy and stability even if one chamber is ruptured, should be used;
- .2 The boat or raft should be tethered to the access ladder and an additional person should be stationed down the access ladder with a clear view of the boat or raft;
- .3 Appropriate lifejackets should be available for all participants;
- .4 The surface of water in the tank should be calm (under all foreseeable conditions the expected rise of water within the tank should not exceed 0.25 m) and the water level either stationary or falling. On no account should the level of the water be rising while the boat or raft is in use;
- .5 The tank or space must contain clean ballast water only. Even a thin sheen of oil on the water is not acceptable;
- .6 At no time should the water level be allowed to be within 1 m of the deepest under deck web face flat so that the survey team is not isolated from a direct escape route to the tank hatch. Filling to levels above the deck transverses should only be contemplated if a deck access manhole is fitted and open in the bay being examined, so that an escape route for the survey party is available at all times;
- .7 If the tanks (or spaces) are connected by a common venting system, or Inert Gas system, the tank in which the boat or raft is to be used should be isolated to prevent a transfer of gas from other tanks (or spaces).

3.5 In addition to the above rafts or boats alone may be allowed for inspection of the under deck areas for tanks or spaces, if the depth of the webs are 1.5 m or less.

- 3.6 If the depth of the webs is more than 1.5 m, rafts or boats alone may be allowed only:
- .1 when the coating of the under deck structure is in GOOD condition and there is no evidence of wastage; or
 - .2 if a permanent means of access is provided in each bay to allow safe entry and exit. This means of access is to be direct from the deck via a vertical ladder and a small platform should be fitted approximately 2 m below the deck.

If neither of the above conditions are met then staging should be provided for the survey of the under deck area.

4 Equipment for survey

4.1 Thickness measurement should normally be carried out by means of ultrasonic test equipment. The accuracy of the equipment should be proven to the attending surveyor(s) as required.

4.2 One or more of the following fracture detection procedures may be required if deemed necessary by the attending surveyor(s):

- radiographic equipment
- ultrasonic equipment
- magnetic particle equipment
- dye penetrant
- other equivalent means.

4.3 Explosimeter, oxygen-meter, breathing apparatus, lifelines, riding belts with rope and hook and whistles together with instructions and guidance on their use should be made available during the CAS survey. A safety check-list should be provided.

4.4 Adequate and safe lighting should be provided for the safe and efficient conduct of the CAS survey.

4.5 Adequate protective clothing should be made available and used (e.g. safety helmet, gloves, safety shoes, etc) during the CAS survey.

5 Meetings and Communication Arrangements

5.1 The establishment of proper preparation and the close co-operation between the attending surveyor(s) and the Company's representatives onboard prior to and during the CAS survey are an essential part in the safe and efficient conduct of the CAS survey. During the CAS survey on board safety meetings should be held regularly.

5.2 Prior to commencement of the CAS survey a survey meeting should be held between the attending surveyor(s), the Company's representative(s) in attendance, the TM Firm Operator (as applicable) and the Master of the ship for the purpose to ascertain that all the arrangements envisaged in the Survey Plan are in place, so as to ensure the safe and efficient conduct of the survey work to be carried out.

5.3 The following is an indicative list of items that should 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 TM operator(s) and Company representative(s) concerning findings.

5.4A communication system should be arranged between the survey party in the tank or space being examined, the responsible officer on deck and, as the case may be, the navigation bridge. This system should also include the personnel in charge of handling the ballast pump(s) if rafts or boats are used. The communication arrangements should be maintained throughout the CAS survey.

ANNEX 3

CAS Schedule

For the sole purpose of aid to the Companies and Recognized Organizations in the preparation of the CAS Survey and shall be read and used for this purpose only

