**RULES FOR**

# SURVEY AFTER CONSTRUCTION 2018

## NOTICE NO. 2 – July 2018

The following Rule Changes were approved by the ABS Rules Committee on 1 June 2018 and become **EFFECTIVE AS OF 1 JULY 2018.**

*(See http://www.eagle.org for the consolidated version of the 2018 Rules for Survey After Construction (Part 7), with all Notices and Corrigenda incorporated.)*

*Notes - The date indicated in the parentheses in the Rules for Survey After Construction (Part 7) is the date that the requirement becomes effective for vessels undergoing survey on or after this date.*

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 1 CONDITIONS FOR SURVEY AFTER CONSTRUCTION**

**SECTION 1 GENERAL INFORMATION**

*(Revise Subsection 7-1-1/15, as follows:)*

### 15 Vessels Confined to a Specific Location *(1 July 2018)*

In lieu of the requirements of 7-2-1/11.1, where vessels are permanently moored at a specific site, a survey program consisting of Underwater Inspections in Lieu of Drydocking (UWILD) and/or hull coating system, cathodic protection, and extended thickness measurements may be specially considered, and a drydocking for survey will not be required. The survey program is to be carried out at least two times in any five-year period with an interval not exceeding three years.

Consideration may be given to special circumstances which may justify an extension of the interval.

*(Revise Subsection 7-1-1/19, as follows:)*

### 19 Vessels in Lightering Service *(1 July 2018)*

ABS is to be notified by the Owner when a vessel has been put into lightering service. For a vessel engaged in lightering service, at each Intermediate and Special Periodical Survey, the additional requirements as contained in 7-3-2/3.1.5 and 7-3-2/5.1.16 are to be complied with. Once the vessel has been removed from lightering service, these requirements will remain in effect through the completion of the next scheduled Intermediate or Special Periodical Survey, whichever occurs first.

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 2 SURVEY INTERVALS**

**SECTION 1 VESSELS FOR UNRESTRICTED SERVICE**

*(Revise Subsection 7-2-1/11, as follows:)*

## 11 Drydocking Surveys *(1 July 2018)*

### 11.1 Intervals

#### 11.1.1 All Vessels

*(2011)* There is to be a minimum of two examinations of the outside of a vessel's bottom and related items during each five-year special survey period. One such examination is to be carried out in conjunction with the Special Periodical Survey. In all cases, the interval between any two such examinations is not to exceed 36 months. See also 7-3-2/5.1.2. For vessels not subject to SOLAS operating solely in fresh water, the maximum interval is not to exceed five years.

*(1 July 2004)* Examinations of the outside of a vessel's bottom and related items is normally to be carried out with the vessel in drydock. However, consideration may be given to an alternative examination while the vessel is afloat by an approved underwater inspection, equivalent to a Drydocking Survey, subject to provisions of Appendix 7-A-1. This alternative will not be available for Drydocking Surveys concurrent with the Special Periodical Survey – Hull referred to in 7-3-2/5.1.2. Vessels 15 years of age or over will be subject to special consideration based on the vessel's survey status before being permitted to have such inspections. For vessels on Continuous Surveys – Hull, refer to 7-2-1/7.

*(1 July 2005)* For vessels 15 years of age or over subject to the Enhanced Survey Program (ESP), Underwater Inspections in Lieu of Drydocking (UWILD) will not be permitted at alternate Drydocking Surveys. Accordingly, all Rule-required Drydocking Surveys are to be carried out with the vessel on dry dock.

*(1 July 2004)* Compliance with 7-2-1/11.1 does not absolve the Owner from compliance with the requirements of SOLAS as amended, especially when shorter intervals between examination of the vessel's bottom for certain types of vessels are required.

*(1 July 2004)* For ESP Oil Tankers, ESP Combination Carriers, ESP Bulk Carriers, ESP Chemical Tankers, ESP Oil Tankers – Double Hull, ESP Bulk Carriers – Double Side Skin, and General Dry Cargo Vessels ESDC, reference should be made to the applicable Paragraphs of 7-3-2/5.

*(1 July 2005)* These requirements are also applicable to vessels with geographical limitations except those vessels referred to in 7-2-2/13 and 7-2-3/7.

#### 11.1.2 Accommodation Barges *(2011)*

In lieu of the requirements of 7-2-1/11.1.1, for barges classed as Accommodation Barges, prior to Special Periodical Survey No. 3, drydocking for survey will not be required and an approved underwater inspection in lieu of drydocking is allowed. However, the underwater inspection in lieu of drydocking shall be carried out at least two times in any five-year period with an interval not exceeding three years.

Commencing at Special Periodical Survey No. 3, there is to be a minimum of two examinations of the outside of a vessel's bottom and related items during each five-year special survey period. One such examination is to be carried out in conjunction with the Special Periodical Survey. In all such cases, the interval between any two such examinations is not to exceed 36 months. See also 7-3-2/5.1.2.

Consideration may be given to special circumstances which may justify an extension of the interval.

11.1.3 Barges and Yachts

In addition to the requirements of 7-2-1/11.1.1, for Barges and Yachts operating in salt water for less than six months each year, the maximum interval is not to exceed three years. For barges operating solely in fresh water, the maximum interval is not to exceed five years.

An approved underwater inspection by diver equivalent to a Drydocking Survey will be considered at alternate Drydocking Survey dates.

11.1.4 Passenger Vessels and High Speed Craft *(2005)*

In addition to the requirements in 7-2-1/11.1.1, a Drydocking Survey is to be carried out annually for passenger vessels subject to SOLAS and for High Speed Craft (HSC) vessels subject to the IMO HSC Code.

For passenger vessels and high speed craft, Drydocking Surveys are to be made within three months before or after the date of each annual anniversary date.

For passenger vessels, an approved underwater inspection by a diver (See Section 7-A-1), equivalent to a Drydocking Survey, may be considered at Drydocking Surveys not associated with the Special Periodical Survey – Hull referred to in 7-3-2/5.1.2. Vessels 15 years of age or over will be subject to special consideration based on the vessel's survey status before being permitted to have such inspections.

For vessels on Continuous Surveys – Hull, refer to 7-2-1/7.

## 11.3 Extensions

An extension of the examination of a vessel's bottom beyond the due date may be granted in exceptional circumstances*.

* *Note:* "Exceptional circumstances" means unavailability of dry-docking facilities; unavailability of repair facilities; unavailability of essential materials, equipment or spare parts; or delays incurred by action taken to avoid severe weather conditions. [See also 1-1-2/7.9iii) of the ABS *Rules for Conditions of Classification (Part 1).*]

Extension Surveys should normally be carried out within one (1) month of the drydocking survey due date and the extension counts from the drydocking survey due date.

11.3.1 Extensions up to One (1) Month

An extension up to one (1) month may be granted, when requested by the Owner, provided a survey is carried out in accordance with 7-4-1/9.1.

11.3.2 Extensions up to Three (3) Months

An extension up to three (3) months may be granted, when requested by the Owner, provided a survey is carried out in accordance with 7-4-1/9.3.

# 13 Tailshaft Surveys *(2016)*

## 13.1 Intervals

13.1.2 Closed Loop System Fresh Water Lubricated Shafts

*(Add new Item 7-2-1/13.1.2(c), as follows:)*

*13.1.2(c) (1 July 2018)* For vessels with **TCM-W** notation, up to fifteen (15) years subject to compliance with 7-9-20/3.

13.1.3 Water-Lubricated Bearings (Open Systems)

*(Add new Item 7-2-1/13.1.3(c), as follows:)*

*13.1.3(c) (1 July 2018)* For vessels with **TCM-W** notation, refer to 7-9-20/3.

### 13.3 Extensions

*(Revise first paragraph of Subparagraph 7-2-1/13.3.1, as follows:)*

13.3.1 Oil-Lubricated Bearings or Closed Loop System Fresh Water Lubricated Shafts *(1 July 2018)*

When a survey according to Method 1 is required at the fifteen year interval for Closed Loop System Fresh Water Lubricated Shafts, a maximum extension of not more than three months can be granted.

*(Following text remains unchanged.)*

## PART 7 RULES FOR SURVEY AFTER CONSTRUCTION

## CHAPTER 3 HULL SURVEYS

## SECTION 1 REQUIREMENTS FOR INTERNAL EXAMINATIONS OF ALL VESSELS

### 5 Access to Structures *(1 July 2014)*

### 5.5 Close-up Survey on Bulk Carriers – Non Double Skin and Bulk Carriers Features of Combination Carriers – Non Double Skin

*(Revise Subparagraph 7-3-1/5.5.3, as follows:)*

5.5.3 Cargo Hold Shell Frames of Bulk Carriers 100,000 DWT and Above *(1 July 2018)*

For close-up surveys of the cargo hold shell frames of bulk carriers 100,000 DWT and above, the use of portable ladders is not accepted, and one or more of the following means for access, acceptable to the Surveyor, is to be provided:

*5.5.3(a) Annual Surveys, Intermediate Survey under 10 years of age and Special Survey No. 1*

- Permanent staging and passages through structures
- Temporary staging and passages through structures
- Hydraulic arm vehicles such as conventional cherry pickers, lifts, and movable platforms
- Boats or rafts, provided the structural capacity of the hold is sufficient to withstand static loads at all levels of water
- Other equivalent means

*5.5.3(b) Subsequent Intermediate Surveys and Special Surveys:*

In addition, for vessels 10 years of age and over, the following also apply for Intermediate Surveys and Special Periodical Surveys.

- Either permanent or temporary staging and passage through structures for close-up survey of at least the upper part of hold frames
- Hydraulic arm vehicles such as conventional cherry pickers for surveys of lower and middle part of shell frames as alternative to staging
- Lifts and movable platforms;
- Boats or rafts, provided the structural capacity of the hold is sufficient to withstand static loads at all levels of water;
- Other equivalent means.

Notwithstanding the above requirements:

The use of a portable ladder fitted with a mechanical device to secure the upper end of the ladder is acceptable for the "close-up examination of sufficient extent, minimum 25% of frames, to establish the condition of the lower region of the shell frames including approx. lower one third length of side frame at side shell and side frame end attachment and the adjacent shell plating of the forward cargo hold" at Annual Survey, required in 7-3-2/1.7.2(a)ii), and the "one other selected cargo hold" required in 7-3-2/1.7.2(b)ii).

The use of hydraulic arm vehicles or aerial lifts ("Cherry picker") may be accepted by the attending Surveyor for the close-up survey of the upper part of side shell frames or other structures in all cases where the maximum working height is not more than 17 m (55 ft).

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 3 HULL SURVEYS**

**SECTION 2 VESSELS FOR UNRESTRICTED SERVICE**

# 1 Annual Surveys

## 1.1 All Vessels *(1 July 2018)*

### 1.1.1 Protection of Cargo Hatch Openings

*(Revise Item 7-3-2/1.1.1(b), as follows:)*

*1.1.1(b) (1 July 2018)* Where mechanically operated steel covers are fitted, examination of:

- Hatch covers; including plating and stiffeners

*(Following text remains unchanged.)*

*(Revise Subparagraph 7-3-2/1.1.7, as follows:)*

### 1.1.7 Anchoring Systems and Mooring Equipment *(1 July 2018)*

Anchors and chain cables, anchor windlass including foundation, prime mover, shafting, wildcats, brakes, controls and chain stoppers are to be examined, as far as possible. A function test may be required if deemed necessary by the Surveyor.

Mooring and towing equipment is to be examined as far as possible and to be confirmed properly marked as applicable with any restriction associated with its safe operation.

*(Revise Subparagraph 7-3-2/1.1.11, as follows:)*

### 1.1.11 Helicopter Deck *(1 July 2018)*

Where areas of the vessel are designated for helicopter operations, the helicopter deck, deck supporting structure, deck drainage, tie downs, securing arrangements, where fitted safety netting or equivalent, access arrangements including emergency means of escape for fire-fighting and rescue personnel, are to be examined.

*(Delete Subparagraph 7-3-2/1.1.15, as follows:)*

~~1.1.15 Vessels in Lightering Service *(1 July 2004)*~~

~~In addition to the applicable requirements of 7-3-2/1.1, the Annual Survey – Hull is also to include an external examination of hull structures where fenders for lightering operation were located. Where extensive areas of wastage are found, or when considered necessary by the Surveyor, thickness measurements and internal examination, including Close-up Survey, may be required.~~

*(Renumber Subparagraphs 7-3-2/1.1.16 and 7-3-2/1.1.17 as 7-3-2/1.1.15 and 7-3-2/1.1.16.)*

*(Add new Subparagraph 7-3-2/1.1.17, as follows:)*

1.1.17 Deck Attachments and Fittings *(1 July 2018)*

Deck plating in way of attachments and fittings, including hose handling rail supporting structure connection to the deck.

*(Add new Subparagraph 7-3-2/1.1.18, as follows:)*

1.1.18 Vessels Engaged in Dredging Operations *(1 July 2018)*

In addition to the applicable requirements of 7-3-2/1.1, the following additional requirements are to be examined:

*i)* For split hopper dredgers, visible examination as far as practicable of superstructure hinges and blocks, deck hinges, hydraulic jacks and associated piping systems and alarms.

*ii)* For all types, the following:

- Visual examination as far as practicable of attachments of suction piping and lifting systems to the structure and external examination of piping in dredging machinery spaces for excessive corrosion or leakages.
- Checking the condition of the dredging machinery space and related equipment with regard to electrical shocks, protection from rotating machinery fire and explosion hazards.

## 1.13 Tankers – (ESP and Non ESP) and Tank Barges and Oil Carrier Features of Combination Carriers

1.13.8 Liquefied Gas Carriers and Liquefied Gas Tank Barges *(1 July 2013)*

*(Revise Item 7-3-2/1.13.8iii), as follows:)*

*iii)* *Cargo Tank Venting System (1 July 2018).* The venting system for the cargo tanks and hold spaces is to be confirmed in satisfactory operating condition. The vent line drainage arrangement is to be examined. It is to be verified that the cargo tank relief valves are sealed and that the certificate/record for the relief valves opening/closing pressures is on board.

## 1.17 Vessels Carrying Vehicles *(2012)*

### 1.17.1 Bow Doors, Inner Doors, Side Shell Doors and Stern Doors

*(Revise Item 7-3-2/1.17.1(c), as follows:)*

*1.17.1(c) (1 July 2018)* Bow doors, inner doors, side shell doors and stern doors are to be examined together with shell plating surrounding the opening and the securing, supporting and locking devices, with particular attention being paid to:

*i)* Plating, stiffening and welding of same. The following devices and fittings and associated welding are subject to close-up survey by the attending Surveyor:

- Cylinder securing pins, supporting brackets, back-up brackets (where fitted) and their welded connections
- Hinge pins, supporting brackets, back-up brackets (where fitted) and their welded connections
- Locking hooks, securing pins, supporting brackets, back-up brackets (where fitted) and their welded connections
- Locking pins, supporting brackets, back-up brackets (where fitted) and their welded connections
- Locating and stopper devices and their welded connections

*ii)* Supporting structure, supports and lifting arms

*iii)* Hinging arms and their welding

*iv)* Secondary stiffeners and welding

*v)* Hinges, bearings and thrust bearings

*vi)* Securing, supporting and locking devices

*vii)* Where fractures are revealed, a thorough examination, supported by Nondestructive Testing, is to be carried out in the surrounding area and for similar items.

*(Add new Item 7-3-2/1.17.1(d), as follows:)*

*1.17.1(d) Measurement of Clearances (1 July 2018)*

- Clearances are to be measured. Clearances of hinges, bearings and thrust bearings are to be taken, where no dismantling is required. Where the function test is not satisfactory, dismantling may be required to measure the clearances. If dismantling is carried out, a visual examination of hinge pins and bearings together with NDT of the hinge pin is to be carried out.
- Clearances of securing, supporting and locking devices are to be measured, where indicated in the Operating and Maintenance Manual (OMM).

*(Renumber 7-3-2/1.17.1(c)viii) and 7-3-2/1.17.1(c)ix) as 7-3-2/1.17.1(e) and 7-3-2/1.17.1(f) and revise, as follows:)*

*1.17.1(e) Sealing Arrangement.* An examination of packing material/ rubber gaskets and retaining bars or channels, including welding is to be carried out.

*1.17.1(f) Drainage Arrangement (1 July 2018).*

- An examination of drainage arrangement, including bilge wells and drain pipes is to be carried out, where fitted. A test of the bilge system between the inner and outer doors is to be carried out.

*(Renumber 7-3-2/1.17.1(d) through 7-3-2/1.17.1(j) as 7-3-2/1.17.1(g) through 7-3-2/1.17.1(m).)*

# 3 Intermediate Surveys *(1 July 2014)*

## 3.1 All Vessels

*(Revise Subparagraph 7-3-2/3.1.5, as follows:)*

3.1.5 Vessels in Lightering Service *(1 July 2018)*

In addition to the applicable requirements of 7-3-2/3.1, the Intermediate Survey is to include an external examination of hull structures where fenders for lightering operation were located. Where extensive areas of wastage are found, or when considered necessary by the Surveyor, thickness measurements and internal examination, including Close-up Survey, may be required.

## 3.11 Tankers Non ESP

3.11.2 Liquefied Gas Carriers *(1 July 2018)*

*(Revise Subparagraph 7-3-2/3.11.2, as follows:)*

*(1 July 2006)* In addition to the applicable requirements of 7-3-2/1.13.8, the Intermediate Survey is also to include the following.

*(Following text remains unchanged.)*

## 3.15 Tankers ESP (Oil Carriers and Oil Carrier Features of Combination Carriers – Double Hull) *(2003)*

*(Revise Subparagraph 7-3-2/3.15.2, as follows:)*

3.15.2 Piping Systems on Weather Decks *(1 July 2018)*

An examination, as far as applicable, of cargo, crude oil washing, bunker, ballast, steam and vent piping systems as well as vent masts and headers. If upon examination there is any doubt as to the condition of the piping, the piping may be required to be pressure-tested, thickness-measured, or both. Venting systems of cargo tanks, including secondary means of protection, are to be examined.

## 3.17 Bulk Carriers – Double Skin ESP and Bulk Carrier Features of Combination Carriers – Double Skin ESP *(2005)*

*(Revise Subparagraph 7-3-2/3.17.3, as follows:)*

3.17.3 Close-up Survey Requirements *(1 July 2018)*

*3.17.3(a) For Vessels 5 < Age ≤ 10 years*

*i)* Where considered necessary by the Surveyor as a result of the overall survey, the survey is to be extended to include a close-up survey of those areas of structure in the cargo holds selected by the Surveyor.

*ii)* Close-up survey of suspect areas identified at previous surveys.

*3.17.3(b) For Vessels Age > 10 years*

Close-up survey requirements of the previous Special Periodical Survey as contained in 7-3-2/5.19.4.

For ore carriers, close-up survey requirements of the previous Special Periodical Survey as contained in 7-3-2/15.19.4(b).

# 5 Special Periodical Surveys

## 5.1 All Vessels

*(Revise Subparagraph 7-3-2/5.1.4, as follows:)*

5.1.4 Anchor Windlass, Anchor and Chain Cable *(1 July 2018)*

Each windlass is to be operated, as far as possible, for braking, clutch functioning, lowering and hoisting of chain cable and anchor, proper riding of the chain over the wildcat, proper transit of the chain through the hawse pipe and chain pipe, and effecting proper stowage of the chain and anchor.

The anchors and chain cables are to be ranged, examined and the required complement and condition confirmed. The chain locker, holdfasts, hawse pipes and chain stoppers are to be examined and pumping arrangements of the chain locker operationally tested.

At Special Periodical Survey No. 2 and subsequent Special Periodical Surveys, chain cables are to be gauged and renewed in cases where their mean diameter is 12% or more below the original required nominal size. Where structural alterations to the vessel have resulted in a higher equipment numeral, the original chain cables may be used until their mean diameter has been reduced to 12% below the nominal diameter of the larger cable required by the higher equipment numeral.

5.1.7 Overall Survey Requirements

*(Revise Item 7-3-2/5.1.7(e), as follows:)*

*5.1.7(e) Fuel Oil Tanks, Lube Oil Tanks, and Freshwater Tanks (1 July 2018).* Where tanks of integral structural type, except for peak tanks, are used primarily for heavy fuel oil or exclusively for light oils or fresh water, the internal examination may be specially considered, provided a general external examination and the following internal examinations are carried out.

Minimum requirements for internal examination of fuel oil, lube oil and fresh water tanks at Special Periodical Surveys are as follows.

*i) Special Periodical Survey No. 1 (Age ≤5 Years)*

None

*ii) Special Periodical Survey No. 2 (5 < Age ≤10 Years)*

- *(2008)* One (1) fuel oil tank in the Cargo length area. For vessels without a defined cargo area a minimum of one (1) fuel oil tank.
- One (1) freshwater tank

*iii) Special Periodical Survey No. 3 (10 < Age ≤15 Years)*

- *(2008)* One (1) fuel oil tank in way of the engine room
- Two (2) fuel oil tanks in the Cargo length area. One (1) deep tank in the cargo length area is to be included, if fitted
- All freshwater tanks

*iv) Special Periodical Survey No. 4 and Subsequent Special Periodical Surveys (Age > 15 Years)*

- *(2008)* One (1) fuel oil tank in way of the engine room
- Half of all fuel oil tanks in the Cargo length area, minimum two (2). One (1) deep tank in the cargo length area is to be included, if fitted
- For vessels without a defined cargo area, a minimum of two (2) fuel tanks
- One (1) lube oil tank
- All freshwater tanks

*Note:* If a selection of tanks is accepted for examination, then different tanks are to be examined at each Special Periodical Survey on a rotational basis.

Independent oil tanks in machinery spaces are to be externally examined and, if deemed necessary, tested under a head of liquid.

5.1.15 Minimum Requirements for Thickness Measurements at Special Periodical Surveys for Vessels without ESP and ESDC Notations

*(Revise Item 7-3-2/5.1.15(a), as follows:)*

*5.1.15(a) Vessels Under 90 meters (295 feet) in Length; Passenger Vessels and High Speed Craft under 61 meters (200 feet) in Length (1 July 2018)*

*i) Special Periodical Survey No. 1 (Age ≤ 5 Years) (2003)*

- Suspect areas throughout the vessel.

*ii) Special Periodical Survey No. 2 (5 < Age ≤ 10 Years) (2003)*

- Suspect areas throughout the vessel.
- One (1) transverse section of deck plating within the midship 0.5*L* (in way of cargo space, if applicable).

*iii) Special Periodical Survey No. 3 (10 < Age ≤ 15 Years)*

- Suspect areas throughout the vessel.
- One (1) transverse section within the amidships 0.5*L*.
- Internals in forepeak and afterpeak tanks.
- All cargo hold hatch covers and coamings (stiffeners and plating).

*iv) Special Periodical Survey No. 4 and Subsequent Special Periodical Surveys (Age > 15 Years)*

- Suspect areas throughout the vessel.
- Two (2) transverse sections within the amidships 0.5*L*, (in way of two (2) different cargo (or ballast) spaces, if applicable), avoiding those spaces previously gauged.
- Internals in forepeak and after peak tanks.
- All cargo hold hatch covers and coamings (stiffeners and plating).
- Lowest strake and strakes in way of tween decks of all transverse bulkheads in cargo spaces together with internals in way.
- Wind-and-water strakes, port and starboard, full length.
- All exposed main deck full length and representative exposed superstructure deck plating (poop, bridge and forecastle decks).
- Flat keel plating full length. Also, additional bottom plates in way of cofferdams, machinery spaces and aft ends of tanks.
- For tank vessels, gauging of principal internals throughout cargo and ballast tanks.
- For High Speed Craft, one (1) additional transverse section forward of 0.125*L*.
- Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor.

*(Revise Item 7-3-2/5.1.15(b), as follows:)*

*5.1.15(b) Non ESP Tankers, Independent Tank Carriers 90 meters (295 feet) and over in Length (1 July 2018).* These requirements do not apply to independent cargo tanks.

*i) Special Periodical Survey No. 1 (Age ≤5 Years)*

- Suspect areas throughout the vessel.

*ii) Special Periodical Survey No. 2 (5 < Age ≤10 Years)*

- All main deck plates within the amidships 0.5*L* or cargo tank section, whichever is longer.
- One (1) transverse section within the amidships 0.5*L*.
- Plates in wind-and-water strakes outside the amidships 0.5*L*.
- All complete transverse web frame rings in a ballast wing tank or ballast double hull tank, if any.
- One (1) deck transverse in each of the remaining ballast tanks, if any.
- Both transverse bulkheads including girder system in a ballast wing tank or ballast double hull tank, if any, or a cargo wing tank used primarily for water ballast.
- Lower part of transverse bulkhead including girder system in each remaining ballast tank, one (1) cargo wing tank and two (2) cargo center tanks.
- Suspect areas throughout the vessel.

*iii) Special Periodical Survey No. 3 (10 < Age ≤15 Years)*

- All main deck plates within the amidships 0.5*L* or cargo tank, whichever is longer.
- Two (2) transverse sections within the amidships 0.5*L*.
- Plates in wind-and-water strakes outside the amidships 0.5*L*.
- All complete transverse web frame rings in all ballast tanks and in a cargo wing tank.
- A minimum of 30% of all complete transverse web frame rings in each remaining cargo wing tank. (In calculating the 30% minimum, the number of web frame rings is to be rounded up to the next whole integer.)
- A minimum of 30% of deck and bottom transverse in each cargo center tank. (In calculating the 30% minimum, the number of transverses is to be rounded up to the next whole integer.)
- All transverse bulkheads including girder and stiffener systems in all cargo and ballast tanks.
- Additional complete transverse web frame rings as considered necessary by the Surveyor.
- Internals in forepeak and afterpeak tanks including plating and stiffeners of forepeak and afterpeak tank bulkheads.
- Suspect areas throughout the vessel.

*iv) Special Periodical Survey No. 4 and Subsequent Special Periodical Surveys (Age > 15 Years)*

- All exposed main deck plates, full length. Also, exposed first-tier superstructure deck plates (poop bridge and forecastle decks).
- All keel plates full length. Also, additional bottom plates in way of cofferdams, machinery space and aft ends of tanks.
- A minimum of three (3) transverse sections within the amidships 0.5*L*.
- All complete transverse web frame rings in all ballast tanks and in a cargo wing tank.

- A minimum of 30% of all complete transverse web frame rings in each remaining cargo wing tank. (In calculating the 30% minimum, the number of web frame rings is to be rounded up to the next whole integer.)
- A minimum of 30% of deck and bottom transverse in each cargo center tank. (In calculating the 30% minimum, the number of transverses is to be rounded up to the next whole integer.)
- All transverse bulkheads including girder and stiffener systems in all cargo and ballast tanks.
- Additional complete transverse web frame rings as considered necessary by the Surveyor.
- Any additional tanks and structure as considered necessary by the Surveyor.
- Internals in forepeak and afterpeak tanks including plating and stiffeners of forepeak and afterpeak tank bulkheads.
- All plates in two (2) wind-and-water strakes, port and starboard full length.
- Suspect areas throughout the vessel.
- Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor.

*(Revise Subparagraph 7-3-2/5.1.16, as follows:)*

5.1.16 Vessels in Lightering Service *(1 July 2018)*

In addition to the applicable requirements of 7-3-2/5.1, the Special Periodical Survey is also to include an external examination and internal Close-up Survey of hull structures where fenders for lightering operation were located. Where extensive areas of wastage are found, or when considered necessary by the Surveyor, thickness measurements may be required.

*(Add new Subparagraph 7-3-2/5.1.19, as follows:)*

5.1.19 Vessels Engaged in Dredging Operations *(1 July 2018)*

In addition to the applicable requirements of 7-3-2/5.1, the following additional requirements are to be examined:

*5.1.19(a)* For hopper dredger, visual examination of hopper bottom doors or valves and accessories, such as hinges, actuating rods, hydraulic systems, with opening out as deemed necessary by the attending Surveyor.

*5.1.19(b)* For split hopper dredgers, visual examination, as far as practical of superstructure hinges and blocks, deck hinges, hydraulic jacks and associated piping systems and alarms with opening out and/or future checks as deemed necessary by the Surveyor.

*5.1.19(c)* Examination of lining (wear plates) in hopper space to confirm that there is no detachments which would allow dredge spoils to migrate between the lining and hull structure. Where such detachments are found the lining is to be removed to the extent necessary to permit examination and gauging of the hull structure.

## 5.7 Bulk Carriers – Non Double Skin ESP and Bulk Carrier Features of Combination Carriers – Non Double Skin ESP

*(Revise Subparagraph 7-3-2/5.7.5, as follows:)*

5.7.5 Thickness Measurement Requirements *(1 July 2018)*

*(Preceding text remains unchanged.)*

*5.7.5(a) Special Periodical Survey No. 1 (Age ≤5 years)*

*i)* Suspect areas throughout the vessel.

*5.7.5(b) Special Periodical Survey No. 2 (5 < Age ≤10 years)*

*i)* Suspect areas throughout the vessel.

*ii)* All deck plating inside the line of opening between cargo hold hatches.

*iii)* Two (2) transverse sections of deck plating outside the line of cargo hatch openings within the amidships 0.5*L* with at least one (1) including a ballast tank, as far as practicable.

*iv)* Wind -and-water strakes in way of the same transverse sections.

*v)* Selected wind-and-water strakes outside the cargo length area.

*vi)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey.

*vii)* *(1 July 2003)* Measurements of the corrugated transverse watertight bulkhead between cargo holds No's. one and two, for vessels subject to IACS UR S19 and IACS UR S23.

*viii)* *(2005)* Additional thickness measurements to be taken of the cargo hold side shell frames and brackets on ships subject to compliance with IACS UR S31 for initial and continued compliance.

*5.7.5(c) Special Periodical Survey No. 3 (10 < Age ≤15 years)*

*i)* Suspect areas throughout the vessel

*ii)* All main deck plating outside of line of cargo hatch openings within the cargo length area.

*iii)* Two (2) transverse sections, one (1) in the amidship area, outside the line of cargo hatch openings.

*iv)* All wind-and-water strakes within the cargo length area.

*v)* Selected wind and water strakes outside the cargo length area.

*vi)* All cargo hold hatch covers and coamings (plating and stiffeners).

*vii)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of bulkheads.

*viii)* Measurement, for general assessment and recording of corrosion pattern, of structural members subject to Close-up Survey.

*ix)* *(1 July 2002)* Measurements of the corrugated transverse watertight bulkhead between cargo holds No's. one and two, for vessels subject to IACS UR S19 and IACS UR S23.

*x)* *(2005)* Additional thickness measurements to be taken of the cargo hold side shell frames and brackets on ships subject to compliance with IACS UR S31 for initial and continued compliance.

*5.7.5(d) Special Periodical Survey No. 4 and Subsequent Special Periodical Surveys (Age > 15 years)*

*i)* Suspect areas throughout the vessel.

*ii)* All exposed main deck plating and representative exposed first tier superstructure deck plates (poop, bridge and forecastle decks).

*iii)* A minimum of three (3) transverse sections, one (1) in the amidship area, outside of the line of cargo hatch openings within the amidships 0.5*L*.

*iv)* All wind-and-water strakes, port and starboard, full length.

*v)* All cargo hold hatch covers and coamings (plating and stiffeners).

*vi)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of bulkheads.

*vii)* Duct keel or pipe tunnel plating and internals.

*viii)* All keel and bottom plates full length.

*ix)* *(2003)* Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor.

*x)* Measurement, for general assessment and recording of corrosion patterns of structural members subject to Close-up Survey.

*xi)* *(1 July 2002)* Measurements of the corrugated transverse watertight bulkhead between cargo holds No's. one and two, for vessels subject to IACS UR S19 and IACS UR S23.

*xii)* *(2005)* Additional thickness measurements to be taken of the cargo hold side shell frames and brackets on ships subject to compliance with IACS UR S31 for initial and continued compliance.

## 5.11 Liquefied Gas Carriers

*(Revise Subparagraph 7-3-2/5.11.3, as follows:)*

5.11.3 Special Periodical Survey Close-Up Survey Requirements *(1 July 2018)*

The Surveyor may extend the close-up survey as deemed necessary taking into account the maintenance of the tanks under survey, the condition of the corrosion prevention system and where tanks have structural arrangements or details which have suffered defects in similar spaces or on similar ships according to available information.

For areas in tanks where hard protective coatings are found to be in a GOOD condition, the extent of close-up surveys may be specially considered.

For ships having independent tanks of type C, with a midship section similar to that of a general cargo ship, the extent of close-up surveys may be specially considered.

The minimum requirements for close-up surveys at special survey are as follows:

*5.11.3(a) Special Periodical Survey No. 1 (Age ≤ 5 years)*

*i)* One (1) complete transverse web frame including adjacent structural members in a representative ballast tank of the topside, hopper side and double hull side type.

*ii)* One (1) transverse bulkhead lower part including girder system and adjacent structural members in a ballast tank.

*5.11.3(b) Special Periodical Survey No. 2 (5 < Age ≤ 10 years)*

*i)* All complete transverse web frames including adjacent structural members in a ballast tank, which is to be a double hull side tank or a topside tank. If such tanks are not fitted, another ballast tank is to be selected.

*ii)* One (1) complete transverse web frame including adjacent structural members in each remaining ballast tank.

*iii)* One (1) complete transverse bulkhead including girder system and adjacent structural members and adjacent longitudinal bulkhead structure in each ballast tank.

*5.11.3(c) Special Periodical Survey No. 3 and Subsequent Special Periodical Surveys (Age > 10 years)*

*i)* All complete transverse web frames, including adjacent structural members in all ballast tanks.

*ii)* All complete transverse bulkheads including girder system and adjacent structural members and adjacent longitudinal bulkhead structure in all ballast tanks.

*(Add new Subparagraph 7-3-2/5.11.4, as follows:)*

5.11.4 Thickness Measurement Requirements *(1 July 2018)*

Where substantial corrosion is found, additional thickness measurements in accordance with 7-3-2/7 are to be taken to confirm the extent of substantial corrosion. These extended thickness measurements are to be carried out before the survey is credited as completed.

Suspect areas identified at previous surveys are to be examined. Areas of substantial corrosion identified at previous surveys are to have thickness measurements taken.

The Surveyor may require further thickness measurements, as deemed necessary.

Where hard protective coatings are found to be in GOOD condition, the extent of thickness measurements of structural members subject to Close-up Surveys may be specially considered.

Transverse sections are to be chosen where the largest reductions are suspected to occur or are revealed from deck plating measurements.

Minimum requirements for Thickness Measurement at Special Periodical Survey are as follows:

*5.11.4(a) Special Periodical Survey No. 1 (Age ≤5 years)*

*i)* Suspect areas throughout the vessel.

*ii)* One (1) transverse section of deck plating for the full beam of the ship within amidships 0.5*L*, in way of a ballast tank, if any

*iii)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Surveys.

*5.11.4(b) Special Periodical Survey No. 2 (5 < Age ≤10 years)*

*i)* Suspect areas throughout the vessel.

*ii)* All main deck plating within cargo area.

*iii)* One (1) transverse section within the amidships 0.5*L* in way of a ballast tank, if any.

*iv)* Selected wind-and-water strakes outside the cargo area.

*v)* Measurement for general assessment and recording of corrosion patterns of structural members subject to Close-up Survey.

*5.11.4(c) Special Periodical Survey No. 3 (10 < Age ≤15 years)*

*i)* Suspect areas throughout the vessel.

*ii)* All exposed main deck plating within the cargo area.

*iii)* Two (2) transverse sections within 0.5*L* amidships in way of two different cargo spaces. At least one section is to include a ballast tank within 0.5*L* amidships, if any.

*iv)* All wind-and-water strakes within the cargo area

*v)* Selected wind-and-water strakes outside the cargo area.

*vi)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads.

*vii)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey.

*5.11.4(d) Special Periodical Survey No. 4 and Subsequent Special Periodical Surveys (Age > 15 years)*

*i)* Suspect areas throughout the vessel.

*ii)* All main deck plating full length and representative exposed superstructure deck plating (poop, bridge and forecastle decks).

*iii)* A minimum of three (3) transverse sections within the amidships 0.5*L*, including at least one (1) in way of a ballast tank.

*iv)* All wind-and-water strakes, port and starboard, full length.

*v)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads.

*vi)* Duct keel or pipe tunnel plating and internals.

*vii)* All keel and bottom plating, full length.

*viii)* Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor.

*ix)* Measurements, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey.

*(Renumber 7-3-2/5.11.4 as 7-3-2/5.11.5.)*

## 5.13 Tankers ESP (Oil Carriers and Oil Carrier Features of Combination Carriers – Non-Double Hull) *(1 July 2006)*

5.13.5 Thickness Measurement Requirements *(1 July 2006)*

*(Revise Items 7-3-2/5.13.5(b), 7-3-2/5.13.5(c), and 7-3-2/5.13.5(d), as follows:)*

*5.13.5(b) Special Periodical Survey No. 2 (5 < Age ≤ 10 years) (1 July 2018)*

*i)* Suspect areas throughout the vessel.

*ii)* All main deck plating within the amidships 0.5*L* or cargo area, whichever is longer.

*iii)* One (1) transverse section within the amidships 0.5*L*.

*iv)* Selected wind-and-water strakes outside the cargo area.

*v)* Measurement for general assessment and recording of corrosion patterns of structural members subject to Close-up Survey.

*5.13.5(c) Special Periodical Survey No. 3 (10 < Age ≤ 15 years) (1 July 2018)*

*i)* Suspect areas throughout the vessel.

*ii)* All main deck plating within the cargo area.

*iii)* Two (2) transverse sections within 0.5*L* amidships in way of two different cargo tanks. At least one section is to include a ballast tank within 0.5L amidships, if any.

*iv)* All wind-and-water strakes within the cargo area.

*v)* Selected wind and water strakes outside the cargo area.

*vi)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads.

*vii)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey.

*5.13.5(d) Special Periodical Survey No. 4 and Subsequent Special Periodical Surveys (Age > 15 years) (1 July 2018)*

*i)* Suspect areas throughout the vessel.

*ii)* All main deck plating and representative exposed superstructure deck plating (poop, bridge and forecastle decks).

*iii)* A minimum of three (3) transverse sections, including at least one (1) in way of a ballast tank, within the amidships 0.5*L*.

*iv)* All wind-and-water strakes, port and starboard, full length.

*v)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads.

*vi)* Duct keel or pipe tunnel plating and internals.

*vii)* All keel and bottom plating, full length.

*viii)* *(2003)* Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor.

*ix)* Measurements, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey.

## 5.14 Tankers ESP (Oil Carriers and Oil Carrier Features of Combination Carriers – Double Hull) *(2003)*

5.14.5 Thickness Measurement Requirements *(1 July 2006)*

*(Revise Items 7-3-2/5.14.5(b), 7-3-2/5.14.5(c), and 7-3-2/5.14.5(d), as follows:)*

*5.14.5(b) Special Periodical Survey No. 2 (5 < Age ≤ 10 years) (1 July 2018)*

*i)* Suspect areas throughout the vessel.

*ii)* All main deck plating within the cargo area.

*iii)* One (1) transverse section within the amidships 0.5*L*.

*iv)* Selected wind-and-water strakes outside the cargo area.

*v)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey.

*5.14.5(c) Special Periodical Survey No. 3 (10 < Age ≤ 15 years) (1 July 2018)*

*i)* Suspect areas throughout the vessel.

*ii)* All main deck plating within the cargo area.

*iii)* Two (2) transverse sections within 0.5*L* amidships in way of two different cargo tanks. At least one section is to include a ballast tank within 0.5*L* amidships, if any.

*iv)* All wind-and-water strakes within the cargo area.

*v)* Selected wind and water strakes outside the cargo area.

*vi)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads.

*vii)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey.

*5.14.5(d) Special Periodical Survey No. 4 and Subsequent Special Periodical Surveys (Age > 15 years) (1 July 2018)*

*i)* Suspect areas throughout the vessel.

*ii)* All main deck plating and representative exposed superstructure deck plating (poop, bridge and forecastle decks).

*iii)* A minimum of three (3) transverse sections, including at least one (1) in way of a ballast tank, within the amidships 0.5*L*.

*iv)* All wind-and-water strakes, port and starboard, full length.

*v)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads.

*vi)* Duct keel or pipe tunnel plating and internals.

*vii)* All keel and bottom plating full length.

*viii)* *(2003)* Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor.

*ix)* Measurements, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey.

## 5.19 Bulk Carriers – Double Skin ESP and Bulk Carrier Features of Combination Carriers – Double Skin ESP *(2005)*

*(Revise Subparagraph 7-3-2/5.19.4, as follows:)*

5.19.4 Close-up Survey Requirements *(1 July 2018)*

Close-up Survey of transverse bulkheads is to be carried out at the following levels:

- Immediately above the inner bottom and immediately above the line of gussets (if fitted) and shedders for ships without lower stools.
- Immediately above and below the lower stool shelf plate (for those ships fitted with lower stools) and immediately above the line of shedder plates.
- About mid-height of the bulkhead.
- Immediately below the upper deck plating and immediately adjacent to the upper wing tank, and immediately below the upper stool shelf plate for those ships fitted with upper stools, or immediately below the topside tank.

With reference to cargo and ballast history and coating arrangements, tanks and holds are to be selected for Close-up Survey which will provide the best representative sampling of areas likely to be most exposed to the effects of corrosion, swash and stress concentration.

For areas in spaces where hard protective coatings are found to be in GOOD condition, the extent of close-up surveys may be specially considered.

The survey extent of ballast tanks converted to void spaces is to be specially considered in relation to the requirements for ballast tanks. As a minimum, sufficient close-up inspection and thickness measurements are to be carried out to determine the actual average condition of the structure under coating.

The Surveyor may extend the close-up survey as deemed necessary, taking into account the maintenance of the spaces under survey, the condition of the corrosion prevention system and where spaces have structural arrangements or details which have suffered defects in similar spaces or on similar ships according to available information.

*5.19.4(a)* Minimum requirements for close-up survey at Special Periodical Survey for Bulk Carriers – Double Skin ESP and Bulk Carrier Features of Combination Carriers – Double Skin ESP except for Ore Carriers are as follows.

*i) Special Periodical Survey No. 1 (Age ≤ 5 years)*

- One (1) transverse web frame(1) in two (2) representative ballast tanks of each type in topside, hopper side and double side ballast tanks. (This is to include the foremost topside and double side ballast tanks on either side) (See 7-A-15/Figure 1 Area A.)
- Two (2) selected cargo hold transverse bulkheads(2). (See 7-A-15/Figure 1 Area C.)
- *(1 July 2016)* All cargo hold hatch covers and coamings (plating and stiffeners). For cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers structures. (See 7-A-15/Figure 1 Area D.)

*ii) Special Periodical Survey No. 2 (5 < Age ≤ 10 years)*

- One (1) transverse web frame(1) in all ballast tanks. (See 7-A-15/Figure 1 Area A.)
- Forward and aft transverse bulkheads, including stiffening systems in a transverse section including topside, hopper side and double side ballast tanks on one side of the ship (i.e., port or starboard). (See 7-A-15/Figure 1 Area A.)
- *(1 July 2016)* 25% of ordinary transverse frames for transverse framing system or 25% of longitudinals for longitudinal framing system on side shell and inner side plating at forward, middle and aft parts, in all double side ballast tanks (See 7-A-15/Figure 2 Area B.)
- One (1) transverse bulkhead(2) in all cargo holds. (See 7-A-15/Figure 1 Area C.)
- *(1 July 2016)* All cargo hold hatch covers and coamings (plating and stiffeners). For cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers structures. (See 7-A-15/Figure 1 Area D.)
- All deck plating and under deck structure inside line of hatch openings between all cargo hold hatches. (See 7-A-15/Figure 1 Area E.)

*iii) Special Periodical Survey No. 3 (10 < Age ≤ 15 years)*

- All transverse web frames(1) in all ballast tanks. (See 7-A-15/Figure 1 Area A.)
- All transverse bulkheads, including stiffening systems in all ballast tanks. (See 7-A-15/Figure 1 Area A.)
- *(1 July 2016)* 25% of ordinary transverse frames for transverse framing system or 25% of longitudinals for longitudinal framing system on side shell and inner side plating at forward, middle and aft parts, in all double side ballast tanks (See 7-A-15/Figure 2 Area B.)
- All cargo hold transverse bulkheads(2). (See 7-A-15/Figure 1 Area C.)
- *(1 July 2016)* All cargo hold hatch covers and coamings (plating and stiffeners). For cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers structures. (See 7-A-15/Figure 1 Area D.)
- All deck plating and under deck structure inside line of hatch openings between all cargo hold hatches. (See 7-A-15/Figure 1 Area E.)

*iv) Special Periodical Survey No. 4 and Subsequent Special Periodical Surveys (Age > 15 years)*

- All transverse web frames(1) in all ballast tanks. (See 7-A-15/Figure 1 Area A.)
- All transverse bulkheads, including stiffening systems in all ballast tanks. (See 7-A-15/Figure 1 Area A.)
- *(1 July 2016)* All ordinary transverse frames for transverse framing system or all longitudinals for longitudinal framing system on side shell and inner side plating at forward, middle and aft parts, in all double side ballast tanks (See 7-A-15/Figure 2 Area B.)
- All cargo hold transverse bulkheads(2). (See 7-A-15/Figure 1 Area C.)
- *(1 July 2016)* All cargo hold hatch covers and coamings (plating and stiffeners). For cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers structures. (See 7-A-15/Figure 1 Area D.)
- All deck plating and under deck structure inside line of hatch openings between all cargo hold hatches. (See 7-A-15/Figure 1 Area E.)

*Notes:*

1 Transverse web frame includes associated plating, stiffeners and longitudinals.

In fore and aft peak tanks, transverse web frame means a complete transverse web frame ring, including adjacent structural members.

2 Cargo hold transverse bulkhead includes plating, stiffeners and girders, and internal structure of upper and lower stools, where fitted.

*5.19.4(b)* Minimum requirements for close-up survey at Special Periodical Survey for ore carriers are as follows.

*i) Special Periodical Survey No. 1 (Age ≤ 5 years)*

- One (1) complete transverse web frame ring including adjacent structural members in a ballast wing tank. (See 7-A-15/Figure 6 Area A)
- One (1) transverse bulkhead lower part, including girder system and adjacent structural members in a ballast tank. (See 7-A-15/Figure 6 Area D)
- Two (2) selected cargo hold transverse bulkheads, including internal structure of upper and lower stools, where fitted. (See 7-A-15/Figure 6 Area C)
- All cargo hold hatch covers and coamings (plating and stiffeners). (See 7-A-15/Figure 1 Area D)

*ii) Special Periodical Survey No. 2 (5 < Age ≤ 10 years)*

- All complete transverse web frame rings including adjacent structural members in a ballast wing tank. (See 7-A-15/Figure 6 Area A)
- One (1) deck transverse including adjacent deck structural members in each remaining ballast tank. (See 7-A-15/Figure 6 Area B)
- Forward and aft transverse bulkheads, including girder system and adjacent structural members in a ballast tank. (See 7-A-15/Figure 6 Area C)
- One (1) transverse bulkhead lower part, including girder system and adjacent structural members in each remaining ballast tank. (See 7-A-15/Figure 6 Area D)
- One (1) transverse bulkhead in each cargo hold, including internal structure of upper and lower stools, where fitted. (See 7-A-15/Figure 6 Area C)
- All cargo hold hatch covers and coamings (plating and stiffeners). (See 7-A-15/Figure 1 Area D)
- All deck plating and under deck structure inside line of hatch openings between all cargo hold hatches. (See 7-A-15/Figure 1 Area E)

*iii)* *Special Periodical Survey No. 3 and Subsequent Special Periodical Surveys (Age > 10 years)*

- All complete transverse web frame rings including adjacent structural members in each ballast tank. (See 7-A-15/Figure 6 Area A)
- All transverse bulkheads, including girder system and adjacent structural members in each ballast tank. (See 7-A-15/Figure 6 Area C)
- One (1) complete web frame ring including adjacent structural members in each wing void space. (See 7-A-15/Figure 6 Area A.)
- Additional web frame rings in void spaces as deemed necessary by the Surveyor.
- All cargo hold transverse bulkheads, including internal structure of upper and lower stools, where fitted. (See 7-A-15/Figure 6 Area C.)
- All cargo hatch covers and coamings (plating and stiffeners). (See 7-A-15/Figure 1 Area D.)
- All deck plating and under deck structure inside line of hatch openings between all cargo hold hatches. (See 7-A-15/Figure 1 Area E)

*(Revise Subparagraph 7-3-2/5.19.5, as follows:)*

5.19.5 Thickness Measurement Requirements *(1 July 2018)*

*(Preceding text remains unchanged.)*

*5.19.5(a) Special Periodical Survey No. 1 (Age ≤ 5 years)*

*i)* Suspect areas throughout the vessel.

*5.19.5(b) Special Periodical Survey No. 2 (5 < Age ≤ 10 years)*

*i)* Suspect areas throughout the vessel.

*ii)* Two (2) transverse sections of deck plating outside the line of cargo hatch openings within the cargo length area.

*iii)* Wind -and-water strakes in way of the two (2) transverse sections considered above.

*iv)* *(1 July 2008)* Selected wind-and-water strake plating, outside the cargo length area.

*v)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey.

*5.19.5(c) Special Periodical Survey No. 3 (10 < Age ≤ 15 years)*

*i)* Suspect areas throughout the vessel.

*ii)* Each deck plate outside line of cargo hatch openings within the cargo length area

*iii)* Two (2) transverse sections, one (1) in the amidships area, outside the line of cargo hatch openings within the cargo length area.

*iv)* All wind-and-water strakes within the cargo length area.

*v)* Selected wind-and-water strakes outside the cargo length area.

*vi)* All cargo hold hatch covers and coamings (plating and stiffeners).

*vii)* Internals in forepeak and afterpeak tanks including plating and stiffeners of bulkheads.

*viii)* Measurement, for general assessment and recording of corrosion pattern, of structural members subject to Close-up Survey.

*5.19.5(d) Special Periodical Survey No. 4 and Subsequent Special Periodical Surveys (Age > 15 years)*

*i)* Suspect areas throughout the vessel.

*ii)* All exposed main deck plates full length and representative exposed first-tier superstructure deck plates (poop, bridge and forecastle decks).

*iii)* Three (3) transverse sections, one (1) in the amidships area, outside the line of cargo hatch openings within the cargo length area.

*iv)* All wind-and-water strakes, port and starboard, full length.

*v)* All cargo hold hatch covers and coamings (plating and stiffeners).

*vi)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads.

*vii)* Duct keel or pipe tunnel plating and internals.

*viii)* Each bottom plate, including lower turn of bilge within the cargo length area, all keel plates full length and also additional bottom plates in way of cofferdams, machinery space and aft end of tanks.

*ix)* Plating of sea chests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor.

*x)* Measurement, for general assessment and recording of corrosion patterns of structural members subject to Close-up Survey.

## 5.21 Chemical Carriers ESP *(1 July 2006)*

5.21.5 Thickness Measurement Requirements

*(Revise Item 7-3-2/5.21.5(b), as follows:)*

*5.21.5(b) Special Periodical Survey No. 2 (5 < Age ≤ 10 years) (1 July 2018)*

*i)* Suspect areas throughout the vessel.

*ii)* All main deck plating within the cargo area.

*iii)* One (1) transverse section within the cargo area.

*iv)* Selected wind-and-water strakes outside the cargo area.

*v)* Measurements, for general assessment and recording of corrosion patterns, of those structural members subject to Close-up Survey.

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 4 DRYDOCKING SURVEYS**

**SECTION 1 SURVEY REQUIREMENTS**

*(Revise Subsection 7-4-1/1, as follows:)*

## 1 All Vessels *(1 July 2018)*

*i)* Keel

*ii)* Stern frame

*iii)* *(2008)* Bottom Plug arrangements

*iv)* *Hull Plating.* The hull plating is to be examined for excessive corrosion, or deterioration due to chafing or contact with the ground and for any undue unfairness or buckling. Plate unfairness or other deterioration which does not necessitate immediate repairs is to be recorded.

*v)* Visible parts of the rudder. If considered necessary by the Surveyor, the rudder is to be lifted. For flap rudders, the hinge and link system are to be examined.

*vi)* *(2005)* Visible parts of rudder shafts and couplings

*vii)* Rudder pintles and gudgeons together with their respective securing arrangements. Inspection covers or access plates are to be removed for the examination of pintles and securing arrangements unless alternate means, such as an inspection port, have been provided.

*viii)* Rudder pressure test as deemed necessary by the Surveyor

*ix)* Rudder bearing clearances are to be ascertained and reported on

*x)* *(2014)* Propeller nozzle

*xi)* Exposed parts of the stern bearing and seal assembly. (See Note below.)

*xii)* The stern bearing clearance or weardown is to be ascertained and reported on. (See Note below.)

*xiii)* *(1 July 2015)* Visible parts of the propeller. Each taper fitted propeller hub with greater than 10 years of service life is to be examined by a surface crack-detection method at each out of the water drydocking, or whenever the propeller is removed for any reason.

*xiv)* Controllable pitch propeller hub fastenings and tightness. (See Note below.)

*xv)* Controllable pitch propeller blade fastenings and tightness. (See Note below.)

*xvi)* The efficiency of the oil gland, if fitted, is to be ascertained and reported on. (See Note below.)

*xvii)* Bilge keels, with special attention paid to the connection between the bilge strakes and the bilge keels.

*xviii)* *(1 July 2014)* Visible parts of athwartship thrusters are to be examined. Other propulsion systems which also have maneuvering characteristics (such as directional propellers, vertical axis propellers, water jet units) are to be examined externally with focus on the condition of gear housing, propeller blades, bolt locking and other fastening arrangements. Sealing arrangement of propeller blades, propeller shaft and steering column shall be verified.

*xix)* Sea chests and their gratings

*xx)* *(2005)* Sea connections and overboard discharge valves and cocks, including their attachments to the hull or sea chests, are to be externally examined. Valves and cocks need not be opened up more than once in a Special Periodical Survey period unless considered necessary by the Surveyor.

*xxi)* All nonmetallic expansion pieces in the sea-water cooling and circulating systems are to be externally examined

*xxii)* Nonmetallic expansion pieces in the main sea-water circulating systems are to be examined both externally and internally when vessel is examined on drydock

*xxiii)* *(1 July 2015)* Special attention is to be paid to all weldments of the ESD (energy saving device) in way of its connection to the hull or rudder blade plating as applicable.

*xxiv)* *(1 July 2015)* The exposed steel of the tailshaft is to be protected from the action of the water by filling all spaces between cap, hub and shaft with a suitable material. Once the cap/cone is installed, bolts are to be tightened, visually examined and are to be secured using a locking mechanism.

*Note:* *(2005)* Dismantling need not be carried out unless considered necessary by the Surveyor

For Special Periodical Survey of underwater items, refer to 7-6-2/3.1.1 and 7-3-2/5.

*(Add new Subsection 7-4-1/9, as follows:)*

## 9 Extensions *(1 July 2018)*

### 9.1 Extensions up to One (1) Month

General examination afloat to determine the vessel's fitness for continued service during the extension period is to include:

*i)* Examination and testing of the steering machinery as considered necessary

*ii)* Review of on board records to confirm satisfactory operation of the propulsion machinery

*iii)* Confirmation that no damages and/or grounding have occurred since the last attendance by ABS

*iv)* External examination of the saltwater systems with particular attention to nonmetallic expansion pieces (if fitted), sea valves and their attachments to the sea chests/side shell

*v)* Re-examination of any outstanding recommendation with a view to confirm condition satisfactory for service through the subject extension period

*vi)* All class surveys are current

### 9.3 Extensions up to Three (3) Months

General examination afloat to determine the vessel's fitness for continued service during the extension period is to include:

*i)* Examination and testing of the steering machinery as considered necessary

*ii)* Review of on board records to confirm satisfactory operation of the propulsion machinery

*iii)* Confirmation that no damages and/or grounding have occurred since the last attendance by ABS

*iv)* External examination of the saltwater systems with particular attention to nonmetallic expansion pieces (if fitted), sea valves and their attachments to the sea chests/side shell

*v)* Re-examination of any outstanding recommendation to confirm condition satisfactory for service through the subject extension period

*vi)* All class surveys are current

In addition, when the requested extension date exceeds 36 months from the previous drydocking survey, the following examinations are required:

*vii)* An examination of the underwater body by an ABS approved In-Water Survey company (with the underwater body sufficiently clean and water clear enough for a meaningful examination) including rudder, propeller, visible parts of the stern bearing assembly and sea chests

*viii)* Strut/stern bearing and rudder clearances to be determined as possible and confirmed satisfactory for continued service during subject deferral period. Where not practical, rudder pintle clearances may be dispensed with if the attending Surveyor is satisfied with the physical and securing arrangements of the pintle.

*ix)* Oil-lubricated stern bearings to be visually checked for oil leaks

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 5 TAILSHAFT SURVEYS**

**SECTION 1 SURVEY REQUIREMENTS**

# 5 Oil Lubricated Shafts or Closed Loop System Fresh Water Lubricated Shafts (Closed System) *(2016)*

## 5.1 Shaft Survey Methods

*(Revise Subparagraph 7-5-1/5.1.3, as follows:)*

5.1.3 Method 3 *(1 July 2018)*

The survey is to consist of:

- Checking and recording the bearing weardown measurements.
- Visual Inspection of all accessible parts of the shafting system. Verification that the propeller is free of damages which may cause the propeller to be out of balance.
- Seal liner found to be or placed in a satisfactory condition.
- Bearing inboard seal assemblies are to be externally examined and are to be found or placed in a satisfactory condition.
- Renewal of outboard seal is to be in accordance with manufacturer's recommendation
- Review of service records.
- Review of test records of:
  - Lubricating Oil analysis (for oil lubricated shafts), or
  - Fresh Water Sample test (for closed system fresh water lubricated shafts).
- Oil Sample Examination (for oil lubricated shafts), or Fresh Water Sample test (for closed system fresh water lubricated).
- Verification of no reported repairs by grinding or welding of shaft and/or propeller.

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 6 MACHINERY SURVEYS**

**SECTION 2 SURVEY REQUIREMENTS**

# 1 Annual Surveys – Machinery *(2018)*

## 1.1 All Vessels

*(Revise Subparagraph 7-6-2/1.1.6, as follows:)*

1.1.6 Bilge System *(1 July 2018)*

*1.1.6(a)* Bilge pumping system, bilge wells and oil pollution prevention equipment, including operation of pumps, remote reach rods and level alarms, where fitted. Examination of each bilge pump and confirmation of the bilge pumping arrangement for each watertight compartment. Examination of the functionality of bilge well alarms to all cargo holds and conveyor tunnels. For passenger vessels, operational test to include emergency bilge system.

*1.1.6(b)* The oil pollution prevention equipment is to be examined and tested as necessary, including the following:

*i)* Controls, alarms and means of preventing the discharge of oily mixtures.

*ii)* Oil content meter, where fitted, examined and confirmed in satisfactory working order including verification that calibration is current.

1.1.8 Electrical Installation *(2002)*

*(Add new Item 7-6-2/1.1.8(f), as follows:)*

*1.1.8(f) Lighting Fixtures (1 July 2018).* Protection of lighting fixtures with globes, covers and their associated protective guards or other equivalent arrangement.

## 1.5 Liquefied Gas Carriers *(1 July 2013)*

1.5.1 General

*(Revise Item 7-6-2/1.5.1v), as follows:)*

*v)* *Ventilating System (1 July 2018).* Examination of the ventilation system is to be made for all spaces containing boil off gas utilization units or components, including air locks, pump rooms, compressor rooms, gas valve rooms, control rooms and spaces containing gas burning equipment. All required portable ventilating equipment is to be examined. Where alarms, such as differential pressure and loss of pressure

# 3 Special Periodical Surveys – Machinery *(2018)*

## 3.1 All Vessels

### 3.1.1 General

*(Revise Item 7-6-2/3.1.1(n), as follows:)*

*3.1.1(n) Dock Trials and Trials after Significant Repairs (1 July 2018).*

*(1 July 2006)* At the time of drydocking, a dock trial is to be carried out to the satisfaction of the Surveyor to confirm satisfactory operation of main and auxiliary machinery. If significant repairs are carried out to main or auxiliary machinery or steering gear, consideration should be given to a sea trial to the satisfaction of the Surveyor.

If the significant repairs are considered to have any impact on response characteristics of the propulsion systems, then the scope of sea trials is also to include a test plan for astern response characteristics based on those required for such equipment or systems when fitted to the new ship. Refer to 4-1-1/7.5.1 for astern testing requirements. The tests are to demonstrate the satisfactory operation of the equipment or system under realistic service conditions at least over the maneuvering range of the propulsion plant, for both ahead and astern directions. Depending on the actual extent of the repair, the Surveyor may accept a reduction of the test plan.

## 3.7 Vessels other than Liquefied Gas Carriers Utilizing Gas or other Low Flash Point Fuels *(2018)*

*(Revise Item 7-6-2/3.7vi), as follows:)*

*vi) Fuel Storage Tanks (1 July 2018).*

- Fuel storage tanks are to be examined in accordance with an approved survey plan. Liquefied gas fuel storage tanks are to be examined in accordance with the applicable parts of 7-3-2/5.11.1 and 7-3-2/5.11.2.
- For vacuum insulated independent fuel storage tanks of type C need not be examined internally. Where fitted, the vacuum monitoring system is to be examined and records are to be reviewed. The tank insulation and tank support arrangements are to be visually examined. Nondestructive testing may be required if conditions raise doubt to the structural integrity.
- Verification of satisfactory operation of tank high level alarms.

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 9 SURVEY REQUIREMENTS FOR ADDITIONAL SYSTEMS AND SERVICES**

**SECTION 13 BRIDGE DESIGN AND NAVIGATIONAL EQUIPMENT/SYSTEMS**

# 1 NBLES Notation

## 1.1 Annual Surveys

*(Revise Subparagraph 7-9-13/1.1.4, as follows:)*

### 1.1.4 Loss of Power Supply *(1 July 2018)*

Confirm automatic recovery of essential navigation equipment (e.g., gyro compass, radar, position fixing system, electronic chart system) following a loss of power supply to the pre-power-loss configuration. Confirm loss of power to the distribution panels activates an alarm.

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 9 SURVEY REQUIREMENTS FOR ADDITIONAL SYSTEMS AND SERVICES**

**SECTION 15 ENVIRONMENTAL SAFETY**

*(Revise Subsection 7-9-15/3, as follows:)*

## 3 Environmental Protection (ENVIRO, ENVIRO+, ENVIRO-OS and ENVIRO-OS+) Notations for Vessels *(1 July 2018)*

### 3.1 ENVIRO Notations

#### 3.1.1 Annual Surveys

The following certification and documentation are required, as applicable, to maintain the various **ENVIRO** notations:

- An automation class notation of **ACC** or **ACCU** or higher is to be maintained.
- Safety Management Certificate
- A contract with the ABS Rapid Response Damage Assessment (RRDA) program, or with a similar program of another IACS Member Society
- Current MARPOL Certificates or Statements of Compliance for Annex I, Annex IV, Annex V, and Annex VI.
- Current International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate) or an International Chemical Code Certificate of Fitness or equivalent Statement of Compliance for vessels carrying Noxious Liquid Substances in bulk.
- Compliance with the requirements in the International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004
- International Anti-Fouling System Certificate (For **ENVIRO-OS** and **ENVIRO-OS+** vessels, a Declaration on Anti-Fouling System is also acceptable).
- Applicable only to vessels with **ENVIRO+** notation Documentation indicating relevant navigational equipment complies with criteria of Part C, ABS *Guide for Bridge Design and Navigational Equipment/Systems*
- Applicable only to vessels with **ENVIRO+** or **ENVIRO-OS+** notation, an Incinerator Type Approval Certificate in accordance with IMO Resolution MEPC 76(40) and Resolution MEPC.93(45), Amendments to the Standard Specification for Shipboard Incinerators

The following documents are to be ABS approved and onboard:

- Bilge water management plan
- Sewage management plan (For vessels with **ENVIRO-OS+** Notation, the plan is to also include the grey water system)
- Garbage management plan
- Ballast water management plan
- Fuel oil management for control of the $SO_x$ emission, including fueling management plan and procedure
- Refrigerant systems management plan

The following documents are to be furnished onboard:

- Instructions and procedures addressing operation and control of NOx exhaust gas cleaning systems
- Instructions and procedures addressing operation and control of SOx exhaust gas cleaning systems, where fitted

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 9 SURVEY REQUIREMENTS FOR ADDITIONAL SYSTEMS AND SERVICES**

**SECTION 20 TAILSHAFT CONDITION MONITORING**

*(Add new Subsection 7-9-20/3, as follows:)*

## 3 Tailshaft Condition Monitoring (TCM-W) (*1 July 2018*)

For vessels with **TCM-W** notation, the tailshaft survey interval required by 7-2-1/13.1.2 and 7-2-1/13.1.3 will be extended up to 15 years provided:

*i)* Annual surveys are carried out to the satisfaction of the attending Surveyor, and

*ii)* The following are carried out at each tailshaft survey due date required by 7-2-1/13.1.2 and 7-2-1/13.1.3

- Bearing weardown measurement
- Verification that the propeller is free of damage which may cause the propeller to be out of balance
- Verification of effective inboard seal
- Renewal of outboard seal in accordance with manufacturer's recommendation, if applicable

### 3.1 Annual Survey

Satisfactory operating conditions of the tailshaft are to be confirmed, including the verification of the condition monitoring monthly records and analysis records of the lubricant, as required by SVR 4-3-2/15.

### 3.3 Initial Survey for Existing Vessels obtaining TCM-W Notation

The shaft is to be drawn in its entirety in accordance with 7-5-1/5.1.1 and all systems required by SVR 4-3-2/15 are to be examined and tested in accordance with the approved plans to the satisfaction of the attending Surveyor.

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 9 SURVEY REQUIREMENTS FOR ADDITIONAL SYSTEMS AND SERVICES**

**SECTION 23 GREEN PASSPORT AND INVENTORY OF HAZARDOUS MATERIALS**

*(Revise title as shown above.)*

*(Revise Section 7-9-23, as follows:)*

## 1 GP Notation

### 1.1 Annual Survey

An annual survey is also to be conducted to confirm that the Inventory reflects any modifications, repairs, or changes to the vessel that involve the removal or addition of hazardous materials. It should be noted that the annual survey approach is intended to verify proper maintenance of the information in the Inventory of Hazardous Materials (IHM) Booklet.

## 3 IHM Notation

### 3.1 Annual Survey

The Inventory will be subjected to an annual survey in accordance with the ABS *Rules for Survey After Construction (Part 7)* in the course of completing other annual and periodical surveys.

See ABS *Guide for the Inventory of Hazardous Materials*, Section 2, Table 1C for the list of documents to be made available onboard for the annual survey of the Inventory.

The annual survey is to verify the following:

- The Inventory has been maintained and updated to reflect changes in vessel structure and equipment based on the records in the maintenance manual, to the satisfaction of the Surveyor.
- MD and SDOC have been collected for purchases of materials, machinery or equipment, coating renewal and spares from the date of the last Survey verification of the Inventory or Inventory supplements thereof. Deletion of equipment and/or parts of the ship's structure previously classed as PCHM from the Inventory complies with the requirements 2/3.5v) of the ABS *Guide for the Inventory of Hazardous Materials.*.
- The Inventory, especially the location of hazardous materials, is consistent with the arrangements, structure and equipment of the vessel through an onboard visual inspection.

### 3.3 Additional Survey

When a ship undergoes a replacement or repair of the structure, equipment, systems, fittings, arrangements or material, which has a significant impact on the ship's Inventory, the shipowner is to request ABS for an additional survey of the Inventory.

See Section 2, Table 1D of the ABS *Guide for the Inventory of Hazardous Materials* for the list of documents to be made available onboard for the additional survey of Inventory.

The additional survey is to be carried out with an updated Inventory or an Inventory supplement that has been reviewed by Engineering without outstanding technical comments. The survey is to verify that the updated Inventory or additional supplements to the Inventory, especially the location of hazardous materials, is consistent with the arrangements, structure and equipment of the vessel through an onboard visual inspection.

*(Add new Section 7-9-26, as follows:)*

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 9 SURVEY REQUIREMENTS FOR ADDITIONAL SYSTEMS AND SERVICES**

**SECTION 26 BALLAST WATER EXCHANGE AND TREATMENT** *(1 July 2018)*

## 1 BWE Notation

### 1.1 Annual Survey

The survey is to include the following, as applicable:

*i)* A general, external examination of the controls and piping systems (including pipes, valves, pipe supports, etc.)

*ii)* *Operation and Maintenance Records.* The Surveyor is to review the ballast water exchange records and the ballast water exchange plan to confirm that activities, including sampling of the ballast water, associated with the exchange of ballast water have been properly recorded and that the exchange plan is current.

*iii)* *Alarm and Safety Devices.* The Surveyor is to verify the operation of applicable alarms and safety devices, using simulated conditions where necessary.

### 1.3 Special Survey

In addition to the requirements of the Annual Survey, the survey is to include the following:

*i)* The mechanical and electrical components are to be examined, including but not limited to valves, seals, pumps, control panels, vents, air pipes and monitoring sensors.

*ii)* When possible, the operation of the ballast water exchange system is to be demonstrated to the satisfaction of the attending Surveyor.

*iii)* At the discretion of the Surveyor, the vessel's entire ballast water exchange system (including ballast tanks, pumps, valves and controls) is to be examined.

## 3 BWT or BWT+ Notation

### 3.1 Annual Survey

The survey is to include the following, as applicable:

*i)* A general, external examination of the structure, any equipment, systems, fittings, arrangements and material or process associated with the ballast water management plan, to confirm that they have been maintained and remain in compliance with the standards in the ABS *Guide for Ballast Water Treatment*.

*ii)* *Operation and Maintenance Records.* The Surveyor is to review the ballast water record book to confirm that the record book has been maintained and that the activities, including the maintenance of the BWMS, have been properly recorded and that the ballast water management plan is current.

*iii)* *Ballast Water Management.* The Surveyor is to verify that an approved BWMP is onboard and the information including the operational and safety procedures, qualification of the BWM officer, and crew training, is current.

*iv)* *Control and Monitoring Equipment.* The Surveyor is to verify that control equipment that automatically monitors and adjusts the necessary treatment dosages or intensities or other aspects of the BWMS of the vessel are operating properly. This includes examination of records of the proper functioning or failure of the BWMS.

*v)* *Operation of the Ballast Water Management System.* On inspection of the records detailed in 7-9-26/3.1ii) and 7-9-26/3.1iv), if it is found that:

*a)* During an Annual BWMS Survey, the BWMS has not been in operation since the last applicable Survey and/or

*b)* During the Surveyors BWMS planned maintenance examination it is found that the BWMS has not been subject to the manufacturer's recommended maintenance schedule a function test in accordance with 7/1.3 of the ABS *Guide for Ballast Water Treatment* is to be performed to the satisfaction of the Surveyor.

*Note:* If the operational status of the vessel does not permit the vessel to perform any part of the function test during the Annual Survey, the remaining tests are to be performed at the vessel's next convenient port.

### 3.3 Special Survey

In addition to the requirements of the Annual Survey, the survey is to include the following:

*i)* The mechanical and electrical components are to be examined, including but not limited to valves, seals, pumps, control panels, vents, air pipes and monitoring sensors.

*ii)* The operation of the BWMS in accordance with the manufacturer's technical installation specifications is to be demonstrated to the satisfaction of the attending Surveyor.

*(Add new Section 7-9-27, as follows:)*

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 9 SURVEY REQUIREMENTS FOR ADDITIONAL SYSTEMS AND SERVICES**

**SECTION 27 COATING PERFORMANCE STANDARD (CPS)** *(1 July 2018)*

## 1 CPS Notation

### 1.1 Annual Survey

At each annual survey, the surveyor is to verify:

*i)* Approved coating maintenance and repair procedures are maintained onboard, and

*ii)* The Coating Technical File is onboard and any maintenance or repair of coatings has been documented.

*(Add new Section 7-9-28, as follows:)*

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 9 SURVEY REQUIREMENTS FOR ADDITIONAL SYSTEMS AND SERVICES**

**SECTION 28 VESSEL MANEUVERABILITY** *(1 July 2018)*

## 1 MAN or MAN-A Notation

### 1.1 Annual Survey

At each annual survey, the surveyor is to verify:

*i)* Poster of maneuvering characteristics is displayed in the wheelhouse

*ii)* Pilot cards are available onboard

*iii)* Modifications that may affect the vessel maneuverability performance have not been made to the vessel

*Note:* A modification that will alter the vessel's maneuverability performance includes, but is not limited to: any change in hull form length or shape, change in appendages (such as changing the rudder or installation of anti-rolling fins, increasing/decreasing the size of bilge keels or changing the vessel speed), replacing or modifying the main engine, propeller, the steering machinery (e.g., changing the operating pressure), etc. If any such modification has been made, the changes are to be submitted to ABS Engineering for review.

*(Add new Section 7-9-29, as follows:)*

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 9 SURVEY REQUIREMENTS FOR ADDITIONAL SYSTEMS AND SERVICES**

**SECTION 29 EXHAUST EMISSION ABATEMENT SYSTEMS** *(1 July 2018)*

# 1 EGC-SOx, EGC-SCR, EGC-EGR, EEMS Notations

## 1.1 Annual Surveys

### 1.1.1 Exhaust Emission Abatement Systems

The following is to be carried out during each Annual Survey of the exhaust emission abatement equipment, associated systems, and monitoring equipment covered by Subsection 1/9 of the ABS *Guide for Exhaust Emission Abatement (Exhaust Emission Abatement Guide)* unless all the requirements of 7-9-29/1.5 are complied with:

*i)* Logbooks are to be examined to verify correct functioning of the exhaust emission abatement systems, emissions monitoring, and washwater monitoring systems, etc. The hours per day of the prime movers, EGC SOx scrubbers, SCR systems, EGR systems, exhaust emission monitoring systems, as applicable, are to be reviewed together with historical records.

*ii)* *Operating and Maintenance Instruction Manual.* The approved instructions and manuals covering the operations, safety, and maintenance requirements and occupational health hazards relevant to exhaust emission abatement units and associated systems are to be confirmed as being aboard the vessel.

*iii)* *Instrumentation, Control, Monitoring, and Safety Systems.* The instrumentation, control, monitoring, and safety equipment applicable to each particular type of installed exhaust emission abatement unit and associated systems, including indicators and alarms, is to be confirmed in satisfactory operating conditions. The examination is to be made with one or more ship's service generator(s) in operation and the control system energized to permit random checking of function indicators, alarms, and such control actuators as may be operational. Installed interlocks, where applicable, are to be verified in working condition.

*iv)* *Exhaust Gas Handling Piping and Machinery.* Piping, hoses, bellows, blowers/fans, heaters, dry scrubbing equipment, soot blowing equipment, emergency shutdown or bypass valves, remote operating valves, and machinery and equipment associated with processing or distribution of exhaust gases are to be examined to the satisfaction of the Surveyor. Stopping of pumps, fans, and blowers upon emergency shutdown of the system is to be confirmed.

*v)* Where applicable, exhaust system bypass, isolation, or mixing valve sealing arrangements are to be examined.

*vi)* The integrity and effectiveness of insulation arrangements is to be confirmed.

*vii)* *Water Treatment, Reductant, and Residue Systems.* Tanks, piping, hoses, pumps, strainers, separators, filtration units, dosing systems, and equipment associated with processing of washwater, injection of reductant or collection of exhaust residues are to be examined and verified to be in operational condition.

*viii)* Drip trays, overflow arrangements, shielding, or insulation installed for the protection of personnel or the vessel from the effects of hazardous or corrosive chemicals used in exhaust emission abatement systems or system temperatures are to be examined for continued suitability for their intended service.

*ix)* Electrical equipment associated with the operation or monitoring of exhaust emission abatement systems is to be examined for continued suitability for its intended service and installation area.

*x)* *Personal Protective Equipment.* The required PPE equipment and facilities are to be confirmed as being onboard and in an operational condition.

*xi)* *Warning Notices.* The location of the applicable warning notices is to be confirmed.

*xii)* Spare parts are to be verified as available onboard in consideration of the equipment redundancy arrangements.

1.1.2 EGC-SOx Scrubbers

In addition to the requirements of 7-9-29/1.1.1, the following are to be examined, as applicable, Insulation need not be removed, but any deterioration or evidence of leakage is to be investigated:

*i)* *External Examination.* External examination of all components including scrubber units, piping, tanks, fans, insulation, valves, pumps, drip trays, etc., including foundations and attachments.

*ii)* *Equipment Operation.* Confirmation of correct operation of all rotating and reciprocating components, such as exhaust gas fans, water treatment pumps, dry handling conveyors, ventilation fans, etc.

*iii)* *Control Valves.* Verify the correct operation of all remotely operated or automatically controlled valves in the exhaust, water treatment, or dry handling systems.

*iv)* *System Operation.* Examination of the exhaust emission abatement system during working condition. Multi-mode $SO_x$ scrubbers are to be tested in all operational modes as far as practicable.

1.1.3 EGC-SCR Systems

In addition to the requirements of 7-9-29/1.1.1, the following are to be examined, as applicable, Insulation need not be removed, but any deterioration or evidence of leakage is to be investigated:

*i)* *External Examination.* External examination of all components, including SCR reaction chamber, injectors, dosing units, heating, soot blowing equipment, piping, tanks, insulation, valves, pumps, drip trays, etc., including foundations and attachments.

*ii)* *Equipment Operation.* Confirmation of correct operation of all rotating and reciprocating components, such as dosing pumps, ventilation fans, etc.

*iii)* *Control Valves.* Verify the correct operation of all remotely operated or automatically controlled valves in the exhaust, reductant dosing, or soot blowing systems.

*iv)* *System Operation.* Examination of the exhaust emission abatement system during working condition.

1.1.4 EGC-EGR Systems

In addition to the requirements of 7-9-29/1.1.1, the following are to be examined, as applicable, Insulation need not be removed, but any deterioration or evidence of leakage is to be investigated:

*i)* *External Examination.* External examination of all components including scrubbers, EGR coolers, piping, tanks, blowers, insulation, valves, pumps, drip trays, etc., including foundations and attachments.

*ii)* *Equipment Operation.* Confirmation of correct operation of all rotating and reciprocating components such as exhaust gas blowers, water treatment pumps, ventilation fans, etc.

*iii)* *Control Valves.* Verify the correct operation of all remotely operated or automatically controlled valves in the exhaust or water treatment systems.

*iv)* *System Operation.* Examination of the exhaust emission abatement system during working condition at full EGR rate. Multi-mode systems are to be tested in all operational modes as far as practicable.

1.1.5 Exhaust Emissions Monitoring Systems

In addition to the requirements of 7-9-29/1.1.1, the following are to be examined, as applicable, Insulation need not be removed, but any deterioration or evidence of leakage is to be investigated:

*i)* *External Examination.* External examination of all components including exhaust gas sample probes, pre-filters, heated lines, analyzer units, pneumatic systems, span and calibration gases, etc.

*ii)* *System Operation.* Examination of the EEMS during calibration and exhaust gas sampling conditions; verification of the emissions monitoring and data logging functions is to be undertaken.

## 1.3 Special Periodical Survey

In addition to the items covered by the Annual Survey listed in item 7-9-29/1.1 the Special Survey of the exhaust emission abatement equipment, associated systems, and monitoring equipment covered by Subsection 1/9 of the *Exhaust Emission Abatement Guide* is also to include the following:

*i)* *Washwater, Water Treatment, and Dosing Pumps.* All washwater, water treatment pumps, and reductant dosing pumps are to be examined including opening for examination, as deemed necessary.

*ii)* *Exhaust Fans and Blowers. All exhaust fans, EGR blowers and associated prime movers are to be examined including opening for examination, as deemed necessary.*

*iii)* *Control Valves.* All bypass, mixing, isolating, shut-down, or control valves in the exhaust, water treatment, and dosing systems are to be inspected and proven operable. Pressure relief valves are to be function-tested. A random selection of valves is to be opened for examination and adjusted as necessary.

*iv)* *Control Actuators.* All mechanical, hydraulic, and pneumatic control actuators and their power systems are to be examined and tested as considered necessary.

*v)* *Electrical Equipment.* The electrical equipment is to be examined to include the physical condition of electrical cables and supports, together with insulation resistance testing of the windings of electrical control motors and actuators. Where a proper record of testing is maintained, consideration may be given to accepting recent readings.

*vi)* *Automatic Controls.* Automatic controls for components associated with the exhaust emission abatement equipment and associated systems, including auto-changeover for system pumps/fans and electrical power supply, are to be examined for functionality and for continued system serviceability.

*vii)* *Instrumentation, Control, Monitoring, and Safety Systems. Control systems are to be subjected to dock trials to verify correct operation of the following automatic functions, alarms, and safety systems:*

- Function test of the monitoring and alarm systems
- Function test of safety systems, including override of system functions, if provided
- Manual control of the EGC equipment and systems
- Automatic changeover of designated machinery associated with the exhaust emission abatement equipment

## 1.5 Alternative Surveys

ABS is at all times ready to consider alternative survey arrangements which can be shown, through either satisfactory service experience or a systematic analysis based on sound engineering principles, to meet the overall safety, serviceability, and standards of the *Steel Vessel Rules* and the *Exhaust Emission Abatement Guide*. Alternative to requirements particularly contained in 7-9-29/1.1 and 7-9-29/1.3, an In-Service Inspection Plan (ISIP) may be developed by the Owner and submitted to the Assistant Chief Surveyor's office for review. A stamped copy of the ISIP placed onboard the vessel is to be referenced during all of the scheduled surveys.

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**CHAPTER 11 UNDERWATER VEHICLES, SYSTEMS AND HYPERBARIC FACILITIES**

**SECTION 2 SURVEY INTERVAL**

*(Revise Subsection 7-11-2/3, as follows:)*

## 3 Special Periodical Surveys *(1 July 2018)*

A Special Periodical Survey is to be completed within three months either way of a date three years after the date of build or the anniversary date, except as noted below. Upon request from the Owner, the Certificate can be extended for up to three months by a Surveyor after a general examination of the vehicle, system, or facility. Alternatively, a year of grace for completion of the Special Periodical Survey may be granted upon satisfactory completion of the Year of Grace Survey, as noted in 7-11-2/5. The interval between Special Periodical Surveys may be reduced by the Committee. If a Special Periodical Survey is not completed at one time, it will be credited as of the completion date of the survey but no later than Four years from date of build or from the date recorded for the previous Special Periodical Survey.

Where the Special Periodical Survey is commenced more than three months prior to the due date, the entire survey is normally to be completed within 15 months if such work is to be credited to the Special Periodical Survey.

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**APPENDIX**

**SECTION 4 ADDITIONAL INFORMATION FOR HULL THICKNESS MEASUREMENT**

*(Revise Subsection 7-A-4/15, as follows:)*

## 15 Modification of Thickness Measurement Requirements *(1 July 2018)*

In general, thickness measurement requirements of internals may be modified for vessels with acceptable, corrosion-resistant, hard-type coatings, such as epoxy or zinc, providing that after a careful examination, the Surveyor can verify the continued effectiveness of same. No consideration for reduced thickness measurements will be given for soft type coatings.

Where there is evidence that the coating is no longer intact (such as heavy staining, blistering, cracking, peeling or bare spots), the Surveyor must require sufficient confirmatory thickness measurement to clearly establish the condition of the internals. Please note that in the initial stages of coating breakdown, the corrosion may proceed at a very high rate in the exposed spots due to the abnormal area ratio between the protected and unprotected surfaces.

For vessels subject to ESP, thickness measurements for general assessment of corrosion patterns of structural members subject to Close-up Surveys are required at Intermediate and Special Periodical Surveys. The Surveyor may modify the extent of thickness measurements of these structural members where the coating is found in "GOOD" condition, as defined in ABS Rules, for Intermediate and Special surveys up to and including Special Periodical Survey No. 2. The Surveyor will specifically examine and report on the coating condition, and take a number of confirmatory thickness measurements to support his recommendation to modify the extent of thickness measurement of these structural members.

After Special Periodical Survey No. 2, modification of the extent of thickness measurements of these structural members is to be specially considered. The Surveyor will submit his findings on the coating condition and the confirmatory thickness measurements, along with sufficient photos to support his recommendation, for special consideration. Normally, the Divisional Assistant Chief Surveyor will examine the Surveyor's submittal and either accept or reject the Surveyor's recommendation to modify the extent of thickness measurements.

For converted vessels, the Special Periodical Survey and the thickness measurement requirements are based on the age of the original, retained sections. However, the thickness measurement requirements for the new body sections may be in accordance with Special Periodical Survey requirements for a vessel of corresponding age.

## PART 7 RULES FOR SURVEY AFTER CONSTRUCTION

## APPENDIX

## SECTION 14 SURVEYS BASED ON PREVENTATIVE MAINTENANCE TECHNIQUES

*(Revise Subsection 7-A-14/1, as follows:)*

# 1 General *(1 July 2018)*

The intent of a Preventative Maintenance Program is for owners/operators to maintain their vessels with updated machinery maintenance practices, which may increase a vessel's reliability and/or operational availability. While a Surveyor may allow a reduction in the amount of covered equipment being opened for crediting towards Special Continuous Survey of Machinery (CMS), provided it is enrolled in a Preventative Maintenance Program (PMP), operational testing may be increased.

The following are procedures and conditions under which a properly conducted preventative maintenance plan may be credited as satisfying the requirements of Special Continuous Survey of Machinery. No preventative maintenance program supersedes the judgment of an ABS Surveyor, nor does it waive an ABS Surveyor(s) attendance for damage, repairs, overhauls, testing or any other verification considered necessary due to actual or reported conditions. Consideration will be given to the details and intervals for examination of machinery in 7-6-2/1 and 7-6-2/3 as permitted by 7-6-1/5. The reference to an ABS Recognized Condition Monitoring Company refers to those companies whom ABS has identified as an External Specialist. For additional requirements, refer to 7-A-14/19 of this Appendix.

## 1.1 Survey and Maintenance Intervals

Maintenance is to be carried out on the basis of intervals between overhauls recommended by manufacturers, documented operator's experience and/or results from a Condition Monitoring plan, where applied. In general, the intervals for the Preventative Maintenance Program are not to exceed those specified for Special Continuous Survey of Machinery (CMS). However, for components where the maintenance is based on running hours or number of cycles, longer intervals may be accepted as long as the intervals are based on the manufacturer's recommendations or satisfactory results from a Condition Monitoring plan. In addition, if an approved PMP is in effect, the opening of individual items of equipment may not be required during the CMS cycle, based on satisfactory results within the program.

## 1.2 Definitions

*i)* *Special Continuous Survey of Machinery (CMS)* – A system of Continuous Surveys may be undertaken, whereby the Special Periodical Survey requirements are carried out on a rotating basis to complete all of the requirements of the particular Special Periodical Survey within a five-year period. (See 7-2-1/7 for details)

*ii)* *Preventative Maintenance Program (PMP)* – A program that consists of Planned Maintenance and/or Condition Monitoring plans.

*a)* *Planned Maintenance (PM)* – A maintenance plan which uses time-based inspection, part replacement and/or overhauls in an effort to prevent equipment failures. Timing can be based on calendar days, number of cycles, equipment running hours, fuel consumption, or alternate periodic trigger. Such schedules are generally established by the machinery manufacturer and include lubrication servicing; filter, bearing and seal replacements; as well as major overhaul.

*b)* *Condition Monitoring (CM)* – The use of various technologies to determine the condition of equipment, at a specific moment in time, using minimal or non-invasive means. Common approaches applied in condition monitoring are temperature monitoring, dynamic analysis (vibration monitoring), oil analysis, corrosion monitoring, nondestructive testing (ultrasonic analyses, acoustic emissions), electrical testing, observation and surveillance, performance trending, engine and system performance trending and diagnostics.

*iii)* *Condition Based Maintenance (CBM)* – A maintenance plan, conducted on a frequent or real-time basis, which is based on the use of Condition Monitoring to determine when part replacement or other corrective action is required. This process involves establishing a baseline and operating parameters, then frequently monitoring the machine and comparing any changes in operating conditions to the baseline. Repairs or replacement of parts are carried out before the machinery fails based upon the use of the tools prescribed for CM.

*iv)* *Reliability Centered Maintenance (RCM)* – RCM is a process that is used to determine the most effective approach to maintenance. It involves identifying actions that when taken will reduce the probability of failure and which actions are most cost effective. ABS has developed a maintenance program which uses RCM analysis of installed equipment to develop a Preventative Maintenance Program (PMP), a spare parts holdings list and includes a sustainment plan.

*a)* *Reactive Maintenance* – A RCM maintenance strategy in which equipment is run until failure before corrective action is taken. This is useful for items which are low-cost and have no impact on operational, environmental or safety concerns as a result of failure.

*b)* *One-Time Change* – A RCM maintenance strategy in which equipment or systems, that have been determined to present an unacceptable level of risk and have no potential mitigations, are replaced or significantly altered in order to provide an acceptable level of risk.

*v)* *Reliability Based Maintenance (RBM) (1 July 2017)* – A process for developing a preventative maintenance plan that will act as the foundation for applying selective reliability techniques, choosing and deploying a maintenance plan, and creating an effective reliability strategy to support an efficient maintenance environment

*vi)* *Design for Reliability (DFR) (1 July 2017)* – The incorporation of reliability-enhancing strategies and practices into the design, manufacture and capital equipment procurement procedures.

## 1.3 Optional Notation

Optional notations can be added to the *Record* indicating compliance with the **P**reventative **M**aintenance **P**rogram on one or more pieces of equipment. See 7-A-14/Table 1, "Program Definitions, Notations and References", which lists the applicable subsections and paragraphs in the ABS *Guide for Surveys Based on Machinery Reliability and Maintenance Techniques* and this Appendix. Any notation indicates less than 50% of all classed equipment is enrolled into this program. Any notation with "+" appended (e.g., **PMP+**) indicates 50% or greater of the equipment is enrolled.

*(Revise first row of 7-A-14/Table 1, as follows:)*

**TABLE 1**
**Program Definitions, Notations and References** *(1 July 2018)*

| *Plan* | *Definition* | *ABS Notation* | *Applicable Section of Surveys Based on Preventative Maintenance Techniques (7-A-14/) / MRM Guide* | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | *ABS Engineering Submittal* | *Operational Documentation* | | | *ABS Surveys* | |
| | | | | *Onboard Req* | *Sustain* | *Annual Report* | *Submittal/ Implement* | *Annual Confirmation* |

*(Remainder of table is unchanged.)*

## 5 Program Description

*(Revise Paragraph 7-A-14/5.5, as follows:)*

### 5.5 Machinery Status Indicators *(1 July 2018)*

Once the Implementation Survey has been satisfactorily completed, the attending Surveyor shall advise Classification Documentation Center (CDC) that the items covered by a:

- Planned Maintenance plan as per 7-A-14/13.5.1(a)i) are to be shown by a PM indicator,
- Condition Monitoring plan as per 7-A-14/15.5.1(a)i) are to be shown by a CM indicator,.
- Equipment covered by both PM and CM plans, items covered are to be shown by a PM/CM indicator,.
- Condition Based Maintenance plan as per 7-A-14/19.7.1(a)i) are to be shown by a CBM indicator.

The owner is to communicate with the attending Surveyor so that the Survey Manager for a vessel shows the correct indicators for all listed equipment.

## 9 Annual Surveys and Reporting –All Plans *(1 July 2018)*

*(Revise Title of Subsection 7-A-14/9, as shown above.)*

*(Revise Paragraph 7-A-14/9.3, as follows:)*

### 9.3 Owner's Annual Preventative Maintenance Report *(1 July 2018)*

The vessel's qualified representative is to present an Annual Preventative Maintenance Report via hard copy or approved alternative electronic formats (7-A-14/9.5) containing the information detailed in 7-A-14/9.3.1 through 7-A-14/9.3.13, as applicable, to the attending Surveyor for review and verification. Refer to 7-A-14/Table 2 listing the ABS Plan and the associated information required for inclusion in the report. Any reports submitted without all of the required information will be returned without action to the submitter.

#### 9.3.1 List of Machinery Enrolled

A summary list of all machinery enrolled in PMP. (PM, CM, CBM, RCM, RBM)

#### 9.3.2 Equipment Item Changes

*9.3.2(a)* For the machinery enrolled in PMP, the Owner may add or delete equipment subject to the approval of the attending ABS Surveyor, who is also to notify the ABS Classification and Documentation Center (CDC) of any machinery additions or deletions, as necessary. (PM, CM, CBM, RCM, RBM)

*9.3.2(b)* Any machinery to be added to the system is subject to the requirements of the PMP and approval by the responsible ABS Engineering Office and the attending Surveyor. (CM, CBM, RCM, RBM)

*9.3.2(c)* The asset's Owner is to advise CDC and the attending Surveyor of any machinery to be deleted from the PMP. (PM, CM, CBM, RCM, RBM)

*9.3.2(d)* If the machinery enrolled has changed from the previous report and any replacements performed, this is to be stated in the report. (PM, CM, CBM, RCM, RBM)

9.3.3 Maintenance Records

*9.3.3(a)* Records are to provide a complete description of work completed on each machine since the last submitted report. (PM, CM, CBM, RCM, RBM)

*9.3.3(b)* When applying CM techniques for machinery, the Owner is to report the overall condition of the machinery based on the most recent CM measurement data., which must have been collected within three months of the submission date of the report by an ABS Recognized Condition Monitoring Specialist. This report is to be provided to the attending Surveyor. (CM, CBM).

*9.3.3(c)* At a minimum, the report is to contain the information as indicated in 7-A-14/Table 1B. The report should be organized by equipment or system with the assigned Condition Monitoring techniques result summaries listed. (CM, CBM)

The results of trend reports that evidence the health state of machines should be simplified as indicated (e.g., good, degrading, unacceptable or failure occurred) on the approved periodic basis.

*i)* CM trending results; Description of anomalies observed and corrective action taken. See 7-A-14/Table 1B, Notes 2 and 3 for clarification.

*ii)* Planned maintenance tasks performed as a result of trending and any routine planned maintenance tasks performed.

*iii)* CM tasks confirming functionality of machine and alarm/trip functionality.

9.3.4 Report Exceptions

*9.3.4(a)* The Owner is to report to the attending Surveyor all machinery for which:

*i)* Maintenance is not indicated,

*Ii)* Maintenance is incomplete, or

*iii)* More frequent monitoring of the machinery is needed based on CM results near or exceeding pre-established threshold.

*9.3.4(b)* If any of the above mentioned situations occurs, the condition of the machinery is to be to the satisfaction of the attending Surveyor. Exceptions, notes and comments during the maintenance tasks are to be included in the Maintenance Records. (PM, CM, CBM, RCM, RBM)

9.3.5 Reporting Failures

The report is to list machines that failed prior to scheduled maintenance, servicing, or monitoring and analysis and related record of corrective actions taken. (PM, CM, CBM, RCM, RBM)

9.3.6 Maintenance Plan Changes

*9.3.6(a)* Modifications with justifications to the schedule, such as might be recommended by a machinery manufacturer's technical bulletin. (PM, CM, CBM)

*9.3.6(b)* If during the sustainment process, the Owner identifies the time intervals for maintenance tasks need to be altered, then documentation that supports the interval change are to be submitted to the attending Surveyor for review and acknowledgement. (RCM, RBM)

9.3.7 External Specialist Records

When External Specialists are used, their details including a list of approved specialists providing CM services. See 7-A-14/Table 1C for an example. (CM, CBM)

9.3.8 Crew Training Records

*9.3.8(a)* Where the crew is taking condition monitoring measurements, then training records for the designated crew members and a description of the training is to be included. (CM, CBM)

*9.3.8(b)* The attending Surveyor may request a trained crewmember to demonstrate proficiency in collection and related management of the obtained data. (CM, CBM)

9.3.9 Data Collection Methods, Recording and Calibration

The type of recording device, method of data collection and calibration of the data collector is to be provided. (CM, CBM)

9.3.10 Sustainment Activities (Onboard)

Records of sustainment activities are to be available for the ABS Surveyor and a summary included in the annual report. The results of relative ranking analyses, trend analyses, maintenance requirements document reviews, task packaging reviews, age exploration tasks and failure investigations of all unscheduled maintenance and/or breakdowns are to be provided. Sustainment activities can be conducted ashore as long as some shipboard personnel, who have been participating in the RCM program aboard the subject vessel or marine structure, are involved in the sustainment activities. (RBM, RCM)

9.3.11 Sustainment Activities (Shoreside)

A sustainment shore office audit is to be completed within five years after the date of enrollment of an asset in RBM or RCM programs or after the crediting date of the previous sustainment audit. This may occur in conjunction with Intermediate and/or Special Survey requirements and is to comply with 6/2.2 of the ABS *Guide for Surveys Based on Machinery Reliability and Maintenance Techniques*. (RBM, RCM)

If the machinery included in the Preventative Maintenance Program has changed, this is to be stated. Any machinery to be added to the program is subject to the requirements of 7-A-14/5, and approval by the attending Surveyor. When adding machinery to a Condition Monitoring plan, approval is required from the responsible ABS Engineering Office. When removing machinery from any Preventative Maintenance Program, CDC is to be advised and the machinery status updated accordingly.

*(Add new 7-A-14/Table 2, as follows:)*

**TABLE 2**
**Annual Preventative Maintenance Report Requirements** *(1 July 2018)*

| *No.* | *Requirement* | *ABS Plan* | | | | |
|---|---|---|---|---|---|---|
| | | *PM* | *CM* | *CBM* | *RBM* | *RCM* |
| 9.3.1 | List of Machinery Enrolled in PMP: | X | X | X | X | X |
| 9.3.2 | Equipment Item Changes: | X | X | X | X | X |
| 9.3.3 | Maintenance Records: | X* | X | X | X | X |
| 9.3.4 | Report Exceptions: | X* | X | X | X | X |
| 9.3.5 | Reporting Failures: | X | X | X | X | X |
| 9.3.6 | Maintenance Plan Changes: | X | X | X | X | X |
| 9.3.7 | External Specialist Records: | | X | X | | |
| 9.3.8 | Crew Training Records: | | X | X | | |
| 9.3.9 | Data collection methods, recording and calibration: | | X | X | | |
| 9.3.10 | Sustainment Activities (Onboard): | | | | X | X |
| 9.3.11 | Sustainment Activities (Shoreside): | | | | X | X |

* *Note:* Reporting results for machinery applying CM techniques is not applicable to Planned Maintenance.

*(Add new 7-A-14/Table 3A, as follows:)*

## TABLE 3A
## Equipment Summary (Example) *(1 July 2018)*

| Equipment Summary | | | | | |
|---|---|---|---|---|---|
| | **Unsatisfactory** | **0** | **0** | **1** | **1** |
| | **Marginal** | **24** | **23** | **22** | **22** |
| | **Satisfactory** | **147** | **147** | **147** | **147** |

| Equipment | Monitoring Type | Condition Summary | | | |
|---|---|---|---|---|---|
| | | Current | Report History | | |
| #1 AUX. D/G TURBOCHARGER | **CM** | **Satisfactory** | **Satisfactory** | **Satisfactory** | **Satisfactory** |
| #1 AUX. DIESEL GENERATOR | **CM** | **Satisfactory** | **Satisfactory** | **Satisfactory** | **Satisfactory** |
| #1 S.S. REEFER COMPRESSOR | **CM** | **Marginal** | **Satisfactory** | **Satisfactory** | **Satisfactory** |
| #2 AUX. D/G TURBOCHARGER | **CM** | **Satisfactory** | **Marginal** | **Satisfactory** | **Satisfactory** |
| #2 AUX. DIESEL GENERATOR | **CM** | **Satisfactory** | **Satisfactory** | **Satisfactory** | **Satisfactory** |
| #2 S.S. REEFER COMPRESSOR | **CM** | **Marginal** | **Marginal** | **Unsatisfactory** | **Unsatisfactory** |

*(Add new 7-A-14/Table 3B, as follows:)*

## TABLE 3B
## Equipment Detail (Example) *(1 July 2018)*

| Equipment Name or System Name | Component Assessed | Monthly Status Good/Degrading/Failed or Repaired Green/Yellow Red | | | | | | | | | | | | Findings | Planned Maintenance Tasks Performed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CMT | | Period (Month or Day or other time period) | | | | | | | | | | | | | |
| | | J | F | M | A | M | J | J | A | S | O | N | D | | |
| CMT[(1)] No. 1 | Component No. 1 | | | | | | | | | | | | | Component degrading | Job No. 1 (6/17) |
| CMT No.2 | Component No. 2 | | | | | | | | | | | | | Component degrading | Job No. 2 (3/17) |
| CMT No. 3 | Component No. 3 | | | | | | | | | | | | | (Delay PM Job No. 3 to 10/17) | |
| CMT No. 4 | Alarm Panel | | | | | | | | | | | | | | |
| Parameter Assessed | | | | | | | | | | | | | | | |
| OP[(2)] No. 1 | Fuel Input | | | | | | | | | | | | | | |
| OP No. 2 | Power Output | | | | | | | | | | | | | Component degrading | |
| OP No. 3 | Exhaust Temp. | | | | | | | | | | | | | Exh Cyl Valve leaking | Exh cyl valve #4 replaced (3/2017)<br>Exh cyl valve #8 replaced (6/2017) |
| Combined Parameters | | | | | | | | | | | | | | | |
| CP[(3)] No. 1 | T/C No. 1 Scavenging Air Pressure Increase | | | | | | | | | | | | | | |
| CP No. 2 | Highest/Lowest Cylinder Exhaust Temp | | | | | | | | | | | | | | |
| etc. | | | | | | | | | | | | | | | |

*Notes:*

1 CMT – Condition Monitoring Technique

2 OP – Operational Parameter

3 CP – Combined Parameters

*(Add new 7-A-14/Table 3C, as follows:)*

**TABLE 1C**
**Specialist Details (Example)** *(1 July 2018)*

| *Company Name* | *Point of Contact* | *Vendor Type* | *Last Visit* | *Next Visit* |
|---|---|---|---|---|
| OEM 1 | | Data and Performance Analyst | Real-Time | Real-time |
| Data Firm 1 | | Data and Performance Analyst | Real-Time | Real-time |
| Specialist 2 | | CM - Lube Oil Analysis | 8/5/16 | 10/2/17 |

## 13 Planned Maintenance (PM)

*(Revise Paragraph 7-A-14/13.5, as follows:)*

### 13.5 Administrative Requirements *(1 July 2018)*

13.5.1 PM Plan Submission

*13.5.1(a)* For Items Covered by a Planned Maintenance Plan

*i)* A list and description of the machinery.

*ii)* Organization chart identifying areas of responsibility.

*iii)* Schedule of servicing and overhaul. This schedule is to meet at least the servicing and overhaul intervals specified by the manufacturer and a statement to this effect is to accompany the plan.

*iv)* Description of the work to be performed at each interval.

*v)* Machinery identification method and record keeping procedures.

*vi)* Planned maintenance sheet(s)/record(s) for each machine to be considered.

*vii)* A reference list showing owner's equipment item name and ABS equivalent equipment name as shown in ABS Survey Manager.

## 15 Condition Monitoring (CM) *(1 July 2018)*

*(Revise Subsection 7-A-14/15, as follows:)*

*(1 July 2018)* A Condition Monitoring plan which is submitted for review, is intended to be supplemented with Planned Maintenance activities. The benefits of using condition monitoring techniques are to provide additional information regarding the current condition of the machine and the system it operates in and through trending of previous analyses to predict remaining operating life. This additional information can be used to support crediting enrolled machinery so as to satisfy the requirements of Special Continuous Survey of Machinery.

With regards to monitoring measurements, ABS principally allows two methods to be used towards the crediting of the CMS cycle as discussed in 7-A-14/9.1. A summary of the first method involves the Chief Engineer or other trained crewmember(s) collecting overall monitoring data and a representative specialist of an ABS Recognized Condition Monitoring Company collecting at least one set of complete monitoring annually. A summary of the second method, involves complete monitoring by a representative specialist of an ABS Recognized Condition Monitoring Company, with no requirement for data collection by the Chief Engineer or crewmembers.

When equipment is covered by both PM and CM plans (substantiated by a PM/CM indicator), the results of the CM analysis may affect the calendar or operating time requirements of the vessel's PM plan. When the CM analysis demonstrates that the equipment is operating satisfactorily, consideration will be given for deferring appropriate PM tasks.

*(Paragraphs 7-A-14/15.1 and 7-A-14/15.3 remain unchanged.)*

*(Revise Paragraph 7-A-14/15.5, as follows:)*

## 15.5 Administrative Requirements *(1 July 2018)*

15.5.1 CM Plan Submission

*15.5.1(a)* For Items Covered by a Condition Monitoring Plan

*i)* A list and description of the machinery covered including:

*a)* Method of data collection and analysis tools

*b)* Nominal rpm

*c)* Horsepower

*d)* Location and orientation of sensor attachments, which are to be permanently marked and/or affixed by a Recognized Condition Monitoring Specialist on covered machinery

*e)* Sampling procedures for oil analysis

*ii)* Organization chart identifying areas of responsibility.

*iii)* Schedule of data collection.

*iv)* Type and model of data collection instrument, including sensor and attachment method and calibration schedule.

*v)* Acceptance criteria of data.

*vi)* *Baseline Data (1 July 2017).* Initial or baseline data are to be recorded in the presence of the Surveyor and/or a representative specialist of an ABS Recognized Condition Monitoring Company. (*Note*: If vibration is selected as a monitoring type, the baseline are to be compared to the acceptable vibration levels shown in SNAME's T&R Bulletin 3-42 "Guidelines for the Use of Vibration Monitoring for Preventative Maintenance" or other equivalent national or international standards). The Owner is to be notified of all machinery that does not meet acceptance criteria (i.e., machinery with high vibration levels).

*vii)* A reference list showing owner's equipment item name and ABS equivalent equipment name as shown in ABS Survey Manager.

*viii)* *(1 July 2018)* Provide basis for monitoring intervals. Intervals may be real-time or periodic. Owner is to provide justification for schedule of data collection. Additional information on determining condition-monitoring task intervals is available in Subsection 3/5 of the ABS *Guidance Notes on Equipment Condition Monitoring Techniques*.

*(Paragraphs 7-A-14/15.7 and 7-A-14/15.9 remain unchanged.)*

*(Delete Paragraph 7-A-14/15.11, as follows:)*

~~**15.11 Alternative Techniques**~~

~~Application of techniques of condition monitoring other than those mentioned above will be specially considered.~~

~~15.11.1 Semi-Annual Alternative *(2014)*~~

~~Condition monitoring based on semi-annual signatures is acceptable as an alternative technique for rotating machinery in lieu of quarterly overall vibration meter readings supplemented by an annual signature, as required in 7-A-14/15.7.1iii). The semi-annual signatures are to be taken and reviewed by a representative of an ABS Recognized Condition Monitoring Company. External checks, such as lube oil analysis, shaft position indicating and bearing temperatures are not affected and are to continue to be monitored by the crew at least on a quarterly basis.~~

~~The annual Owner's report is to clearly indicate that this alternative is being utilized and must include both semi-annual signatures for all of the monitored equipment. In addition, a summation and analysis of all unscheduled maintenance and/or breakdowns of the monitored equipment which were not identified by the semi-annual signatures must be included. Any reports submitted without the required statement of maintenance and/or summation will be returned without action to the submitter.~~

# 17 Reliability Based (RBM) or Reliability Centered Maintenance (RCM) *(1 July 2017)*

## 17.7 Administrative Requirements *(1 July 2018)*

*(Delete Subparagraph 7-A-14/17.7.2, as follows:)*

~~17.7.2 Owner's Annual RCM Program Report Requirements~~

~~The annual report is to be submitted in a paper or electronic format. Prior to submitting electronic reports, the submitter is to confirm the attending Surveyor has the necessary software to review the reports.~~

~~*17.7.2(a) Equipment Item Changes.* If the machinery included in the Program has changed, this is to be stated. Any machinery to be added to the system is subject to the requirements of the Program and approval by the responsible ABS Engineering Office and the attending Surveyor. Also, the asset's Owner is to advise Corporate Document Classification and the attending Surveyor of any machinery to be deleted from the Program~~

~~*17.7.2(b) Maintenance Plan Changes.* If during the sustainment process the time intervals for maintenance task needs to be altered, then documentation that supports the change in interval are to be submitted to the attending Surveyor for review and acknowledgement.~~

~~*17.7.2(c) Maintenance Plan Details.*~~

~~*i) Condition Monitoring Tasks:* See 7-A-14/15.5.2~~

~~*ii) Planned Maintenance Tasks:* See 7-A-14/13.5.2~~

~~*17.7.2(d) Sustainment Activities.* Records of sustainment activities are to be available for the ABS Surveyor and a summary included in the annual report. The results of relative ranking analyses, trend analyses, maintenance requirements document reviews, task packaging reviews, age exploration tasks and failure investigations of all unscheduled maintenance and/or breakdowns are to be provided. Sustainment activities can be conducted ashore as long as some shipboard personnel, who have been participating in the RCM program aboard the subject vessel or marine structure, are involved in the sustainment activities.~~

~~*17.7.2(e) Report Exceptions.* The Owner is to advise the attending Surveyor of all machinery for which maintenance is not indicated, is incomplete, or when additional monitoring is needed for machinery with vibration readings above those in the approved baseline. If either of the above mentioned situations occurs, the condition of the machinery is to be to the satisfaction of the attending Surveyor.~~

*(Renumber Subparagraph 7-A-14/17.7.3 as 7-A-14/17.7.2.)*

## 19.7 Administrative Requirements *(1 July 2018)*

*(Delete Subparagraph 7-A-14/19.7.2, as follows:)*

~~19.7.2 Owner's Annual Predictive Maintenance Report Requirements~~

~~*19.7.2(a) CBM Plan Report – Annual*~~

~~*i)* A summary report listing all machinery covered under the Condition Based Maintenance plan, clearly stating the overall condition of the machinery based on the most recent vibration measurement data (i.e., Satisfactory, Marginal, or Unacceptable). Data for the report must have been analyzed by an ABS Recognized Condition Monitoring Company. This report is to be provided to the attending Surveyor and should be verified against the information shown onboard the vessel.~~

~~*ii)* Summary of maintenance actions recommended by the Recognized Specialist.~~

~~*iii)* Records of any maintenance conducted on equipment enrolled in the CBM Plan.~~

~~*iv)* Records of any equipment that has been replaced, including information required by 7-A-14/19.7.1(a).~~

~~If the machinery included in the Condition Based Maintenance plan has changed, this is to be stated. Any machinery to be added to the plan is subject to the requirements of 7-A-14/19.7.1 and approval by the responsible ABS Engineering Office and the attending Surveyor. Any machinery to be deleted from the Condition Based Maintenance plan is to be brought to the attention of the attending Surveyor and written documentation sent to CDC.~~

~~If any equipment is unable to be monitored for extended periods, due to connectivity or sensor issues, the Owner is to advise the Responsible Survey office and any attending Surveyor immediately. Until CBM equipment monitoring is resumed, the condition of the machinery is to be to the satisfaction of the attending Surveyor applying the principles of a CM plan (as per 7-A-14/15).~~

**PART 7 RULES FOR SURVEY AFTER CONSTRUCTION**

**APPENDIX**

**SECTION 16 THICKNESS MEASUREMENT AND CLOSE-UP SURVEY REQUIREMENTS AT SPECIAL PERIODICAL SURVEYS**

*(Revise 7-A-16/Table 1, as follows:)*

## TABLE 1
## Thickness Measurement Requirements at Special Periodical Surveys for Vessels without ESP and ESDC Notations *(1 July 2018)*

### Vessels Under 90 meters (295 feet) in Length; Passenger Vessels and High Speed Craft Under 61 meters (200 feet) in Length

### [See also 7-3-2/5.1.15(a)]

| *i) Special Periodical Survey No. 1 (Age ≤ 5 Years)* | *ii) Special Periodical Survey No. 2 (5 < Age ≤ 10 Years)* | *iii) Special Periodical Survey No. 3 (10 < Age ≤ 15 Years)* | *iv) Special Periodical Survey No. 4 and Subsequent (Age > 15 Years)* See Notes 1 & 2 |
|---|---|---|---|
| 1 Suspect areas throughout the vessel. | 1 Suspect areas throughout the vessel.<br>2 One (1) transverse section of deck plating within the midship 0.5*L* (in way of cargo space, if applicable). | 1 Suspect areas throughout the vessel.<br>2 *(1 July 2018)* One (1) transverse section within the amidships 0.5*L*.<br>3 *(1 July 2006)* Internals in forepeak and afterpeak tanks.<br>4 All cargo hold hatch covers and coamings (stiffeners and plating). | 1 Suspect areas throughout the vessel.<br>2 *(1 July 2018)* Two (2) transverse sections within the amidships 0.5*L*, (in way of two (2) different cargo (or ballast) spaces, if applicable), avoiding those spaces previously gauged.<br>3 Internals in forepeak and after peak tanks.<br>4 All cargo hold hatch covers and coamings (stiffeners and plating).<br>5 Lowest strake and strakes in way of tween decks of all transverse bulkheads in cargo spaces together with internals in way.<br>6 Wind-and-water strakes, port and starboard, full length.<br>7 *(1 July 2018)* All exposed main deck full length and representative exposed superstructure deck plating (poop, bridge and forecastle decks).<br>8 Flat keel plating full length. Also, additional bottom plates in way of cofferdams, machinery spaces and aft end of tanks.<br>9 Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor. |

*Notes:*

1 For tank vessels, gauging of principal internals throughout cargo and ballast tanks.

2 For High Speed Craft, one (1) additional transverse section forward of 0.125*L*.

*(Revise 7-A-16/Table 2, as follows:)*

## TABLE 2
## Thickness Measurement Requirements at Special Periodical Surveys for Vessels without ESP and ESDC Notations *(1 July 2018)*

### Non ESP Tankers, Independent Tank Carriers 90 meters (295 feet) and over in Length

### [See also 7-3-2/5.1.15(b)]

| *i) Special Periodical Survey No. 1 (Age ≤ 5 Years)* | *ii) Special Periodical Survey No. 2 (5 < Age ≤ 10 Years)* | *iii) Special Periodical Survey No. 3 (10 < Age ≤ 15 Years)* | *iv) Special Periodical Survey No. 4 and Subsequent (Age > 15 Years)* |
|---|---|---|---|
| 1 Suspect areas throughout the vessel. | 1 All main deck plates within the amidships 0.5*L* or cargo tank section, whichever is longer.<br>2 One (1) transverse section within 0.5*L*.<br>3 Plates in wind-and-water strakes outside 0.5*L*.<br>4 *(2006)* All complete transverse web frame rings in a ballast wing tank or ballast double hull tank, if any.<br>5 *(2006)* One (1) deck transverse in each of the remaining ballast tanks, if any.<br>6 *(2006)* Both transverse bulkheads including girder system in a ballast wing tank or ballast double hull tank, if any, or a cargo wing tank used primarily for water ballast.<br>7 *(2006)* Lower part of transverse bulkhead including girder system in each remaining ballast tank, one (1) cargo wing tank and two (2) cargo center tanks.<br>8 Suspect areas throughout the vessel. | 1 All main deck plates within the amidships 0.5*L* or cargo tank, whichever is longer.<br>2 Two (2) transverse sections within the amidships 0.5*L*.<br>3 Plates in wind-and-water strakes outside 0.5*L*.<br>4 *(2006)* All complete transverse web frame rings in all ballast tanks and in a cargo wing tank.<br>5 *(2006)* A minimum of 30% of all complete transverse web frame rings in each remaining cargo wing tank. (In calculating the 30% minimum, the number of web frame rings is to be rounded up to the next whole integer.)<br>6 *(2006)* A minimum of 30% of deck and bottom transverse in each cargo center tank. (In calculating the 30% minimum, the number of transverses is to be rounded up to the next whole integer.)<br>7 *(2006)* All transverse bulkheads including girder and stiffener systems in all cargo and ballast tanks.<br>8 *(2006)* Additional complete transverse web frame rings as considered necessary by the Surveyor. | 1 All exposed main deck plates, full length. Also, exposed first-tier superstructure deck plates (poop bridge and forecastle decks).<br>2 All keel plates full length. Also, additional bottom plates in way of cofferdams, machinery space and aft end of tanks.<br>3 A minimum of three (3) transverse sections within the amidships 0.5*L*.<br>4 *(2006)* All complete transverse web frame rings in all ballast tanks and in a cargo wing tank.<br>5 *(2006)* A minimum of 30% of all complete transverse web frame rings in each remaining cargo wing tank. (In calculating the 30% minimum, the number of web frame rings is to be rounded up to the next whole integer.)<br>6 *(2006)* A minimum of 30% of deck and bottom transverse in each cargo center tank. (In calculating the 30% minimum, the number of transverses is to be rounded up to the next whole integer.)<br>7 *(2006)* All transverse bulkheads including girder and stiffener systems in all cargo and ballast tanks. |

| *i) Special Periodical Survey No. 1 (Age ≤5 Years)* | *ii) Special Periodical Survey No. 2 (5 < Age ≤10 Years)* | *iii) Special Periodical Survey No. 3 (10 < Age ≤15 Years)* | *iv) Special Periodical Survey No. 4 and Subsequent (Age > 15 Years)* |
|---|---|---|---|
| | | 9 *(2006)* Internals in forepeak and afterpeak tanks including plating and stiffeners of forepeak and afterpeak tank bulkheads.<br>10 Suspect areas throughout the vessel. | 8 *(2006)* Additional complete transverse web frame rings as considered necessary by the Surveyor.<br>9 *(2006)* Any additional tanks and structure as considered necessary by the Surveyor.<br>10 *(2006)* Internals in forepeak and afterpeak tanks including plating and stiffeners of forepeak and afterpeak tank bulkheads.<br>11 All plates in two (2) wind-and-water strakes, port and starboard full length.<br>12 Suspect areas throughout the vessel.<br>13 Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor. |

*(Revise 7-A-16/Table 6, as follows:)*

## TABLE 6
## Thickness Measurement Requirements at Special Periodical Surveys *(1 July 2018)*

### Bulk Carriers – Non Double Skin ESP and Bulk Carrier Features of Combination Carriers – Non Double Skin ESP

### [See also 7-3-2/5.7.5]

| *(a) Special Periodical Survey No. 1 (Age ≤5 Years)* | *(b) Special Periodical Survey No. 2 (5 < Age ≤10 Years) (1 July 2006)* | *(c) Special Periodical Survey No. 3 (10 < Age ≤15 Years) (1 July 2006)* | *(d) Special Periodical Survey No. 4 and Subsequent (Age > 15 Years) (1 July 2006)* |
|---|---|---|---|
| *i)* Suspect areas throughout the vessel. | *i)* Suspect areas throughout the vessel.<br>*ii)* All deck plating inside the line of opening between cargo hold hatches.<br>*iii)* *(1 July 2018)* Two (2) transverse sections of deck plating outside the line of cargo hatch openings within the amidships 0.5*L* with at least one (1) including a ballast tank, as far as practicable. | *i)* Suspect areas throughout the vessel.<br>*ii)* *(1 July 2018)* All main deck plating outside of line of cargo hatch openings within the cargo length area.<br>*iii)* *(1 July 2018)* Two (2) transverse sections, one (1) in the amidship area, outside the line of cargo hatch openings<br>*iv)* *(1 July 2018)* All wind-and-water strakes within the cargo length area. | *i)* Suspect areas throughout the vessel.<br>*ii)* *(1 July 2018)* All exposed main deck plating representative exposed first tier superstructure deck plates (poop, bridge and forecastle decks).<br>*iii)* A minimum of three (3) transverse sections, one (1) in the amidship area, outside of the line of cargo hatch openings within the amidships 0.5*L*. |

| *(a)* *Special Periodical Survey No. 1 (Age ≤5 Years)* | *(b)* *Special Periodical Survey No. 2 (5 < Age ≤10 Years) (1 July 2006)* | *(c)* *Special Periodical Survey No. 3 (10 < Age ≤15 Years) (1 July 2006)* | *(d)* *Special Periodical Survey No. 4 and Subsequent (Age > 15 Years) (1 July 2006)* |
|---|---|---|---|
| | *iv)* *(1 July 2018)* Wind-and-water strakes in way of the same transverse sections.<br>*v)* *(1 July 2006)* Selected wind-and-water strakes outside the cargo length area.<br>*vi)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey.<br>*vii)* Measurements of the corrugated transverse watertight bulkhead between cargo holds No's. one and two, for vessels subject to IACS UR S19 and IACS UR S23.<br>*viii)* Additional thickness measurements to be taken of the cargo hold side shell frames and brackets on ships subject to compliance with IACS UR S31 for initial and continued compliance. | *v)* *(1 July 2018)* Selected wind and water strakes outside the cargo length area.<br>*vi)* All cargo hold hatch covers and coamings (plating and stiffeners).<br>*vii)* *(1 July 2006)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of bulkheads.<br>*viii)* Measurement, for general assessment and recording of corrosion pattern, of structural members subject to Close-up Survey.<br>*ix)* Measurements of the corrugated transverse watertight bulkhead between cargo holds No's. one and two, for vessels subject to IACS UR S19 and IACS UR S23.<br>*x)* Additional thickness measurements to be taken of the cargo hold side shell frames and brackets on ships subject to compliance with IACS UR S31 for initial and continued compliance. | *iv)* *(1 July 2018)* All wind-and-water strakes, port and starboard, full length.<br>*v)* All cargo hold hatch covers and coamings (plating and stiffeners).<br>*vi)* *1 July 2006)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of bulkheads.<br>*vii)* Duct keel or pipe tunnel plating and internals.<br>*viii)* All keel and bottom plates full length.<br>*ix)* Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor.<br>*x)* Measurement, for general assessment and recording of corrosion patterns of structural members subject to Close-up Survey.<br>*xi)* Measurements of the corrugated transverse watertight bulkhead between cargo holds No's. one and two, for vessels subject to IACS UR S19 and IACS UR S23.<br>*xii)* Additional thickness measurements to be taken of the cargo hold side shell frames and brackets on ships subject to compliance with IACS UR S31 for initial and continued compliance. |

*(Revise 7-A-16/Table 8, as follows:)*

## TABLE 8
## Thickness Measurement Requirements at Special Periodical Surveys *(1 July 2018)*

### Tankers ESP (Oil Carriers and Oil Carrier Features of Combination Carriers – Non-Double Hull) and Oil/Fuel Oil Tank Barges – Non Double Hull and Chemical Tank Barges 122 meters (400 feet) and over in Length

### [See also 7-3-2/5.13.5 and 7-3-2/5.5.1(f)iii)]

| *(a)* *Special Periodical Survey No. 1 (Age ≤ 5 Years) (1 July 2006)* | *(b)* *Special Periodical Survey No. 2 (5 < Age ≤ 10 Years) (1 July 2006)* | *(c)* *Special Periodical Survey No. 3 (10 < Age ≤ 15 Years) (1 July 2006)* | *(d)* *Special Periodical Survey No. 4 and Subsequent (Age > 15 Years) (1 July 2006)* |
|---|---|---|---|
| *i)* Suspect areas throughout the vessel.<br>*ii)* One (1) transverse section of deck plating for the full beam of the ship within amidships 0.5*L*, in way of a ballast tank, if any, or a cargo tank used primarily for water ballast.<br>*iii)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Surveys. | *i)* Suspect areas throughout the vessel.<br>*ii)* All main deck plating within the amidships 0.5*L* or cargo area, whichever is longer.<br>*iii)* One (1) transverse section within the amidships 0.5*L*.<br>*iv)* *(1 July 2018)* Selected wind-and-water strakes outside the cargo area.<br>*v)* Measurement for general assessment and recording of corrosion patterns of structural members subject to Close-up Survey. | *i)* Suspect areas throughout the vessel.<br>*ii)* *(1 July 2018)* All main deck plating within the cargo area.<br>*iii)* *(1 July 2018)* Two (2) transverse sections within the amidships 0.5*L* in way of two different cargo tanks. At least one section is to include a ballast tank within 0.5*L* amidships, if any.<br>*iv)* *(1 July 2018)* All wind-and-water strakes within the cargo area.<br>*v)* *(1 July 2018)* Selected wind and water strakes outside the cargo length area.<br>*vi)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads.<br>*vii)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey. | *i)* Suspect areas throughout the vessel.<br>*ii)* *(1 July 2018)* All main deck plating and representative exposed superstructure deck plating (poop, bridge and forecastle decks).<br>*iii)* *(1 July 2006)* A minimum of three (3) transverse sections, including at least one (1) in way of a ballast tank, within the amidships 0.5*L*.<br>*iv)* *(1 July 2018)* All wind-and-water strakes, port and starboard, full length.<br>*v)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads.<br>*vi)* *(1 July 2006)* Duct keel or pipe tunnel plating and internals.<br>*vii)* All keel and bottom plating, full length.<br>*viii)* Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor.<br>*ix)* Measurements, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey. |

*Note:* In the case of oil tankers of 130 meters (427 feet) in length and upwards, for the evaluation of the vessel's longitudinal strength as required in 7-3-2/15.1.2, the sampling method of thickness measurements is given in 7-A-4/33..

*(Revise 7-A-16/Table 10, as follows:)*

## TABLE 10
## Thickness Measurement Requirements at Special Periodical Surveys *(1 July 2018)*

### Tankers ESP (Oil Carriers and Oil Carrier Features of Combination Carriers – Double Hull) and Oil/Fuel Oil Tank Barges – Double Hull 122 meters (400 feet) and over in Length

### [See also 7-3-2/5.14.5 and 7-3-2/5.5.1(f)iii)]

| *(a)* *Special Periodical Survey No. 1 (Age ≤ 5 Years) (1 July 2006)* | *(b)* *Special Periodical Survey No. 2 (5 < Age ≤ 10 Years) (1 July 2006)* | *(c)* *Special Periodical Survey No. 3 (10 < Age ≤ 15 Years) (1 July 2006)* | *(d)* *Special Periodical Survey No. 4 and Subsequent (Age > 15 Years) (1 July 2006)* |
|---|---|---|---|
| *i)* Suspect areas throughout the vessel. | *i)* Suspect areas throughout the vessel. | *i)* Suspect areas throughout the vessel. | *i)* Suspect areas throughout the vessel. |
| *ii)* *(1 July 2006)* One (1) transverse section of deck plating for the full beam of the ship within amidships 0.5*L*, in way of a ballast tank, if any. | *ii)* *(1 July 2018)* All main deck plating within the cargo area. | *ii)* *(1 July 2018)* All main deck plating within the cargo area. | *ii)* *(1 July 2018)* All main deck plating and representative exposed superstructure deck plating (poop, bridge and forecastle decks). |
| *iii)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Surveys. | *iii)* One (1) transverse section within the amidships 0.5*L*. | *iii)* *(1 July 2018)* Two (2) transverse sections within the amidships 0.5*L* in way of two different cargo tanks. At least one section is to include a ballast tank within 0.5*L* amidships, if any. | *iii)* *(1 July 2006)* A minimum of three (3) transverse sections, including at least one (1) in way of a ballast tank, within the amidships 0.5*L*. |
| | *iv)* *(1 July 2018)* Selected wind-and-water strakes outside the cargo area. | *iv)* *(1 July 2018)* All wind-and-water strakes within the cargo area. | *iv)* *(1 July 2018)* All wind-and-water strakes, port and starboard, full length. |
| | *v)* Measurement for general assessment and recording of corrosion patterns of structural members subject to Close-up Survey. | *v)* *(1 July 2018)* Selected wind and water strakes outside the cargo length area. | *v)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads. |
| | | *vi)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads. | *vi)* *(1 July 2006)* Duct keel or pipe tunnel plating and internals. |
| | | *vii)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey. | *vii)* All keel and bottom plating full length. |
| | | | *viii)* Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor. |
| | | | *ix)* Measurements, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey. |

*Note:* In the case of oil tankers of 130 meters (427 feet) in length and upwards, for the evaluation of the vessel's longitudinal strength as required in 7-3-2/15.1.2, the sampling method of thickness measurements is given in 7-A-4/33..

*(Revise 7-A-16/Table 14, as follows:)*

## TABLE 14
## Thickness Measurement Requirements at Special Periodical Surveys *(1 July 2018)*

### Bulk Carriers – Double Skin ESP and Bulk Carrier Features of Combination Carriers – Double Skin ESP

**[See also 7-3-2/5.19.5]**

| *(a)* *Special Periodical Survey No. 1 (Age ≤ 5 Years)* | *(b)* *Special Periodical Survey No. 2 (5 < Age ≤ 10 Years)* | *(c)* *Special Periodical Survey No. 3 (10 < Age ≤ 15 Years) (1 July 2006)* | *(d)* *Special Periodical Survey No. 4 and Subsequent (Age > 15 Years) (1 July 2006)* |
|---|---|---|---|
| *i)* Suspect areas throughout the vessel. | *i)* Suspect areas throughout the vessel.<br>*ii)* *(1 July 2006)* Two (2) transverse sections of deck plating outside the line of cargo hatch openings within the cargo length area.<br>*iii)* *(1 July 2018)* Wind-and-water strakes in way of the two (2) transverse sections considered above.<br>*iv)* *(1 July 2008)* Selected wind-and-water strake plating outside the cargo length area.<br>*v)* Measurement, for general assessment and recording of corrosion patterns, of structural members subject to Close-up Survey. | *i)* Suspect areas throughout the vessel.<br>*ii)* Each deck plate outside line of cargo hatch openings within the cargo length area.<br>*iii)* *(1 July 2006)* Two (2) transverse sections, one (1) in the amidships area, outside the line of cargo hatch openings within the cargo length area.<br>*iv)* *(1 July 2018)* All wind-and-water strakes within the cargo length area.<br>*v)* *(1 July 2018)* Selected wind-and-water strakes outside the cargo length area.<br>*vi)* All cargo hold hatch covers and coamings (plating and stiffeners).<br>*vii)* *(1 July 2006)* Internals in forepeak and afterpeak tanks including plating and stiffeners of bulkheads.<br>*viii)* Measurement, for general assessment and recording of corrosion pattern, of structural members subject to Close-up Survey. | *i)* Suspect areas throughout the vessel.<br>*ii)* *(1 July 2018)* All exposed main deck plates full length and representative exposed first-tier superstructure deck plates (poop, bridge and forecastle decks).<br>*iii)* *(1 July 2006)* Three (3) transverse sections, one (1) in the amidships area, outside the line of cargo hatch openings within the cargo length area.<br>*iv)* *(1 July 2018)* All wind-and-water strakes, port and starboard, full length.<br>*v)* All cargo hold hatch covers and coamings (plating and stiffeners).<br>*vi)* Internals in forepeak and afterpeak tanks, including plating and stiffeners of forepeak and afterpeak tank bulkheads.<br>*vii)* *(1 July 2006)* Duct keel or pipe tunnel plating and internals.<br>*viii)* *(1 July 2006)* Each bottom plate, including lower turn of bilge within the cargo length area, all keel plates full length and also additional bottom plates in way of cofferdams, machinery space and aft end of tanks.<br>*ix)* Plating of sea chests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor. |

| *(a)* *Special Periodical Survey No. 1 (Age ≤5 Years)* | *(b)* *Special Periodical Survey No. 2 (5 < Age ≤10 Years)* | *(c)* *Special Periodical Survey No. 3 (10 < Age ≤15 Years) (1 July 2006)* | *(d)* *Special Periodical Survey No. 4 and Subsequent (Age > 15 Years) (1 July 2006)* |
|---|---|---|---|
| | | | *x)* Measurement, for general assessment and recording of corrosion patterns of structural members subject to Close-up Survey. |

*(Revise 7-A-16/Table 16, as follows:)*

## TABLE 16
## Thickness Measurement Requirements at Special Periodical Surveys *(1 July 2018)*
### Chemical Carriers ESP
### [See also 7-3-2/5.21.5]

| *(a)* *Special Periodical Survey No. 1 (Age ≤5 Years)* | *(b)* *Special Periodical Survey No. 2 (5 < Age ≤10 Years)* | *(c)* *Special Periodical Survey No. 3 (10 < Age ≤15 Years)* | *(d)* *Special Periodical Survey No. 4 and Subsequent (Age > 15 Years)* |
|---|---|---|---|
| *i)* Suspect areas throughout the vessel.<br>*ii)* One (1) transverse section of deck plating for the full beam of the ship within the cargo area, in way of a ballast tank, if any.<br>*iii)* Measurements, for general assessment and recording of corrosion patterns, of those structural members subject to Close-up Survey. | *i)* Suspect areas throughout the vessel.<br>*ii)* All main deck plating within the cargo area.<br>*iii)* One (1) transverse section within the cargo area.<br>*iv)* Selected wind-and-water strakes outside the cargo area.<br>*v)* Measurements, for general assessment and recording of corrosion patterns, of those structural members subject to Close-up Survey. | *i)* Suspect areas throughout the vessel.<br>*ii)* All main deck plating within the cargo area.<br>*iii)* Two (2) transverse sections within the cargo area, including at least one (1) section in way of a ballast tank within amidships 0.5*L*.<br>*iv)* All wind-and-water strakes within the cargo area, and selected wind-and-water strakes outside the cargo area.<br>*v)* Internals in forepeak and afterpeak tanks including plating and stiffeners of bulkheads.<br>*vi)* Measurements, for general assessment and recording of corrosion patterns, of those structural members subject to Close-up Survey. | *i)* Suspect areas throughout the vessel.<br>*ii)* All main deck plating within the cargo area, all exposed main deck plating outside the cargo area and all exposed first tier superstructure deck plating (poop, bridge and forecastle decks).<br>*iii)* A minimum of three (3) transverse sections within the cargo area, including at least one (1) section in way of a ballast tank within amidships 0.5*L*.<br>*iv)* All wind-and-water strakes, full length.<br>*v)* Internals in forepeak and afterpeak tanks including plating and stiffeners of bulkheads.<br>*vi)* Duct keel or pipe tunnel plating and internals.<br>*vii)* All keel plates full length. All bottom plates within the cargo area, also additional bottom plates in way of cofferdams, machinery space and aft end of tanks. |

| *(a) Special Periodical Survey No. 1 (Age ≤ 5 Years)* | *(b) Special Periodical Survey No. 2 (5 < Age ≤ 10 Years)* | *(c) Special Periodical Survey No. 3 (10 < Age ≤ 15 Years)* | *(d) Special Periodical Survey No. 4 and Subsequent (Age > 15 Years)* |
|---|---|---|---|
| | | | *viii)* Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor.<br>*ix)* Measurements, for general assessment and recording of corrosion patterns, of those structural members subject to Close-up Survey. |