Polski Rejestr Statków

INFORMATIVE PUBLICATION NO. 23/I

CONDITION ASSESSMENT SCHEME (CAS)
FOR SINGLE HULL OIL TANKERS

2013

Publications I (Informative) are issued by Polski Rejestr Statków
as guidance or explanatory notes to PRS Rules

.

GDAŃSK

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This Publication was accepted by the Director for Ship Division of Polski Rejestr Statków S.A. on 27 June 2013.

PRS/AW, 06/2013

CONTENTS

1 INTORDUCTION

After the disasters of tankers **Erika** in December 2000 and **Prestige** in November 2002, Marine Environment Protection Committee (MEPC) of International Maritime Organization (IMO) adopted the amendments to the regulation 13G (subsequently renumbered 20) of *MARPOL 73/78* Annex I for further acceleration of the phaseout schedule for the single hull oil tankers.

The *Condition Assessment Scheme (CAS)* for oil tankers was adopted by resolution MEPC.94(46) on 27 of April 2001. On subsequent sessions, MEPC adopted numerous amendments to the CAS by resolutions MEPC.99(48) and MEPC. 112(50). All these amendments came into force on 5 April 2005.

2 PURPOSE

2.1 The purpose of the *Condition Assessment Scheme* (CAS) is to provide an international standard to meet the requirements of *MARPOL 73/78* Annex I regulations 20.6, 20.7 and 21.6.1.

2.2 CAS survey is an extended version of the *Enhanced Survey Programme* (*ESP*) for bulk carriers and oil tankers adopted by IMO Resolution A744(18), as amended, subsequently replaced by IMO Resolution A.1049(27) introducing the *International Code on the Enhanced Programme of Inspections during Surveys of Bulk Carriers & Oil Tankers, 2011* (*2011 ESP Code*).

2.3 The main differences between ESP and CAS consist in:

- **.1** survey planning,
- **.2** survey progress reporting extension,
- **.3** Flag Administration involvement; and,
- **.4** strict schedule to be followed by the Owner, Polski Rejestr Statków (PRS) and Administration.

2.4 The purpose of this publication is to provide PRS clients and PRS surveyors with information on the CAS survey requirements.

3 EUROPEAN UNION REQUIREMENTS

3.1 Regulation (EC) No 417/2002 of the European Parliament and of the Council of 18 February 2002 on the accelerated phasing-in of double hull or equivalent design requirements for single hull oil tankers, as substantially amended several times, was replaced, on 20 July 2012, by the Regulation (EU) No 530/2012 of the European Parliament and of the Council of 13 June 2012 on the accelerated phasing-in of double-hull or equivalent design requirements for single-hull oil tankers**.**

3.2 Regulation (EU) No 530/2012 applies to oil tankers of 5000 tonnes deadweight and above which:

a) fly the member state flag;

b) irrespective of their flag, enter or leave a port or an offshore terminal or anchore in an area under the jurisdiction of an EU Member State, and to oil tankers of 600 tonnes deadweight and above in respect of heavy oil carriage.

The Regulation does not apply to warships, naval auxiliary or other ships owned or operated by a state and used only for government non-commercial services.

3.3 No oil tanker is allowed to operate under the flag of a Member State, nor is any oil tanker, irrespective of its flag, allowed to enter into ports or offshore terminals under the jurisdiction of a Member State unless such tanker is a double-hull oil tanker.

3.4 Notwithstanding paragraph 3.3, oil tankers of Category 2 or Category 3 which are equipped only with double bottoms or double sides not used for the transport of oil and extending for the whole length of the cargo tank, or with double-hulled spaces not used for the transport of oil and extending for the whole length of cargo tank, but which do not meet the conditions for exemption from the provisions of Regulation 20.1.3 of Annex I to *MARPOL 73/78*, may continue to be operated, but not beyond the anniversary of the date of delivery of the ship in the year 2015 or the date on which the ship reaches the age of 25 years from its date of delivery, whichever is sooner.

3.5 No oil tanker carrying heavy grade oil is allowed to fly the flag of a Member State unless such tanker is a double-hull oil tanker.

3.6 No oil tanker carrying heavy grade oil, irrespective of its flag, is allowed to enter or leave ports or offshore terminals or to anchor in areas under the jurisdiction of a Member State, unless such tanker is a double-hull oil tanker.

3.7 Oil tankers operated exclusively in ports and inland navigation may be exempted from the requirements of paragraphs 3.5 and 3.6 provided that they are duly certified under inland waterways legislation.

3.8 Irrespective of its flag, a single-hull oil tanker above 15 years of age is not allowed to enter or leave ports or offshore terminals or anchor in areas under the jurisdiction of a Member State unless such tanker complies with the *Condition Assessment Scheme*.

3.9 After the anniversary of the date of delivery of the ship in 2015, the following is no longer allowed:

a) the continued operation, in accordance with Regulation 20.5 of Annex I to *MARPOL 73/78*, of Category 2 and Category 3 oil tankers under the flag of a Member State;
b) the entry into the ports or offshore terminals under the jurisdiction of a Member State of other Category 2 and Category 3 oil tankers, irrespective of the fact that they continue to operate under the flag of a third State in accordance with Regulation 20.5 of Annex I to *MARPOL 73/78*.

3.10 By way of derogation from the above requirements, the competent authority of a Member State may, subject to national provisions, allow, under exceptional circumstances, an individual ship to enter or leave a port or offshore terminal or anchor in an area under the jurisdiction of that Member State, where:

a) an oil tanker is in difficulty and in search of a place of refuge;
b) an unloaded oil tanker is proceeding to a port of repair.

3.11 Each Member State shall inform the IMO of its decision to deny entry to oil tankers operating in accordance with Regulation 20.5 of Annex I to *MARPOL 73/78* into the ports or offshore terminals under its jurisdiction, on the basis of Regulation 20.8.2 of Annex I to *MARPOL 73/78*.

3.12 Each Member State shall notify the IMO if it allows, suspends, withdraws or declines the operation of a Category 1 or a Category 2 oil tanker entitled to fly its flag, in accordance with Regulation 20.8.1 of Annex I to *MARPOL 73/78.*

4 DEFINITIONS

For the purposes of CAS, the following definitions have been adopted:

4.1 *MARPOL 73/78* – the *International Convention for the Prevention of Pollution from Ships, 1973*, as amended by the Protocol of 1978 relating thereto, in their up-to-date-versions.

4.2 *Regulation* – provision contained in Annex I to *MARPOL 73/78.*

4.3 *Recognized Organisation* (*RO*) – organisation authorised by the Administration to perform surveys in accordance with the provisions of Regulation 6.3 of Annex I to *MARPOL 73/78*.[*]

4.4 *Administration* – government of a state as defined in Article 2(5) of *MARPOL 73/78*.

4.5 *Owner* – ship owner, and another organisation of person, such as a ship operator or charterer who took responsibility from the owner of ship for the ship operation and consequently agreed to take all the obligations and full scope of liability resulting from the *International Safety Management Code for the Safe Operation of Ships and for Pollution Prevention* (*ISM Code*).

4.6 *Substantial corrosion* – an extent of corrosion such that assessment of corrosion pattern indicates wastage in excess of 75% of allowable margins, but within acceptable limits.

4.7 *Good condition* – protective coating condition with minor spot rusting only.

[*] Pursuant to Regulation XI/1 of *SOLAS 74*, as further amended, resolutions A.739(18) and A.789(19) apply to recognized organizations. Amendments adopted by Resolution MEPC.112(50)

4.8 *Thickness measurement* (*TM*) *service supplier* – competent measurement company approved by RO.

4.9 *Critical areas of structure* – locations indicated by calculations to require special monitoring or indicated by the operation experience of a relevant ship, similar or sister ship to be vulnerable to cracks, blistering or corrosion which may affect the ship structural integrity.

4.10 *IMO – International Maritime Organisation.*

5 APPLICATION

5.1 CAS survey is a hull survey for single hull tankers of 15 years of age and above in order to allow for trading until the phase-out date.

5.2 CAS requirements apply to of Category 2 and Category 3 oil tankers only.

5.3 Category 1 oil tankers constructed on 1 April 1982 or before that date have been withdrawn from operation on 5 April 2005.

5.4 The requirements of CAS apply to:

- **.1** oil tankers of 5,000 tons deadweight and above and of 15 years and over after date of delivery of the ship, in accordance with regulation 20.6,
- **.2** oil tankers subject to the provisions of regulation 20.7, where authorization is requested for continued service beyond the anniversary of the date of delivery of the ship in 2010, and
- **.3** oil tankers of 5,000 tons deadweight and above and of 15 years and over after date of delivery of the ship, carrying crude oil as cargo having at 15°C a density at 15°C higher than 900 kg/m^3 but lower than 945 kg/m^3, in accordance with regulation 21.6.1.

5.5 For the purpose of CAS, oil tankers are divided into the following categories:

5.5.1 *Category 1 oil tanker* – an oil tanker of 20,000 tons deadweight and above carrying crude oil, fuel oil, heavy diesel oil or lubricating oil as cargo, and of 30,000 tons deadweight and above carrying oil other than the above, which does not comply with the requirements for new oil tanker as defined in regulation 1.28.4 of Annex I to *MARPOL 73/78* (which does not comply with the requirements for protectively located segregated ballast tanks).

5.5.2 *Category 2 oil tanker* – an oil tanker of 20,000 tons deadweight and above carrying crude oil, fuel oil, heavy diesel oil or lubricating oil as cargo, and of 30,000 tons deadweight and above carrying oil other than the above, which complies with the requirements for new oil tanker as defined in regulation 1.28.4 of *MARPOL 73/78*, Annex I (which complies with the protectively located segregated ballast tank requirements).

5.5.3 *Category 3 oil tanker* – an oil tanker of 5,000 tons deadweight and above but less than that specified in regulation 20.3.1 or 20.3.2 of Annex I to *MARPOL 73/78*.

6 SCOPE

6.1 CAS is intended to complement the requirements of the ESP during surveys of oil tankers.

6.2 CAS applies to the survey of hull structure in way of cargo tanks, pump rooms, cofferdams, pipe tunnels, void spaces within the cargo area and all ballast tanks.

6.3 CAS does not apply to survey of machinery, equipment, fire-fighting systems and fittings.

7 TIMELINE

7.1 CAS survey shall be performed together with ESP.

7.2 The first CAS survey in accordance with regulation 20.6 shall be performed concurrently with the first scheduled intermediate or renewal survey when the ship reaches the 15 years of age.

7.3 The first CAS survey in accordance with regulation 20.7 shall be performed concurrently with the first scheduled intermediate or renewal survey due prior to the anniversary of the date of delivery of the ship in 2010.

7.4 The first CAS survey in accordance with regulation 21.6.1 shall be performed concurrently with the first scheduled intermediate or renewal survey after 5 April 2005.

8 CAS TIME SCHEDULE

8.1 *CAS Time Schedule* is shown in the *Appendix 1*. The strict timeframes are set from the preparatory stages up to implementation, reporting and further issuance of *Statement of Compliance.*

8.2 The parties concerned in CAS (Owner, Administration and PRS) shall comply with these timeframes.

9 PREPARATIONS FOR SURVEY

9.1 Notification from the Owner to the Administration and to PRS of its intention to proceed with the CAS shall be submitted not less than 8 months prior to the planned commencement of CAS survey.

9.2 Upon receipt of such notification the PRS shall:

.1 issue to the Owner the *CAS Survey Planning Questionnaire* (see *Appendix 2*) not later than 7 months prior to the planned commencement of the CAS survey; and

.2 advise the Owner whether there have been any changes to the maximum acceptable structural corrosion diminution levels applicable to the ship.

9.3 The Owner shall complete and return the *CAS Survey Planning Questionnaire* to PRS Head Office not less than 5 months prior to the planned commencement of CAS survey. A copy of the completed questionnaire shall be forwarded by the Owner to the Administration.

9.4 The Owner shall guarantee suitable conditions for CAS Survey as described in the *Mandatory Requirements for the Safe Conduct of CAS Surveys* set out in the CAS Appendix 4.

9.5 The *CAS Survey Plan* shall be completed and submitted in signed order by the Owner to the PRS not less than 2 months prior to the planned commencement of the CAS survey. A copy of the *CAS Survey Plan* shall be forwarded by the Owner to the Administration.

9.6 In special circumstances, such as recommissiong after lay-up or unexpected events such as an extended stoppage period due to hull or machinery damage, the Administration may, on a case by case basis, relax the time frame, outlined in paragraphs from 9.1 to 9.5, for commencement of CAS procedures.

9.7 Such relaxation shall, at all times, be subject to the PRS having sufficient time to complete the CAS survey and issue the *Interim Statement of Compliance* under regulation 20.6 or 21.6.1, or the Administration to review the *CAS Final Report* and issue the *Statement of Compliance* under regulation 20.7, as applicable, prior to re-entry of the ship to service.

9.8 The decision on simultaneous assignment of PRS class to a ship and the commencement of CAS survey will be made by PRS Head Office after consideration of the Owner's request.

10 SURVEY REQUIREMENTS

CAS survey requirements are contained in the current *Publication No 36/P – Hull Surveys of Oil Tankers.*

10.1 Overall survey

CAS requires that an overall survey of hull structure in way of cargo tanks, pump rooms, cofferdams, pipe tunnels, void spaces within the cargo area and all ballast tanks be performed.

10.2 Detailed survey

10.2.1 Detailed requirements of close-up survey at the CAS survey are the same as those of 4th class renewal survey contained in *PRS Rules* (see the first passage of Chapter 10).

10.2.2 The acceptance criteria for CAS are those set out in the *International Code on the Enhanced Programme of Inspections during Surveys of Bulk Carriers & Oil Tankers* (2011) (*2011 ESP Code*) where for the acceptance criteria, there are no differences between CAS and the class survey.

10.3 Thickness Measurements

10.3.1 The minimum requirements for thickness measurements under CAS surveys are extended compared to the scope of measurements contained in *PRS Rules* (see the first passage of Chapter 10) and required for the 4th class renewal, with all exposed first tier superstructure deck plates measurements.

10.3.2 Where substantial corrosion is found, the extent of the thickness measurements shall be increased in accordance with the *International Code on the Enhanced Programme of Inspections during Surveys of Bulk Carriers & Oil Tankers.*

10.3.3 In connection with thickness measurement procedures, in case of concern regarding residual throat thickness of the fillet weld between the deck plate and deck longitudinals or possible detachment of a deck longitudinal member, the attending surveyor may refer to the *Guidelines on the Assessment of Residual Fillet Weld between Deck Plating and Longitudinals* adopted by resolution MEPC.147(54), see Appendix 4.

10.4 CAS Procedural Requirements and Administration involvement

10.4.1 An important change as compared with ESP is that CAS is a statutory survey and the Administration is therefore much more directly involved in the process. On the overall level the Administration issues instructions to PRS and to the Owner to be able to monitor the survey performance and verify its compliance with CAS.

10.4.2 The Administration and Owner's responsibilities are as follows (see *Appendix 1 CAS Time Schedule*):

- the Administration shall be informed by the Company that it intends to perform CAS survey;
- the Onwer shall submit the to the Administration *Survey Plan* agreed with PRS;
- the Administration shall review and verify *CAS Final report;*
- the Administration shall issue the *Statement of compliance*;
- the Administration shall communicate the CAS survey result to IMO**.**

11 SURVEY COMPLETION

11.1 CAS survey shall not be completed unless all recommendations/conditions of class which relate to hull structures under review by the CAS survey have been rectified according with PRS Rules.

11.2 Upon satisfactory completion of CAS survey, the attending PRS surveyors will prepare the *CAS Survey Report* to be submitted to PRS Head Office and they issue the *Interim Statement of Compliance* for a period not exceeding 5 months.

11.3 Where the ship has failed to meet the CAS survey requirements, the attending PRS surveyors shall not issue an *Interim Statement of Compliance* and inform the Head Office thereon.

11.4 CAS survey records, including also actions taken, shall form an auditable documentary trail, which shall be made available to the Administration, if requested.

11.5 The narrative part of the report shall be complemented by photographs showing the general condition of each space, including representative photographs or sketches in addition to the detailed survey results for each compartment.

11.6 Where CAS survey consisted of several reviews and was executed by different PRS survey stations, a report shall be made for each portion of CAS survey and a list of the items examined with an indication of whether CAS survey has been completed. Such a report shall be made available to the attending PRS surveyors at the next survey station prior to procceding with CAS survey.

11.7 Whenever the attending PRS surveyors are of the opinion that repairs are required, each item to be repaired shall be identified in a numbered list, and details of the repairs effected shall be reported by making specific reference to each relevant item in the numbered list.

11.8 Where no defects are found, this shall be stated in the report for each space.

11.9 Thickness measurement reports shall be verified and endorsed by the attending surveyors.

12 CAS FINAL REPORT

PRS Head Office shall carry out a verification review of the *CAS Survey Report* and prepare a *CAS Final Report*. *CAS Final Report* shall be submitted by PRS to the Administration without delay and:

.1 in the case of CAS survey in accordance with regulation 20.6 or 21.6.1 of Annex I to *MARPOL 73/78*, not later than 3 months after the completion of CAS survey; or

.2 in the case of CAS survey in accordance with regulation 20.7, not later than 3 months after the completion of CAS survey, or 2 months prior to the date the ship is required to be issued with a *Statement of Compliance*, whichever occurs earlier.

13 CAS VERIFICATION BY ADMINISTRATION

13.1 Administration shall review the *CAS Final Report* prior to the issue of the *Statement of Compliance* and they shall record and document the findings and conclusions of the review and their decision as to the acceptance or rejection of the *CAS Final Report* and they shall also issue the *Review Record.*

13.2 Administration shall, in accordance with their procedures, issue to each ship which completes the CAS to the satisfaction of the Administration, the *Statement of Compliance.*

13.3 Such *Statement* shall be issued in the case of the CAS in accordance with:

.1 regulation 20.6 or 21.6.1, not later than 5 months after the completion of the CAS survey; or

.2 regulation 20.7 – not later than 5 months after the completion of the CAS survey, or the anniversary of the date of delivery of the ship in 2010, whichever occurs earlier, for the first CAS survey, not later however than the expiry date of compliance for any subsequent CAS survey.

13.4 The validity of the *Statement of Compliance* shall not exceed 5 years and 6 months from the date of CAS survey completion.

14 OPERATION OF OIL TANKERS BEYOND THE YEAR 2010

14.1 Oil tankers of Category 2 and Category 3 to be operated beyond the anniversary of the date of delivery of the ship in 2010, shall receive and hold the *Statement of Compliance* with CAS requirements, subject to the authorization by the Administration in accordance with the regulation 20.7 of Annex I to *MARPOL 73/78.*

14.2 In the case that the *Statement of Compliance* issued following the first CAS survey performed at the periods mentioned in Chapter 6 above is valid beyond the anniversary of the date of delivery of the ship 2010, the *Statement of Compliance* with CAS may be considered as complying with regulation 20.7.

14.3 According to regulations 20 and 21, however, the Administration of a State which is a Party to *MARPOL 73/78* is entitled to deny the entry of oil tankers operating beyond the anniversary of the ship delivery date falling in the year 2010 into the ports or offshore terminals under its jurisdiction.

14.4 The conditions of the entry of oil tankers into the ports or offshore terminals under the jurisdiction of UE Member States are specified in Chapter 3. The USA have also banned any entry of oil tankers in accordance with their national law (OPA 90).

15 CONTACT WITH POLSKI REJESTR STATKÓW

For more information on CAS, contact Sea-going Ships Survey Department at PRS Head Office.

At PRS website http://www.prs.pl the *CAS Survey Planning Questionnaire* and *Survey Plan* are available to be downloaded.

Address:

Polish Register of Shipping, Head Office,
Sea-going Ships Survey Department
80-416 Gdańsk, Poland, al. gen. J. Hallera 126

Tel: **+48 58 346 17 00,**

E - mail: **kn@prs.pl**

16 APPENDICES:

APPENDIX 1 – *CAS Time Schedule*

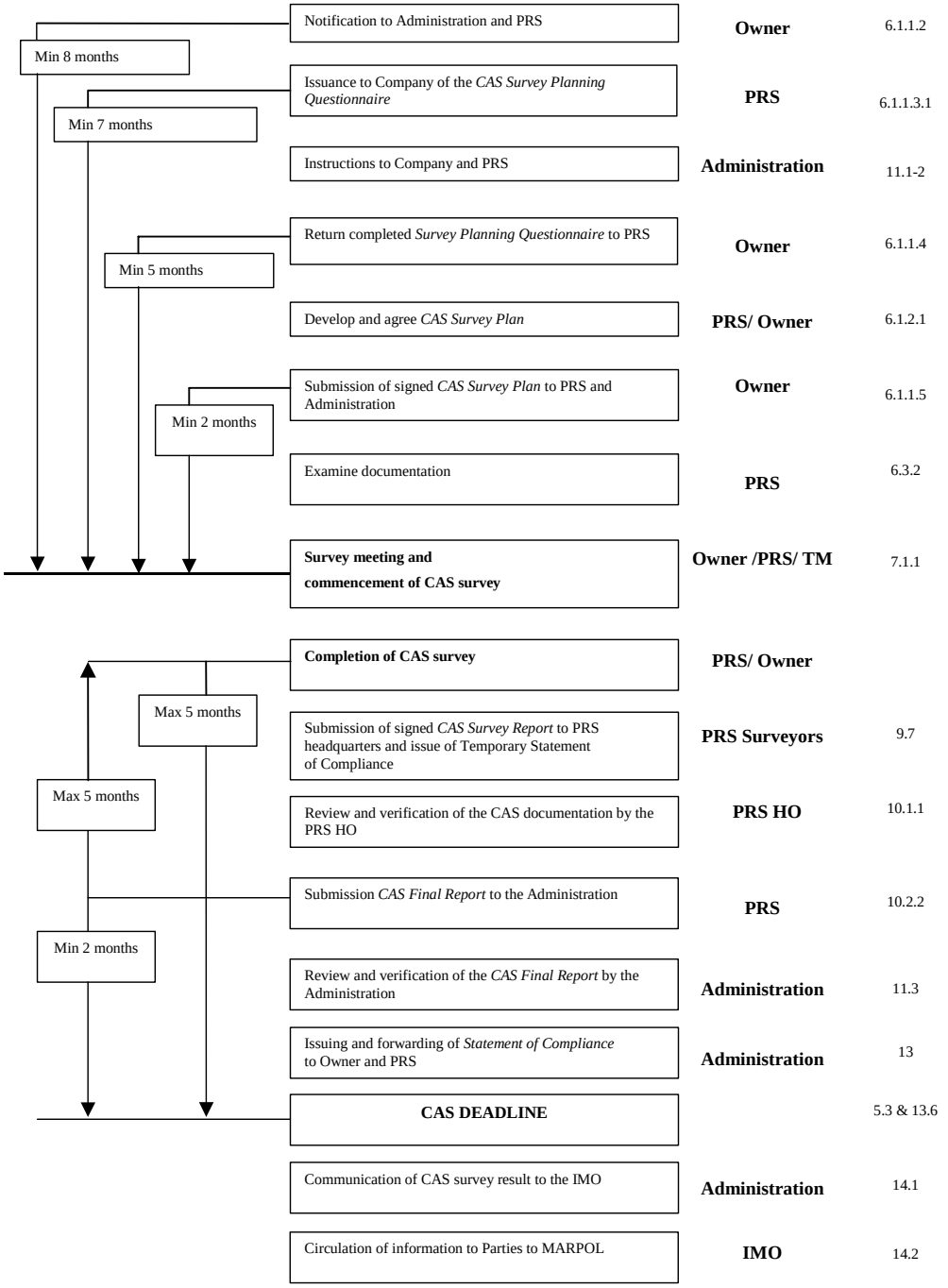
APPENDIX 2 – *CAS Survey Planning Questionnaire* (Form 677)

APPENDIX 3 – *Survey Plan* (Form 377P)

APPENDIX 4 – *Guidelines on the Assessment of Residual Fillet Weld between Deck Plating and Longitudinals*

Appendix 1

CAS TIME SCHEDULE



Polski Rejestr Statków

CAS SURVEY PLANNING QUESTIONNAIRE

In respect of the provisions of the
CONDITION ASSESSMENT SCHEME (CAS)
(resolution MEPC.94(46), as amended)

The Company is requested to provide up-to-date information in co-operation with PRS surveyor.

1 Particulars

Name of ship

IMO No. IMO

Flag State

Port of registry

Gross tonnage

Deadweight [t]

Summer load line draught

Date of delivery

Category of tanker

Date of compliance with regulation 19

Company

Report identification reference

2 Information on access provision for close-up surveys[1] and thickness measurement

Space	Access	Temporary staging	Rafts	Ladders	Direct access	Other means (specify)
Forepeak		☐	☐	☐	☐	
Wing tanks	Under deck	☐	☐	☐	☐	
	Side shell	☐	☐	☐	☐	
	Bottom transverse	☐	☐	☐	☐	
	Longitudinal bulkhead	☐	☐	☐	☐	
	Transverse bulkhead	☐	☐	☐	☐	
Centre tanks	Under deck	☐	☐	☐	☐	
	Bottom transverse	☐	☐	☐	☐	
	Transverse bulkhead	☐	☐	☐	☐	

3 Tank cleaning procedures

Tank No.	Washing frequency	Medium used		
		Crude oil	Heated seawater	Other medium (specify)
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	

4 Inert gas system

Installed: ☐ Yes ☐ No

Average oxygen content during inerting

Details of use of the inert gas plant

[1] A close-up survey is an examination where the details of structural components are within the close visual inspection range of the attending surveyor, i.e. preferably within reach of hand.

5 Cargo history for the last 3 years

Name of cargo	Tank No.	Period (from – till)	Cargo heating
			☐
			☐
			☐
			☐
			☐
			☐
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			☐
			☐
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			☐
			☐
			☐
			☐

6 Ballast history for the last 3 years

Tank No.	Period (from – till)

7 Inspections by the Company for the last 3 years

Spaces[2]	Location (PS/SB, frame Nos.)	Corrosion protection[3]	Coating extent[4]	Coating condition[5]	Structural deterioration[6]	Space history[7]	Report is attached
							☐
							☐
							☐
							☐
							☐
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							☐

On behalf of the Company

,
Place, date Name/Signature

On behalf of the PRS

,
Place, date Name/Signature

2 Tanks which are used for oil/ballast indicate by symbol: (*).
3 HC – hard coating; SC – soft coating; A – anodes; NP – no protection.
4 U – upper part; M – middle part; L – lower part; C – complete.
5 G – good; F – fair; P – poor; RC – recoated.
6 N – no findings recorded; Y - findings recorded, its description is to be attached to this questionnaire.
7 D&R – damage and repair; L – leakages; CV – conversion.

Reports of Port State Control (PSC)
(reports containing hull-related deficiencies are to be listed)

Safety Management System (SMS)
(non-conformities related to hull maintenance, including the associated corrective actions are to be listed)

Name of the Thickness Measurement Firm (TM)

List of attachments

Polski Rejestr Statków

CAS SURVEY PLAN

In respect of the provisions of the
CONDITION ASSESSMENT SCHEME (CAS)
(resolution MEPC.94(46), as amended)

Notes:

1. This 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.
2. This plan shall provide any changes relating to the information provided in the CAS Survey Planning Questionnaire.
3. The practical aspects of any part of the survey shall be acceptable to the attending surveyors.
4. All documents used in the development of this plan shall be available onboard during the survey.

1 Basic information and particulars

Name of ship

IMO No. IMO

Flag State

Port of registry

Gross tonnage

Deadweight [t]

Length between perpendiculars [m]

Breadth [m]

Depth [m]

Summer load line draught [m]

Builder

Hull No.

Recognised Organization (RO)

RO identity

Class notation

Date of delivery

Category of tanker

Date of compliance with reg. 19

Company

Thickness Measurement Firm

CAS Survey Planning Questionnaire
issued on

2 Arrangements of tanks

(plans or descriptions on the arrangement of tanks that fall within the scope of the survey)

3 Information on tanks

(changes relating to the information on the use of tanks, extent of their coatings and corrosion protection system provided in the CAS Survey Planning Questionnaire)

4 Conditions for survey

(information relating to tank cleaning, gas freeing, ventilation, lighting etc.)

5 Access to structures

(changes relating to the information on the provisions and methods of access to structures provided in the CAS Survey Planning Questionnaire)

6 Equipment for survey

(equipment provided by the Company and supplemented by the PRS, as necessary, that will be made available for carrying out the survey and required thickness measurements)

7 Extent of surveys

7.1 **Overall survey** (CAS, p. 5.2 and 7.2.1)

Space	Identification/No.
All cargo wing tanks	
All cargo centre tanks	
Remaining cargo tanks	
All ballast tanks	
Pump rooms	
Cofferdams	
Void spaces	
Pipe tunnels	

7.2 **Close-up survey** (CAS, p. 5.2 and 7.2.2)

Space	Identification/No.	Hull structures
One cargo wing tank		All complete transverse web frame rings including adjacent structural members and all complete transverse bulkheads girder and stiffener systems and adjacent members
Cargo wing tanks		Minimum 30% of all complete transverse web frame rings Frame Nos.
All cargo centre tanks		Minimum 30% of the deck and bottom transverses including adjacent structural members Frame Nos.
Cargo tanks		All complete transverse bulkheads including girder and stiffener systems and adjacent members
All ballast tanks	See item 7.1	All complete transverse web frame rings including adjacent structural members and all complete transverse bulkheads including girder and stiffener systems and adjacent members
Tanks		Additional complete transverse web frame rings as considered necessary by the surveyor Frame Nos.
Tanks		Additional deck/bottom transverses, as considered necessary by the surveyor Frame Nos.

8 Tank testing

(identification of tanks that shall undergo tank testing)

9 Thickness measurements (CAS, p. 5.2 and 7.3.3 -.8)

Space identification	Hull structures
Cargo area	Each deck and bottom plate All wind and water strakes Three transverse sections, Frame Nos.
Outside the cargo area	All exposed main deck plates Selected wind and water strakes
Fore and aft peak tanks No.	Internal structures
Superstructures	All exposed first tier deck plates
Spaces subject to close-up survey (see item 7.2):	Selected structures for general assessment and recording of corrosion pattern:
Suspect areas:	

Notes:

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

10 Hull materials

(to be specified by the PRS; in case of repairs material, grade, type and the extent shall be verified from drawings)

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				

Notes: MS – Mild Steel, HTS – High Tensile Steel, SS – Stainless Steel, CS – Clad Steel

11 Minimum thickness of hull structures

(to be specified by the PRS)

☐ Determined from the attached wastage allowance table and the original thickness according to the hull structure plans of the ship

☐ Given in the following table:

Location		Original thickness [mm]	Minimum thickness [mm]	Substantial corrosion thickness [mm]
Deck	Plating			
	Longitudinals			
	Longitudinal girders			
Bottom	Plating			
	Longitudinals			
	Longitudinal girders			
Inner bottom	Plating			
	Longitudinals			
	Longitudinal girders			
Side shell	Plating			
	Longitudinals			
	Longitudinal girders			
Longitudinal bulkhead	Plating			
	Longitudinals			
	Longitudinal girders			
Transverse bulkheads	Plating			
	Stiffeners			
Transverse web frames/stringers/floors	Plating			
	Flanges			
	Stiffeners			
Cross ties	Flanges			
	Webs			

12 Thickness Measurement Firm (TM)

(changes relating to the information on the thickness measurement firm provided in the CAS Survey Planning Questionnaire)

13 Damage experience related to the ship

(to be specified by the Company and supplemented by the PRS, as necessary)

13.1 Damages for this ship

Location	Possible cause and description	Repair	Date of repair

13.2 Damages for sister/similar ships

Location	Possible cause and description	Repair	Date of repair

14 Areas identified with substantial corrosion from previous surveys
(to be specified by the PRS)

15 Critical structural areas and suspect areas
(to be specified by the Company and supplemented by the PRS, as necessary)

16 Other relevant comments and information
(to be specified by the Company and supplemented by the PRS, as necessary)

17 Appendices
(to be attached to this Plan by the Company and supplemented by the PRS, as necessary)

.1 List of main structural plans
.2 Survey Planning Questionnaire (Form 677)
.3 Mandatory Requirements for the Safe Conduct of CAS Surveys
.4 CAS Schedule as is contained in Annex 3 to MEPC/Circ.390
.5
.6
.7
.8
.9
.10

Prepared by the authorised representative of the Company.

,
Place, date Name/Signature

Reviewed by the PRS for compliance with paragraph 6.2.2 of the CAS.

,
Place, date Name/Signature

APPENDIX 4

GUIDELINES ON THE ASSESSMENT OF RESIDUAL FILLET WELD BETWEEN DECK PLATING AND LONGITUDINALS

1 General

The purpose of the guidelines is to provide an evaluation method and criteria for residual throat thickness for the fillet weld between the deck plate and deck longitudinals in order to prevent collapse accidents of aged oil tankers. To ensure that evaluation of the ship's longitudinal strength is recognized as valid, the fillet weld between longitudinals and deck should be in sound condition..

2 Extent of Measurement

Thickness measurement on deck should be carried out according to paragraph 3 of these guidelines i.e. in every other deck longitudinal for three transverse sections, within the cargo area, as given in Table 7.3.3, paragraph 1.2, of the *Condition Assessment Scheme* (resolution MEPC.94(46), as amended). For areas in tanks where environmental conditions seem to be similar, the extent of this thickness measurement may be specially considered by the attending surveyor.

3 Local Thickness Measurement and Criteria

3.1 Method of Local Thickness Measurement

3.1.1 The extent of local measurement should be set within approximately 50 mm of each side of the baseline, as shown in Figure 1.

3.1.2 Within the extent of local measurement, at least five points should be arranged, including one point on the baseline and with approximately 25 mm spacing at maximum. Thereby, the local thickness distribution for the deck plate can be obtained for the target longitudinal.

3.1.3 From the measured thickness distribution, a representative thickness diminution (Δt), defined by the following equation, should be estimated from the measured data on the baseline and the minimum thickness value among the other points:

$$\Delta t = t_0 - \min\{t_1, t_2, t_3, t_4\} \qquad (3.1.3)$$

where:

t_0 – measured thickness on the baseline which is nearly equal to original thickness minus corrosion diminution for deck upper surface (Δt_0) as shown in Figure 1;

t_1, t_2, t_3, t_4 – thickness on each measuring point; and

Δt – representative thickness diminution, which is assumed to be nearly equal to the diminution of the fillet weld throat thickness.

3.1.4 An estimated residual throat thickness is determined by:

$$r_{residual} = r_{original} - \Delta t \qquad (3.1.4)$$

where $r_{original}$ is the original throat thickness at the weld

3.2 Criteria

When the estimated residual throat thickness is zero or less than zero, repair or renewal of the weld should be considered also based on the result of the close-up survey.

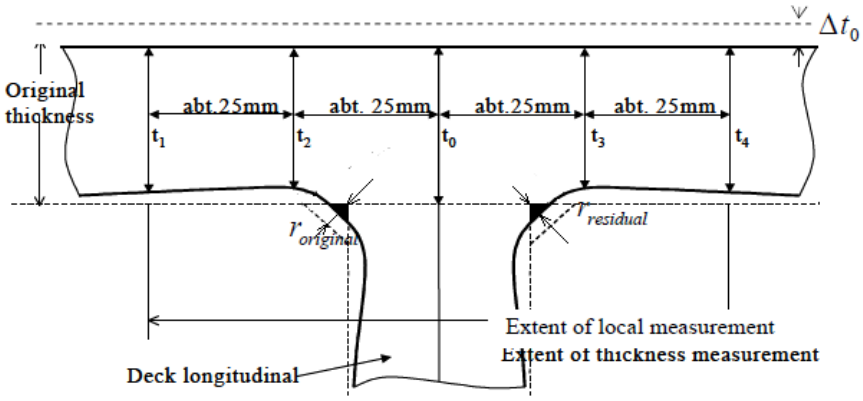

Figure 1 – Thickness measurement at deck plate from upper side

4 Alternative Method

Detachment of the deck longitudinal member can also be checked using the following procedures. In cases where the longitudinal member is attached in sound condition, when the probe of the ultrasonic equipment is moved from the baseline to the outer side over the welding part, the ultrasonic echo from the bottom surface of the deck plate is not observed just over the welding part. However, in cases where the longitudinal member is detached from the deck plate, when the probe of the ultrasonic equipment is moved from the baseline to the outer side beyond the welding part, the ultrasonic signal echo can be observed continuously, even if the probe is on the detached welding part as shown in Figure 2.

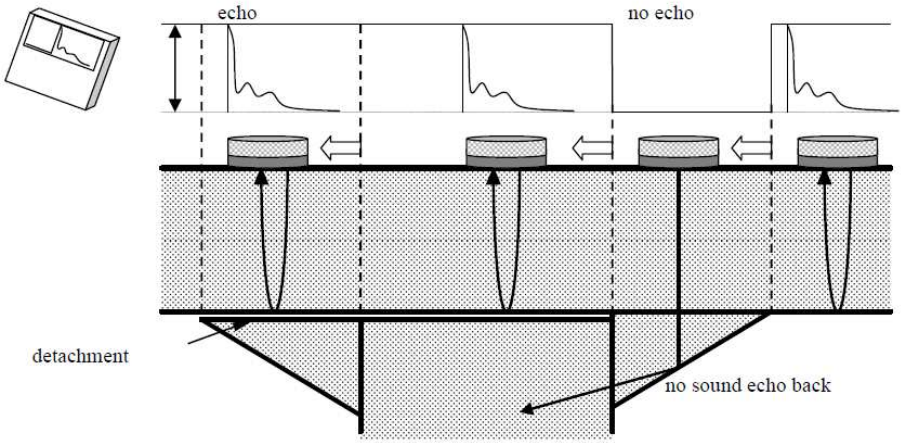

Figure 2 – Alternative method