

INTERNATIONAL SHIP CLASSIFICATION

Procedure for In-Water Surveys



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1. Introduction

The objective of this procedure is to provide a general guideline to International Ship Classification (hereinafter referred to as ISC) requirements to conform that, at the time of the bottom inspection survey, the condition of the underwater structure and equipment are being maintained in satisfactory condition for the intended service.

2. Scope and Application

A request for an In-Water Survey may be accepted as an alternative to Drydocking Survey provided that all arrangements and equipment meet the requirements specified in this procedure.

An In-Water Survey will generally not be allowed for 2 consecutive bottom inspections, unless specifically allowed by the Rules or the Administration.

3. General Conditions and Procedures

At the request of the Owner, ISC may consider accepting an In-Water Survey provided all arrangements and conditions meet the requirements of this procedure.

The In-Water Survey is to be witnessed by the attending Surveyor by IACS or National Standard approved diving organizations or persons. Certified copies of the approved certificates &/or particulars of the diver(s) should be submitted before commencement of the In-Water Survey.

If underwater cleaning of the hull is carried out, a report from the driving organisations or persons should be submitted with photos of the affected portions before & after cleaning.

Should there be damage or deterioration found during the survey that requires further attention, the Surveyor may require that the vessel be drydocked in order to undertake a detailed survey and necessary repairs.


4. Conditions of Limitations

An In-Water Survey may be restricted or limited where there is a record or indication of abnormal deterioration, existing condition of class or damage to underwater body, rudder or propeller.

4.1 Existing Conditions of Class

An In-Water Survey may not be granted or applicable if there are conditions of class for repairs to propeller, rudder, stern frame, underwater structure or sea valves. It may also be inapplicable if damage affecting the fitness of the vessel is found during the course of the survey.

If an existing Condition of Class requiring that the vessel's underwater parts are to be re-examined at the drydock due to grounding or stranding or other damage incidents, the request for an In-Water Survey may not be accepted without additional examination of the affected area(s).

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4.2 Thickness Measurements and Non-Destructive Testing (NDT)

Underwater or internal thickness measurements of suspected areas may be required in conjunction with the underwater inspection. Means for underwater NDT may also be required for fracture detection.

4.3 Plans, Drawings and Documents

Plans showing the following are to be provided to the attending Surveyor, together with the proposed inspection procedures for review well in advance of the inspection.


- i. Location of bottom shell seams and butts (Shell Expansion), including any doublers, straps, bottom plugs and underwater openings.
- ii. Hull markings or other means to orient the In-Water Survey and identifying photographs, which entail specific areas of plating (e.g location of bulkheads or tanks), sea suction and discharge openings, propeller blades and rudder surfaces. Such preparations may include a weld bead or centre punch grid system on the hull, a contrasting colour coating system, a movable grid or an acoustic locating system. Other suitable arrangements may be included for consideration.
- iii. Reference data and instructions to the diver or ROV operator for any necessary underwater operations such as means of access to sea chests to inspect the external side of hull connections and sea valves to rudder bearings to verify clearances of rudder bearings to propeller shaft strut and stern bearings or to athwartship thrusters, if fitted.
- iv. Most recent gauging report during the drydocking period and the as-built scantlings for the underwater body.

4.4 Underwater Conditions

- i. The underwater visibility and cleanliness of the hull below the waterline is to be clear enough to permit a meaningful examination which allows the Surveyor and In-Water Survey to verify the condition of the plating, appendages and the welding. Additional cleaning may be necessary. Overall or spot cleaning may be required at the discretion of the attending Surveyor.
 - a. Underwater visibility shall be at least four (4) meters.
 - b. If the Surveyor feels that better visibility is required, the shipowner will be given the option of either moving the ship to a location with better visibility or drydocking the ship.
- ii. As far as practicable, the underwater examination is to be carried out in protected waters preferably with weak tidal streams and currents.

4.5 Physical Features

The following physical features are to be incorporated into the vessel's design in order to facilitate the In-Water Survey. Access and provisions must be made to verify stern bearing

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and rudder bearing clearances. When verified, they are to be noted in the vessel's records for references at subsequent surveys.

i. Stern Bearing

- a. Means are to be provided to confirm that the seal assembly remains intact on oil lubricated bearings and to verify that the clearance or wear-down is within limits on the stern bearing.
- b. For oil-lubricated bearings, this may only require the review of operating history and onboard testing including accurate oil-loss records and a check of the oil for contamination by sea water or white metal &/or oil sample reports (considerations are to be included in the proposals for In-Water Survey). For wood or rubber bearings, an opening in the top of the rope guard and a suitable gauge or wedge is sufficient for checking the clearance.
- c. Any doubt on wear-down of oil-lubricated metal stern bearings from above examinations and review is to be further checked by external measurements or by the vessel's wear-down gauge, where the gauge wells are located outboard of the seals or the vessel can be tipped. For use of the wear-down gauges, up-to-date records of the base depths are to be maintained onboard the vessel. Whenever the seal sleeve is reviewed or machined, the base readings for the wear-down gauge are to be re-established and noted in the vessel's records and in the survey report.


ii. Rudder bearings

- a. Means and access are to be provided to verify the condition and clearance of the rudder bearings and verify that all parts of the pintle and gudgeon assemblies are intact and secure. This may require bolted access plates, threaded plugs and a measuring arrangement.
- b. Where the capability does not exist for the measurement of the rudder bearing clearance when the In-Water Survey is carried out, the rudder pintle clearance portion of the survey may be specially considered by the attending Surveyor after assessment of the physical condition and securing arrangements of the pintle and review of the operating history and the onboard testing. These considerations are to be included in the proposals for the In-Water Survey.

iii. Sea Suctions

Means are to be provided to enable the diving company to confirm that the sea suction openings are clear. Hinged sea suction grids may be used to facilitate this operation.

iv. Sea Valves

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Sea valves and their attachment to sea chests are to be examined externally, including expansion pieces in sea water cooling and circulating systems.

4.6 Procedures

i. Opening Meeting

An opening meeting is to be conducted with all parties involved such as vessel Master, owner's representative, diving company personnel and Surveyor in attendance.

This meeting discussion shall consist of the safety aspects of the dive, the flow of the In-Water Survey and operational condition of the vessel, such as having turning gear engaged to prevent turning of the propeller, anchor chain windlass brakes engaged, etc.

A contingency plan for various emergency situations is to be emphasised during the discussion to ensure safety of personnel lives, protection of the vessel and the marine environment.

ii. Exposed Areas

An examination of the outside of the shell plating above the waterline and exposed portions of appendages, such as propeller, rudder and rudder bearings, is to be carried out by the attendings Surveyor. Means are to be provided to enable the Surveyor to accomplish this visual inspection.

iii. Underwater Areas

An examination of the entire vessel below the waterline is to be carried out by an IACS or National Standard approved in-water survey company or persons using, at minimum, a video recording medium with two-way communication. The progress of the in-water survey is to be monitored by the attending Surveyor as required and can be supplemented with photographic or video documentation. Items that are to be recorded are listed non-exhaustively below:

- a. Vessel draft
- b. Time and point of commencement
- c. Duration of the in-water survey
- d. Condition of hull markings
- e. Random areas of plating
- f. All sea chests, inlets and discharges
- g. Rudder
- h. Pintles
- i. Propeller
- j. Time and point of completion



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The above examination is to be supplemented by the company's or persons' report describing and attesting to the conditions found. A copy of this report and pertinent photographs and videos are to be provided to the attending Surveyor. Documentation to be retained onboard.

iv. **Damage Areas**

Damage and corrosion areas are to be videoed &/or photographed. Internal examination or thickness gauging of such locations may be necessary, as determined by the attending Surveyor. Means are to be provided for orientating and identifying the underwater surfaces in the photographs.

v. **Planning**

The equipment and procedure for observing and reporting the survey are to be discussed with the parties involved prior to the In-Water Survey and suitable time is to be allocated to the company or persons involved to test all equipment.