



RUSSIAN MARITIME REGISTER OF SHIPPING
HEAD OFFICE

CIRCULAR LETTER

No. 314-24- 906c

dated **16.06.2016**

Re:

CAP (Condition Assessment Program)

Item of supervision:

Ships in service

Implementation 16.06.2016

Valid: till -

Validity period extended till -

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Appendices: Forms of the RS Records. Recommendations on the Condition Assessment Program (CAP)

Director General  Konstantin Palnikov

Amends -

We hereby inform that from 16 June 2016 the following procedure for rendering by RS the complementary CAP service shall be approved.

CAP may be performed in relation to the following ship's items:

I – ship's hull (including superstructures, deckhouses, closures of openings in the outer envelope of the ship);

II – ship's mechanical installation, machinery, arrangements, systems, including cargo, and electrical equipment;

III – all items specified in I and II.

CAP shall be performed on a shipowner's request for oil tankers, chemical tankers, gas carriers and oil bulk carriers.

Based on the CAP results, the Register Head Office issues and submits to the ship via the shipowner a Statement of Fulfilment of Ship's Actual Condition Assessment (CAP) per form 3.1.12 (for CAP1 and CAP2) together with the Condition Assessment Program Report.

It is necessary to do the following:

1. Apply the provisions of the Circular Letter in the practical activity from 16 June 2016.
2. Bring the content of the Circular Letter to the notice of RS surveyors and all parties concerned within region of the Branch Office activity.

Person in charge: Irina A. Surikova

314

(812) 312-85-72

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RUSSIAN MARITIME REGISTER OF SHIPPING



APPROVED

Director General
Konstantin Palnikov
04.04.2016



Recommendations on the Condition Assessment Program (CAP)

ND No. 2-039901-006-E

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Annotation

The present Recommendations on the Condition Assessment Program (CAP) (hereinafter referred to as “the Recommendations”) establish the procedure, performance criteria and scope of the Condition Assessment Program (hereinafter referred to as “the CAP”). The Recommendations have been developed on the basis of the R&D results under contract No. RS-69/2001 and the Register experience in the CAP implementation.

1 Application

- 1.1** The Recommendations establish the procedure, performance criteria and scope of CAP.
- 1.2** The Recommendations are a normative document for RHO Locations 310 and 340 and RS Branch Offices 100 and 200.
- 1.3** The Recommendations have been developed in Russian and English, the original document is maintained in electronic format.

2 Normative references

2.1 Requirements of the following normative documents have been taken into account when developing the Recommendations:

- 1) ND No. 2-060101-001-E – Quality Manual;
- 2) ND No. 2-060203-018-E – Procedure for Development of RS Internal Normative Documents;
- 3) ND No. 2-060203-028-E – Procedure for Control of Quality Records;
- 4) ND No. 2-020101-087-E – Rules for the Classification and Construction of Sea-Going Ships;
- 5) ND No. 2-020101-012-E – Rules for the Classification Surveys of Ships in Service;
- 6) ND No. 2-030101-009-E – Guidelines on Technical Supervision of Ships in Service with Annexes;
- 7) ND No. 2-170101-001-E – Occupational Safety Instructions for RS Surveyors Conducting Survey of Ships and Items of RS Technical Supervision.

3 Terms. Definitions. Abbreviations

3.1 Abbreviation

- 1) CAP – Condition Assessment Program;
- 2) ACS – another classification society;
- 3) RHO – RS Head Office;
- 4) RS, Register – Russian Maritime Register of Shipping;
- 5) Division 310 – Classification Division;
- 6) Division 340 – Ships in Service Division;
- 7) Recommendations – Recommendations on the Condition Assessment Program (CAP);
- 8) Statement of Fulfilment of Ship’s Actual Condition Assessment (CAP) (form 3.1.12).

4 General

4.1 General provisions

4.1.1 CAP is a supplement to classification procedure of the Register intended for assessment and analysis of actual condition of ship’s hull structures, mechanical installation, machinery, devices, systems and electrical equipment. CAP is a tool for quality assessment of the ship and ship’s elements, irrespective of age in accordance with the established rating system. CAP may be carried out for the following groups of items:

- I – ship’s hull (including superstructures, deckhouses, closures of openings in the outer envelope of the ship);
- II – ship’s mechanical installation, machinery, arrangements, systems, including cargo system, and electrical equipment;
- III – all items specified in I and II.

CAP is carried out by the Register at the Request of a shipowner on a reimbursement basis (refer to the Request template in Appendix 1) for oil tankers, chemical tankers, gas carriers and oil bulk carriers. CAP may be applied for the RS class ships under construction, RS class ships in service and for transfer of the ship to RS class. For ships with class of another classification society (ACS), the CAP may be carried out subject to the RHO special consideration.

4.1.2 CAP results are used by insurance companies, cargo terminals, charterers and shipowners.

4.1.3 The objective of CAP is to determine actual condition of items listed in 4.1.1 and to assign the rating to the groups of ship's items in compliance with the applicable requirements of the Rules for the Classification and Construction of Sea-Going Ships and Rules for the Classification Surveys of Ships in Service.

4.1.4 The unified CAP rating scale described in 4.2 is used.

4.1.5 Within the CAP the Register does not assess ship's characteristics having direct effect on the commercial results of ship's operation, such as speed, fuel rate of main engine, auxiliary machinery, etc.

4.2 Condition rating scale

4.2.1 The Register assesses the actual condition of ship hull using the unified **CAP1** to **CAP4** rating scale (rating system).

CAP1 is the maximum rating corresponding to "very good" actual condition of ship (or ship's components and elements).

CAP2 corresponds to "good" actual condition of ship (or ship's components and elements).

CAP3 corresponds to "satisfactory" actual condition of ship (or ship's components and elements).

CAP4 corresponds to "poor" actual condition of ship (or ship's components and elements).

4.2.2 CAP rating system for hull (including superstructures, deckhouses, closures of openings in outer envelope of ship) is based on the assumption that the components selected for assessment are sufficient for evaluation of the ship's hull as a whole. CAP rating is assigned during ship survey performed by RS in accordance with the criteria given in Table 4.2.2.

Table 4.2.2

CAP rating	Criteria for assessment of actual condition of the hull structures, superstructures, deckhouses, closures of openings in outer envelope of ship
CAP1	Inspected and measured hull members and their welded joints have no defects. Minor wear (maximum 35 % of limit values) of hull members is allowed. Condition of coating, if applicable, is assessed as "good".
CAP2	Inspected and measured hull members have minor defects within the tolerance and do not require corrections or repair. Actual wear of hull members is within the tolerance and amounts to maximum 75 % of limit values. Condition of coating, if applicable, is assessed as "satisfactory" or "good".
CAP3	Inspected and measured hull members have defects within the tolerance. Actual wear of hull members is within the tolerance, but exceeds 75 % of limit values. Immediate corrective actions or repair are not required. Condition of coating, if applicable, is assessed as "poor" or "satisfactory".
CAP4	Inspected and measured hull members have defects that can affect the possibility to retain the ship's class and require repair. Actual wear of separate hull members exceeds limit values. Condition of coating, if applicable, is assessed as "poor".
	Notes: 1. CAP rating assigned by results of the hull survey is invalid without calculations and analysis performed according to 4.6. 2. CAP3 rating confirms only that the ship's hull meets the Register requirements. Statement of Fulfilment of Ship's Actual Condition Assessment (CAP) is not issued. 3. CAP4 rating is below the Register requirements. Statement of Fulfilment of Ship's Actual Condition Assessment (CAP) is not issued. The ship shall comply with the RS requirements.

4.2.3 Four-grade rating scale by three parameters (refer to Table 4.2.3) is used as a rating system to assess ship's machinery, arrangements, systems, including cargo system, and electrical equipment.

- technical condition;
- maintenance and spare parts;
- service history.

Actual condition of the ship is determined on the following basis:

- visual examinations (appearance, damages, corrosion and leakages, etc.);
- functional and operational tests (performance characteristics and operation parameters, such as efficiency, temperature, pressure, current strength, check and safety functions, etc.);
- measurement of diagnostic parameters (vibration, oil analysis, etc.).

Maintenance and availability of spare parts are assessed on the basis of execution of a number of operations to maintain and restore serviceability of machinery:

- maintenance: maintenance strategy, availability of schedules, application of diagnostic equipment, correction of maintenance schedule on the basis of diagnosis results; availability and keeping of maintenance and repair logs;
- spare parts: correspondence of quantity and nomenclature of spare parts to the requirements of the Register rules, information on storage location, records on availability, consumption and order system of spare parts.

Service history of the ship is assessed on the basis of analysis of the ship's documentation, records and description of operational failures and faults, data on maintenance operations, data on running hours of machinery, etc.

Table 4.2.3

CAP rating	Criteria for condition assessment
CAP1	<p>Items and systems are inspected, functionally and operationally tested.</p> <p>Ship's machinery, systems, arrangements, electrical equipment are found serviceable. Faults affecting the safe operation and/or normal performance are not found. Maintenance or repair is not required.</p> <p>All necessary documents are available. Records on maintenance are available and updated regularly.</p>
CAP2	<p>Items and systems are inspected, functionally and operationally tested.</p> <p>Ship's machinery, systems, arrangements, electrical equipment are found serviceable.</p> <p>Minor faults, which do not affect safe operation and/or normal performance and do not require maintenance and/or repair, are detected.</p> <p>All necessary documents are available and in good order. Records on maintenance are available and updated regularly.</p>
CAP3	<p>Items and systems are inspected, functionally and operationally tested.</p> <p>Ship's machinery, systems, arrangements, electrical equipment are found serviceable. Faults, which do not affect safe operation and/or normal performance and do not require maintenance and/or repair, are detected.</p> <p>Documentation and records on maintenance are available and meet the minimum requirements.</p>
CAP4	<p>Items and systems are inspected, functionally and operationally tested. Faults, which considerably affect safe operation and/or normal performance and require immediate maintenance and repair, are detected.</p> <p>Documentation and maintenance do not meet the minimum requirements.</p>

Notes: 1. **CAP3** rating confirms that the ship's mechanical installation, machinery, systems, arrangements and electrical equipment comply with the Register requirements. Statement of Fulfilment of Ship's Actual Condition Assessment (CAP) is not issued.

2. **CAP4** rating is below the Register requirements. Statement of Fulfilment of Ship's Actual Condition Assessment (CAP) is not issued. The ship shall comply with the RS requirements.

4.3 CAP operations execution

4.3.1 CAP procedure of the Register includes the following main stages:

- review of documents;
- preparation to survey and performance of survey;
- hull strength analysis for compliance with the CAP criteria;
- preparation and issue of the Condition Assessment Program Report;
- preparation and issue of the Statement of Fulfilment of Ship's Actual Condition Assessment (CAP) as per form 3.1.12 (for **CAP1** and **CAP2**) or a Letter of Conclusion (for **CAP3** and **CAP4**).

4.4 Review of documents

4.4.1 According to the Request of the shipowner during preparation to CAP the Classification Division (Division 310) reviews the following documents included in the Ship's File and/or received from the shipowner:

- Classification Certificate and others, if any;
- current surveys status;
- RS reports, checklists (or, if applicable, ACS – IACS member), at least the last special and subsequent surveys of the ship (to specify the status and presence of any recurring failures, as well as repair and survey history);
- reports on hull condition, reports on thickness measurements, repair reports, history of ship's hull damages, transported cargoes, areas of ship operation and other documents on actual condition of ship's hull for the operation period preceding the CAP procedure execution;
- planned maintenance system (PMS) documentation, if any, for machinery and cargo system (maintenance schedules; documents confirming fulfilment of the PMS operations and schedules); documents demonstrating technical condition before and after maintenance; records on accidents, failures and emergencies, replacement and repair of the CAP items;
- records on technical condition and/or worksheets for checking technical condition of machinery, or special forms of records on the results of technical condition monitoring during the maintenance. The documents submitted shall contain the results of surveys and measurements carried out during the maintenance, as well as the limit values of technical condition parameters (sizes, clearances, condition of surfaces, etc.) determined by the manufacturer or other recognized organization. Causes of failures, accidents, replacements and repairs shall be specified.

4.4.2 Upon request of the Register Head Office (RHO), the shipowner and/or the RS Branch Office for in-service supervision shall provide additional information and ship documents required for the CAP execution.

4.4.3 During review the special attention shall be given to hull defects appeared within the first 10 years of ship's operation, recurring defects and information on accidents. Causes of defects shall be identified and eliminated.

4.4.4 Based on the reviewed documentation RHO shall make preliminary conclusions on the surveys carried out, requirements to be met, ship's condition, operating conditions of the shipboard machinery, etc., determine the items subject to closer attention, specify the scope of surveys, measurements, tests and checks. Division 310 shall inform the Ships in Service Division (Division 340) on the conclusions made and the decision taken on the CAP survey within 10 working days after registration of the Request in RHO.

4.4.5 If during review of the documents some doubts on possibility of issue of the Statement of Fulfilment of Ship's Actual Condition Assessment (CAP) appear, RHO may offer to perform preliminary assessment, including strength analysis based on the existing fault detection reports, repair lists and reports on survey. Upon review of the preliminary assessment results, the shipowner shall make a decision on expediency of the CAP execution and inform the Register.

4.5 Preparation to survey and performance of survey within the CAP framework

4.5.1 In case the satisfactory decision based on the results of the documents' review according to 4.4 is taken, Division 340 shall develop survey program within the CAP framework and organize survey of the ship. The place and the date of survey shall be additionally agreed with the shipowner.

4.5.2 The program of survey within the CAP framework shall include at least the requirements to the scope of survey, conditions of survey, equipment required for examination and, if necessary, to the scope of thickness measurements of hull structures, requirements to oil sampling, vibration measurements and other ship's parameters.

4.5.3 Survey of ship within the CAP framework shall be carried out by the RS Branch Office in the scope determined in authorization issued by Division 340 in accordance with the CAP survey program.

4.5.4 The scope of survey within the CAP framework shall be determined in each particular case depending on the groups of items (refer to 4.1.1) subject to assessment and specified by the shipowner in the Request, as well as the requirements of the Rules for the Classification Surveys of Ships in Service with the reference to ship's age and class and shall include at least the following:

.1 for request for assessment of group I items:

- special hull survey corresponding to ship's age (except for ships less than 5 years of age);
- survey of the ship's bottom (by the RHO decision);
- thickness measurements of hull members, superstructures, deckhouses, closures of openings in outer envelope of ship (except for ships of up to 5 years old);

.2 for request for assessment of group II items:

- annual survey of ship's machinery, systems, including cargo system, devices and electrical equipment;

.3 for requests for assessment of group III items:

- special hull survey corresponding to ship's age (except for ships less than 5 years of age);
- survey of the ship's bottom;
- thickness measurements of hull members, superstructures, deckhouses, closures of openings in outer envelope of ship (except for ships of up to 5 years old);
- annual survey of ship's machinery, systems, including cargo system, devices and electrical equipment.

4.5.5 When assigning the scope of hull survey within the CAP framework, the following may be counted:

.1 for ships less than 5 years of age: results of the initial survey of the ship after construction under the RS technical supervision and subsequent annual surveys;

.2 for ships 5 years of age and above:

- results of the previous special survey carried out by RS or ACS – IACS member not later than 12 months before the shipowner's application. However, at least annual survey of ship's hull shall be carried out;
- results of thickness measurements taken under technical supervision of RS or ACS – IACS member not later than 12 months before the shipowner's application. If the results of measurements carried out under technical supervision of ACS – IACS member are taken into consideration, check measurements of thicknesses under the RS surveyor supervision shall be conducted.

4.5.6 The possibility of combining the CAP survey with special classification surveys shall be decided in each particular case by upon the RHO authorization.

4.5.7 The CAP survey shall be carried out by the RS Branch Offices in the scope assigned by RHO. For the CAP survey the most experienced RS surveyors with open areas of activities at least for special surveys with hull specialization and annual surveys with mechanical and electrical specializations shall be assigned.

4.5.8 The shipowner shall provide safety of ship survey to be carried out by the Register. To provide safety of the CAP survey the shipowner shall fulfil the requirements of the Rules for the Classification Surveys of Ships in Service (at least, Section 4 of Part I "General" and Section 1 of Part III "Additional Surveys of Ships Depending on Their Purpose and Hull Material").

4.5.9 In the process of the CAP survey the RS surveyor shall follow the applicable provisions of the Rules for the Classification Surveys of Ships in Service, Guidelines for Technical Supervision of Ships in Service and other RS normative documents used for survey of ships in service. For safety of the CAP survey, it is also necessary

to use the Occupational Safety Instructions for RS Surveyors Conducting Survey of Ships and Items of RS Technical Supervision.

4.5.10 The survey results shall be introduced in the classification section of the Checklist (form 6.1.01) of STORM system (or, in justified cases, in the RS classification reports of the appropriate survey type), which upper right corner is marked with "CAP" and the appropriate rating is assigned to the CAP items in accordance with the rating scale as per 4.2. If permission to combine the CAP survey with the special survey is given, the Condition Assessment Program Report documents shall be prepared separately. The defects detected during the CAP survey shall be recorded in the RS report documents in a proper manner.

4.5.11 The CAP survey results to be included in the uniform Condition Assessment Program Report may be obtained from several surveys of ship within a period of maximum 6 months.

4.5.12 If elements with **CAP4** rating (elements having below class minimum standard condition) are detected for the RS-classed ships, the Register reserves the right to require elimination of detected defects (refer to Annex 17 to the Guidelines for Technical Supervision of Ships in Service).

4.5.13 For the ACS-classed ships subject to CAP, the Register shall notify the shipowner in writing on detected elements with the **CAP4** rating and necessity to inform the corresponding classification society.

4.5.14 The CAP survey records verified by the RS Branch Office, report on thickness measurements certified by the RS surveyor shall be forwarded to Division 310 within 10 working days upon completion of survey.

Photos proving technical condition of the ship at the moment of the CAP survey (requirements to photos are given in 3.1.2.5, Part I "General" of the Guidelines for Technical Supervision of Ships in Service) shall be enclosed to the survey records.

4.6 Hull strength analysis for compliance with CAP criteria

4.6.1 To assign the CAP rating to the ship, additionally to the rating received as a result of ship's hull CAP survey, the hull strength analysis for compliance with the CAP criteria shall be made. The analysis may be made by Division 310 and a recognized organization.

4.6.2 If hull strength analysis for compliance with the CAP criteria are not made by the Register, the shipowner shall submit strength analysis reports as per 4.6.3 to Division 310 for review and approval. Duration of the strength analysis review is 15 working days.

4.6.3 Strength analysis shall be fulfilled to assign the CAP rating for ship's hull and include the following:

- analysis of ship's hull actual condition with the description of actual wear and other defects detected both during survey and upon results of studying the data of the previous repairs of hull, classification society reports, etc.;
- check of longitudinal strength of ship's hull, including comparison of actual section modulus of hull without wear with the requirements of the Register's rules in force on the date of the Condition Assessment Program Report preparation and comparison of actual section modulus of hull with wear to the Register requirements to **CAP1**, **CAP2** and **CAP3** ratings;
- check of geometric characteristics of ship's hull, including comparison of actual thickness of plates and webs and section modulus of hull members without wear to the new hull requirements of the Register rules in force on the date of Condition Assessment Program Report preparation and comparison of the actual thickness of plates and webs and section modulus of hull members having wear to the new hull requirements of the Register rules;
- check of fatigue strength of hull structures, including determination of residual service life of ship;
- check of geometric characteristics of ship's hull with wear for absence of **CAP4** rating elements (if any, the overall CAP rating becomes **CAP4**);
- plotting of hull structures wear curves and CAP rating evaluation for each group of members. CAP rating is determined with 10 % coverage (90 % cumulative level) for all measurements made for each group of webs;
- calculation of CAP rating for the entire hull based on CAP rating for each group and criticality factor of the corresponding group;
- conclusion with identification of the overall CAP rating of the hull.

4.7 Condition Assessment Program Report

4.7.1 Upon results of review of the CAP survey results as per 4.5 and 4.6 (if applicable), Division 310 shall make a decision on assignment of the CAP rating to one or several groups of ship's items specified in 4.1.1 and then issue

the Statement of Fulfilment of Ship's Actual Condition Assessment (CAP) as per form 3.1.12 and Condition Assessment Program Report with CAP rating justification.

4.7.2 When the Statement of Fulfilment of Ship's Actual Condition Assessment (CAP) is issued for items of groups I and/or II specified in 4.1.1, the Statement shall indicate the particular group of items and/or separate items of group II (for example, **CAP1 – HULL** or **CAP1 – MACHINERY, CARGO SYSTEM**).

4.7.3 If RHO takes a decision to assign **CAP3** and **CAP4** rating, the Statement of Fulfilment of Ship's Actual Condition Assessment (CAP) is not issued. The Letter of Conclusion with the Condition Assessment Program Report containing rating justification shall be sent to the address of the shipowner and the RS Branch Office for supervision in-service.

4.7.4 The Condition Assessment Program Report shall contain, at least, the following main sections:

- general information on the ship;
- CAP survey reports and checklists;
- photos proving ship's technical condition;
- if applicable, hull strength analysis for compliance with the CAP criteria for general and local strength and fatigue endurance; CAP rating calculations for hull;
- calculation of CAP rating for ship's machinery and cargo systems;
- calculation of overall CAP rating;
- conclusion.

Appendix A. Form of Request for Condition Assessment Program (CAP)

Requester _____

in the name
of _____

(position, full name)

acting under _____

I hereby apply with request to Russian Maritime Register of Shipping to perform the Condition Assessment Program (CAP) survey of the ship for the group¹ _____ of items and assign the CAP rating.

Ship particulars:

General

Name of ship: _____ Reg. No.: _____ IMO No.: _____

Port of registry: _____ Flag _____

Type of ship: _____ Date of build: _____ Gross tonnage: _____

Class notation: _____

Length overall: _____ Breadth: _____ Moulded depth: _____

Summer draught: _____

Propulsion type (propeller, ducted propeller, thruster, steerable propeller, vertical axis propeller, water jet unit): _____

General information on mechanical installation:

type of main machinery: _____ total output: _____

Information on propeller shaft and sterntube:

type and material of propeller shaft: _____

propeller shaft lining (continuous or separate): _____

lubrication system of sterntube bearings (oil/water): _____

type of shaft connection to propeller (tapered keyed, tapered keyless, flanged): _____

Information on introduction of ship into propeller shaft condition monitoring (PCM) system: _____

Ship is brought to PCM system (yes/no): _____

Date of bringing the ship to PCM system: _____

Information on planned date and place of ship submission (if any): _____

¹ Groups of CAP items:

I – ship's hull (including superstructures, deckhouses, closures of openings in the outer envelope of the ship);

II – ship's mechanical installation, machinery, devices, systems, including cargo system, and electrical equipment;

III – all items specified in I and II.

Date _____

Place of ship submission (port, country):

Details of agent in port of ship submission: _____

List of documents enclosed to the Request (if applicable):

- general arrangement plan;
- depending on the selected group of CAP items: drawings of hull, mechanical and electrical parts, diagrams of ship's systems;
- list of ship's machinery, devices, systems, including cargo system;
- copy of Classification Certificate and other certificates, if any;
- if applicable: reports, checklists, ACS – IACS member reports on hull condition, at least, the last special and subsequent surveys of the ship;
- thickness measurement reports, repair reports and other documents concerning actual condition of ship's hull for the operation period preceding the CAP execution;
- ship' hull damage history for the entire period of the ship operation;
- information on transported cargoes and areas of operation for the last 3 years of ship's operation;
- planned maintenance system (PMS) documentation, if any, for ship's machinery and cargo system (maintenance schedules; documents confirming fulfilment of PMS operations and schedules); documents demonstrating technical condition before and after maintenance; documents with records on accidents and failures, replacement and repair of the CAP items;
- records on technical condition and/or worksheets for checking technical condition of machinery, or special forms of records on the results of technical condition monitoring during the maintenance. The documents submitted shall contain the results of surveys and measurements carried out during the maintenance. These documents shall also contain the limit values of technical condition parameters (sizes, clearances, condition of surfaces, etc.) required by the manufacturer or other recognized organization. Causes of failures, accidents, replacements and repairs shall be specified;
- information on cathodic protection installation, instruction on renewal of anodes fitted on the ship's outer hull afloat;
- specification of cathodic protection and its installation diagram;
- copy of document confirming ship's introduction into PCM system;
- copy of document confirming ship's introduction into PMS system.