

Australian Transport Council

Uniform Shipping Laws Code

Section 14: Surveys and Certificates of Survey

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PART 1—PRELIMINARY

1. This Section is to be read in conjunction with the Introduction, Definitions and General Requirements Section.
2. This Section applies to all vessels under the jurisdiction of an Authority which are required to be surveyed at intervals and to carry on board evidence of compliance with the survey requirements of that Authority.
3. In this Section, unless otherwise indicated:
 - 3.1 ‘authorised person or society’—
a person appointed or recognised by the Authority, or a society or body and its servants appointed or recognised by the Authority, capable by reason of special qualifications of performing surveys and inspections;
 - 3.2 ‘equipment’—
in relation to a vessel, includes every thing or article belonging to or to be used in connection with, or necessary for the operation of the vessel and, includes life-saving appliances, fire-fighting appliances, miscellaneous equipment, radio equipment, lights and sound signals and medical stores;
 - 3.3 ‘inspection’—
a visual inspection performed by an approved person;
 - 3.4 ‘machinery’—
means boilers, engines, pumps, electrical and ancillary equipment used in the operation of the vessel;
 - 3.5 ‘survey’—
a thorough examination performed by, or in the presence of a surveyor or an authorised person or society.
 - 3.6 ‘prescribed form’—
means a form designed for the purpose, provided by the Authority. That form is to be based on those mentioned in Appendix 1.

PART 2—SURVEY REQUIREMENTS

- A. **Initial Survey**
 4. The Authority shall require all new vessels constructed under its jurisdiction, and all existing vessels being brought under survey for the first time, to undergo an Initial Survey. The

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purpose of this survey shall be to satisfy the Authority that the vessel complies with the laws and regulations of that Authority.

5. The owner of a vessel to be constructed or of an existing vessel being brought under survey for the first time shall forward to the Authority an 'Application for Initial Survey' as prescribed by the Authority together with the appropriate survey fee.
6. An application for Initial Survey shall be accompanied by the following necessary information:
 - 6.1 type and purpose of vessel;
 - 6.2 intended area of operations;
 - 6.3 whether vessel is to be classed and if so, name of the Classification Society (for existing vessel, details of any Classification);
 - 6.4 plans and details of hull, machinery and equipment, as required by the Authority;
 - 6.5 such other information as the Authority may require; and
 - 6.6 where a vessel is, or is to be classed, the owner shall forward to the Authority only such plans and details as are relevant to the Authority's own survey and the other plans and details shall be forwarded to the Classification Society;
 - 6.7 the information in respect of a new vessel shall be forwarded prior to the commencement of construction and construction shall not begin until approval has been obtained from the Authority;
 - 6.8 the information in respect of an existing vessel shall be forwarded prior to the date of initial survey in such time as may be determined by the Authority.
7. An initial survey shall be carried out in full by the Authority's surveyors. On completion of the initial survey, the surveyors shall forward to the Authority in writing a report of the condition of the hull and its machinery and equipment and shall make a written declaration of such condition. The report and declaration shall be as prescribed by the Authority.
 - 7.1 The Authority may accept such part of the survey as performed by an authorised Society.
 - 7.2 The survey of glass reinforced plastic hulls during manufacture should be carried out in accordance with the recommended procedure set out in Appendix III.

B. Subsequent Periodic Surveys and Inspections

8. Subsequent to completion of the initial survey, the Authority shall require all vessels under its survey to undergo periodic surveys and inspections to satisfy itself that such vessels continue to comply with its laws and regulations. However the Authority may accept such part of the survey as performed by an authorised Society.
9. The intervals between surveys shall be as follows:
 - 9.1 A vessel's equipment shall be surveyed at intervals not exceeding 1 year.
 - 9.2 A vessel's hull, structure, machinery and fittings shall be surveyed at intervals specified:
 - (a) in an approved survey program; or
 - (b) in Appendix II, except that the Authority may require such other lesser intervals if it is considered desirable because of:
 - (i) the age of the vessel;
 - (ii) the service of the vessel, (passenger, cargo or fishing);
 - (iii) the area or proposed area of operation of the vessel;
 - (iv) the materials used and the method of construction;
 - (v) the type of underwater fittings;
 - (vi) the size of the vessel; or
 - (vii) any other reason.

10. An owner may submit to the Authority for its approval, a survey program for a vessel. In drawing up such a program consideration shall be given to the following:
 - 10.1 the survey intervals specified in Appendix II; or
 - 10.2 such periods as may be required by the Authority.
 11. Where an approved survey program is being followed the survey of particular items shall be carried out as detailed in such program, except where the Authority directs otherwise or agrees to modify, defer or cancel the survey program.
 12. It shall be the responsibility of the owner to make an 'Application for Periodic Survey' as prescribed by the Authority, giving such notice as is required by the Authority, and to forward such application together with the appropriate fee.
 13. It shall be the responsibility of the owner to make his vessel available for survey at the agreed time and place.
 14. Where a survey or inspection of a vessel's hull is to be carried out, the owner shall cause the vessel to be withdrawn from the water and placed in a satisfactory manner to enable the surveyor to make an external examination of the hull, underwater fittings, shafting, propeller(s), rudder(s) and any other appurtenances. Prior to such examination the hull shall have been washed and cleaned, but shall not have been painted.
 15. During the course of a survey or inspection the Authority's surveyor shall have discretion to require the opening up for examination of any other part or parts of the vessel including removal of linings and permanent ballast where applicable.
 16. After a survey or inspection the surveyor shall make as prescribed by the Authority, a duplicate List of Repairs and Deficiencies which shall be counter signed by the owner who shall retain one copy. The survey will not be completed until such repairs and/or deficiencies have been made good to the satisfaction of the surveyor.
 17. On completion of a survey or inspection a surveyor shall make his report and declaration as prescribed by the Authority.
 18. On completion of an item or stage of an approved survey program, the surveyor shall sign the owner's copy, the vessel's copy and the Authority's copy of the program documents, and shall also make a report to the Authority concerning the item or stage surveyed, and shall make a declaration concerning such report.
 19. A surveyor, when making a survey or inspection of a vessel shall be accompanied by the owner.
- C. Surveys and Inspections other than Initial and Periodic**
20. Surveyors, or authorised persons, in the execution of their duties, may board any vessel at all reasonable times to make an occasional or random inspection.
 21. The owner of a vessel shall report to the Authority any special factors which may influence the Authority's survey requirements for that vessel including any change of trade, operations and alterations to structure or machinery which have occurred since the previous survey.
 22. The owner of a vessel shall make a report to the Authority as prescribed by the Authority concerning any accident or damage to the vessel, or any death or injury to persons occurring on the vessel. Such report shall be forwarded to the Authority within 48 hours of such occurrence for a vessel in port, and, within 48 hours after the first arrival at a port, for a vessel at sea. Where any part of a vessel's hull, structure, machinery, fittings or equipment is open for routine maintenance or substantial repair, then the owner shall inform the Authority so that a survey may take place.

PART 3—CERTIFICATES

A. Issue of Certificate

23. Upon the receipt of a satisfactory Report and declaration of each surveyor performing the Initial Survey of a vessel, the Authority shall prepare a Certificate of Survey, as prescribed

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by the Authority and Record of Survey describing the hull, machinery and equipment of the vessel.

24. The Certificate of Survey shall contain the following items:

Name of Vessel;

Identifying number of Vessel;

Official Number (if registered vessel);

Number of Passengers;

Number of Crew;

Class of Vessel;

Limits of Operation(s);

Measured Length and/or Gross Tonnage;

Title of Issuing Authority;

Signature of authorised officer(s);

Period of validity from to ;

Statement that vessel complies with the survey requirements of the Authority.

25. The original of the Certificate of Survey shall be issued to the owner or his agent.

26. A vessel under survey to an Authority shall be required to carry evidence on board that the vessel complies with the appropriate survey requirements of that Authority.

26.1 This evidence shall consist of the display of the original or a copy of the Certificate of Survey, or a plasticised document, or a sticker or metal plate referring to the Certificate of Survey, as required by the Authority.

26.2 The evidence, if not the original or a copy of the Certificate of Survey, shall contain the following details:

Name of Vessel;

Identifying number of Vessel;

Class of Vessel;

Measured Length and/or Gross Tonnage;

Maximum No. of persons carried;

Limits of operation(s);

Issuing Authority and signature of issuing officer(s); and

Date of expiry.

26.3 This evidence shall be displayed near the steering position, except on passenger vessels, where the evidence shall be displayed in such a position that it is readily visible to passengers.

26.4 If the Authority so requires, the evidence carried on board the vessel shall be placed in such a position on board that it shall be visible from outside the vessel.

27. The owner of a vessel shall not operate that vessel without the approval of the Authority unless:

27.1 A Certificate of Survey has been issued for such vessel; and

27.2 Evidence of compliance with the appropriate survey requirements of the Authority is displayed on board.

B. Revalidation or Renewal of Certificate of Survey

28. Upon the satisfactory completion of any subsequent survey of a vessel and the receipt of the Report and declaration of each surveyor, the Authority may then issue for display on the vessel either:

- 28.1 a new copy of the evidence required to be carried on board under clause 26; or
- 28.2 a statement of revalidation, in a suitable form, that the evidence carried on the vessel under clause 26 shall remain valid until the new expiry date indicated, (which date shall usually be the due date of the next survey).
29. The Authority on satisfactory completion of a subsequent survey, may then issue to the owner the copies referred to in sub-clauses 28.1 and 28.2.
30. If the Authority so requires upon the satisfactory completion of a cycle of an approved survey program for a vessel and the receipt of the Report and declaration of each surveyor, the Authority may then issue for display on the vessel either:
- 30.1 a new copy of the evidence required to be carried on board under clause 26; or
- 30.2 a statement of revalidation, in a suitable form, that the evidence carried on the vessel under clause 26 shall remain valid until the new expiry date indicated, (which date shall usually be the due date of the completion of the following cycle of the approved survey program).
31. The Authority on satisfactory completion of a cycle of a survey program may then issue to the owner the copies referred to in sub-clauses 30.1 and 30.2.
- C. Extension, Suspension, Cancellation**
32. **Application for extension**
- 32.1 The owner(s) of a vessel under survey by an Authority may apply in writing to the Authority for an extension of the certificate of survey carried by the vessel in accordance with clause 25.
- 32.2 This application shall be accompanied by the appropriate fee, as determined by the Authority.
33. **Terms of an extension**
- 33.1 In any case in which the Authority is satisfied that the immediate survey of a vessel is impracticable or would occasion unreasonable or unnecessary expense or inconvenience, that Authority may extend the time for re-survey for any period not exceeding three months. An extension may be granted notwithstanding that the certificate of survey has expired.
- 33.2 The Authority may require an inspection and report on the condition of a vessel to be made before granting the extension of a certificate of survey.
- 33.3 Where the Authority grants an extension of the certificate of survey it shall issue to the owner of the vessel a notice of extension.
34. Where the Authority is satisfied, by reason of a report that a vessel under its survey fails to comply, for any reason, with the appropriate survey requirements, that Authority may suspend the certificate of survey and the owner shall be advised accordingly. The owner when so advised, shall not operate the vessel without the approval of the Authority.
35. Where the certificate of survey has been suspended or cancelled the Authority may require it and the evidence of survey to be delivered up as directed.

PART 4—MISCELLANEOUS

36. For the purposes of control and co-ordinating of the survey or inspection of vessels holding certificates of survey issued by the Authority it shall require the owner to advise that Authority within such period as may be required that:
- (a) a vessel has been sold and the name and address of the new owner;
- (b) the intention to withdraw the vessel from commercial operations;
- (c) the transfer of the vessel into the jurisdiction of another Authority for an extended period; or
- (d) any proposed alteration to the vessel or its manner of operation.

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37. An Authority may accept the certificate issued by another Authority and dispense with the survey of that vessel during the current validity of that certificate.
38. Where a vessel which is carrying out an approved survey program proceeds to the jurisdiction of another Authority, the survey program of that vessel may be continued subject to the approval of that Authority.

PART 5—SINGLE VOYAGE TOWAGE PERMIT

39. This Part applies to all vessels which are engaged in towing or being towed on a seagoing voyage.
40. This Part does not apply to:
- 40.1 regular towage of cargo on a commercial basis;
 - 40.2 the harbour towage of vessels;
 - 40.3 the towage-assistance of oil-exploration structures, semi-submersible oil platforms etc. which are self propelled;
 - 40.4 a vessel in distress at sea or stranded in a position where immediate action by the towing vessel is vital to the saving of life and/or property.
41. The Authority shall require all vessels which are to be towed on a sea-going voyage to undergo an inspection to determine their fitness to be towed. Such vessels may only be towed on a sea-going voyage after the Authority shall have issued a 'Towage Permit' as prescribed by the Authority.
42. The owner of a vessel intended to be towed shall forward to the Authority an 'Application for Towage Permit' as prescribed by the Authority, together with the appropriate survey fee.
43. An 'Application for Towage Permit' shall be accompanied by the following necessary information regarding the vessel to be towed.
- 43.1 nature of tow (e.g. ferry, cargo ship, unloaded barge etc);
 - 43.2 name, official number and port of registry;
 - 43.3 details of any current certificates relating to the tow;
 - 43.4 point of departure and destination of tow;
 - 43.5 details of towing operation i.e. manning (if any) estimated departure date, estimated towing speed, duration of operation, estimated arrival date; and
 - 43.6 such other information as the Authority may require.
44. The owner of the vessel to be towed, or the owner, master or agent of the towing vessel shall be required to forward the following information to the Authority regarding the towing vessel;
- 44.1 name, official number and port of registry;
 - 44.2 type of vessel;
 - 44.3 details of any current certificates relating to the towing vessel;
 - 44.4 propulsion power and or bollard pull; and
 - 44.5 any such other information as the Authority may require.
45. In general due consideration should be given to the following main aspects when inspecting a vessel for fitness to be towed:
- 45.1 the structural condition of the hull, taking into account the intended voyage;
 - 45.2 the prevention of water entering the hull, by the provision of adequate means of closing all openings;
 - 45.3 the stability in the towed condition;
 - 45.4 the towing arrangements; and
 - 45.5 to ensure compliance with the Collision Regulations Section.

**Appendix I
SURVEY FORMS**

The following survey forms are examples to assist Authorities in designing their own survey documents:

1. Application for Initial Survey
2. Application for Periodic Survey
3. Certificate of Survey
4. Survey Plate, Revalidation Plate
5. Renewal Permit
6. Application for Extension of Certificate of Survey
7. Extension of Certificate of Survey
8. Notice of Expiry of Certificate of Survey
9. Notice of Suspension/Cancellation
10. Report of Accident or Other Occurrence
11. Application for examination of plans for construction or alteration of a vessel
12. Application for Towage Permit
13. Towage Permit

Form 1

**NAME OF AUTHORITY
APPLICATION FOR INITIAL SURVEY
Marine Act**

To:

PARTICULARS OF VESSEL

Official use
Only

Intended Name of Vessel		
Intended Port of Registry		
Measured Length		
Type of Vessel		
Construction of Vessel		
Intended Area(s) of Operation		
Number of Crew		
Number of Passengers		
If vessel is to be classed		
Name of Society		

Name and Address of Owner(s)

Nature of Survey Required

Place, date and time where vessel will be available for survey

Date when Construction commences

or

Date of Construction (for existing vessel)

.....
Owner/Agent
Date / /19

OFFICIAL USE ONLY

Date Application Received	Fee Received
Date Survey Commenced	Date Survey Completed
Surveyor's Report Received	Issue of Certificate recommended
Certificate Issued: No.	Licence of Fishing No. of Vessel

NAME OF AUTHORITY
APPLICATION FOR INITIAL SURVEY
 Marine Act
PARTICULARS OF VESSEL

Name of Vessel

Identifying Number of Vessel

Registered Number of Vessel

Name and Address of Owner(s)

Nature of Survey Required

Place, Date and Time where vessel
 will be available for survey

Any alterations or proposed
 alterations

Remarks

.....
 Owner/Agent
 Date / /19

OFFICIAL USE ONLY

Date Application Received	Fee Received
Date Survey Commenced	Date Survey Completed
Surveyors' reports received	Revalidation recommended
Revalidation issued: No.	Type of revalidation

**NAME OF AUTHORITY
CERTIFICATE OF SURVEY
Marine Act**

Name of Vessel _____
 Identifying Number of Vessel _____
 Registered Number of Vessel _____
 Port of Registry _____
 Measured Length _____
 Type of Vessel _____
 Construction of Vessel _____
 If vessel classed, Name of Society _____
 Name and Address of Owners _____

Limits of Operation	Class of Vessel	Persons on Board		
		Crew	Passengers	Total

This is to certify that the provisions of the 'Marine Act 19 ' with respect to the survey of the vessel described above, and the making of Declarations thereof have been complied with.

Period of Validity from _____ to _____

.....
 Chairman

SURVEY PLATE CARD OR TRANSFER

MARINE ACT		8
No. _____	Class _____	
Meas. L _____	Material _____	
Max. No. _____	Persons Carried _____	
Limits _____	_____	
Secretary		

Number of month
 in which periodic
 surveys fall due

MARINE ACT	
REVALIDATION OF SURVEY PLATE 1974	

RENEWAL PERMIT

<p>NAME OF AUTHORITY NO. XXXXXX</p> <p>19 8 75</p>

**NAME OF AUTHORITY
CERTIFICATE OF SURVEY
RENEWAL NOTICE NO. XXXX**

This is to Certify that Certificate of Survey No., unless suspended or cancelled shall remain valid until

Dated at this day of 19

(Signature)

APPLICATION FOR EXTENSION OF CERTIFICATE OF SURVEY

To:

Name of Vessel	Identifying No. of Vessel
Port of Registry	Registered No. of Vessel
	Type of Vessel

Declaration Prior to the Extension of a Certificate

I/We, the undersigned, hereby declare that the above vessel has not been subject to any accident or other occurrence which would raise any doubt as to the vessel continuing to be seaworthy and properly equipped to operate in the limits prescribed by the Certificate of Survey, and that there is not, to my/our best knowledge, any reason why an extension, as permitted under the Marine Act, should not be granted.

Signed at this day of, 19.....

_____ Master
 _____ Owner

**Marine Act
EXTENSION OF CERTIFICATE OF SURVEY**

Name of Vessel	Identifying No. of Vessel
Port of Registry	Registered No. of Vessel
	Class of Vessel

Under Section of the Marine Act, 19..... the currency of this Certificate is extended for a period not exceeding month(s) from the expiration date of the certificate.

Port Signed

Secretary etc

Date

THIS DOCUMENT IS TO BE ATTACHED TO THE CERTIFICATE OF SURVEY

Marine Act

NOTICE OF EXPIRY OF CERTIFICATE OF SURVEY

Name of Vessel Identifying No. of Vessel
Port of Registry Registered No. of Vessel
Class of Vessel

Under Section of the Marine Act, 19....., you, owner of the above vessel are hereby reminded that the Certificate of Survey of the vessel expires on

If no application for extension of the above Certificate of Survey or no application for survey is received by this Authority before such date, the vessel will be declared 'out of survey' and shall not be taken to sea or remain at sea.

Issued at this day of, 19.....

Secretary

Marine Act

NOTICE OF SUSPENSION * CANCELLATION

Name of Vessel Identifying No. of Vessel
Port of Registry Registered No. of Vessel
Class of Vessel

Under Section of the Marine Act,, you, owner of the above vessel are hereby advised that:

- 1.* the validity of the Certificate of Survey of the vessel is suspended until such time that the vessel is again reported to comply with survey requirements.
2.* The Certificate of Survey of the vessel is cancelled.

Issued at this day of, 19.....

Secretary

* Indicate which term is applicable.

Marine Act

REPORT OF ACCIDENT OR OTHER OCCURRENCE

To:

PARTICULARS OF VESSEL

Name of Vessel
Identifying No. of Vessel
Registered No. of Vessel
Port of Registry
Measured Length
Type of Vessel
Construction of Vessel
If vessel classed,
Name of Society
Name and Address of Owner(s)
Date of Occurrence
Place of Occurrence
Number of Persons on Board
Crew
Passengers on a Voyage from
to
Master's Name
Master's Address

APPLICATION FOR TOWAGE PERMIT

To

PARTICULARS OF VESSEL TO BE TOWED

Name and Port of Registry

Registered or Identifying No.

Type of Vessel

Name and Address of Owners

Details of any Certificates in Force

Place, Date and Time where vessel will be available for inspection

Date when vessel last slipped

PARTICULARS OF TOWING VESSEL

Name and Port of Registry

Type of Vessel

Name and Address of Owners

Details of any Certificates in Force

Propulsion power or bollard pull

DETAILS OF TOW

Point of Departure, Date and Time

Destination

Estimated Towing Speed

Estimated Date of Arrival

Manning

Owner

Date

OFFICE USE ONLY

Date Application Received Fee Received

Date of Inspection Surveyors Report received

Date Towage Permit Issued Conditions

Date Tow Departed Date Tow Arrived

Form 13

NAME OF AUTHORITY

Marine Act

TOWAGE PERMIT

Name of Vessel and Port of Registry

Registered or Identifying Number

Type of Vessel

Name and Address of Owner/s

Details of Certificates in Force

This is to certify that the above vessel is permitted to be towed on a sea-going voyage from to by the vessel, departing on or about and arriving on or about subject to the following conditions.

Chairman

Date / /19

Appendix II

In this Appendix items listed shall be subjected to a survey unless otherwise indicated.

PART I VESSELS LESS THAN 35 METRES IN LENGTH

Annual Surveys

1. Equipment.
2. Running trial of each main engine and associated gear box.
3. Operational test of bilge pumps, bilge alarms and bilge valves.
4. Operational test of all valves in the fire main systems.
5. Operational test of all sea injections and overboard discharge valves and cocks.
6. Operational test of main and emergency means of steering.
7. Running trial of all machinery essential to the safe operation of the vessel.
8. Inspection of all pipe arrangements.
9. General examination of machinery installation and electrical installation.
10. All safety and relief valves associated with the safe operation of the vessel to be set at the required working pressure.
11. Pressure vessels, and associated mountings used for the generation of steam under pressure or the heating of water to a temperature exceeding 99°C.
12. Inspection of the liquified petroleum gas installation.
13. Inspection of cargo handling, fishing and trawling gear.
14. Inspection of escapes from engine room and accommodation spaces.
15. Inspection of personnel protection arrangements in machinery spaces.
16. Inspection of casings, superstructures, skylights, hatchways, companionways, bulwarks and guard rails, ventilators and air pipes, together with all closing devices.
17. Inspection of ground tackle.

Two Yearly Surveys

18. Hull externally and internally except in way of tanks forming part of the structure.
19. Sea injection and overboard discharge valves and cocks.
20. Inspection of propellers, rudders and underwater fittings.
21. Pressure vessel and associated mountings, of an air pressure/salt water system having a working pressure of more than 275 kPa.

Four Yearly Surveys

22. Each screw and tube shaft.
23. Anchors and cables to range.
24. Chain locker internally.
25. Tanks forming part of the hull, other than oil tanks, internally.
26. Void spaces internally.
27. Compressed air pressure vessels having a working pressure of more than 275 kPa and associated mountings.
28. Pressure vessel and associated mountings of an air pressure/fresh water system having a working pressure of more than 275 kPa.
29. Cargo handling, Fishing and trawling gear.
30. Insulation tests of all electrical installations above 32V A.C. or D.C.

Eight Yearly Surveys

- 31 Each rudder stock and rudder stock bearing.
- 32 Steering gear.
- 33 Hull in way of removable ballast.
- 34 Selected sections of internal structure in way of refrigerated space.

Twelve Yearly Surveys

- 35 Fuel oil tanks internally.

Other Survey Periods

- 36 The survey period for an item not specified in this Part shall be that period determined by the Authority.

Appendix II**PART II VESSELS OF 35 METRES IN LENGTH AND OVER****Annual Surveys**

- 1 Equipment.
- 2 Running trial of each main engine and associated gear box.
- 3 Operation test of all valves in the fire main system.
- 4 Operational test of all sea injection and overboard discharge valves and cocks.
- 5 Operational test of main and emergency means of steering.
- 6 Running trial of all machinery essential to the safe operation of the vessel.
- 7 Inspection of all pipe arrangements.
- 8 General inspection of machinery installation and electrical installation.
- 9 All safety and relief valves associated with the safe operation of the vessel to be set at the required working pressure.
- 10 Pressure vessels used for the generation of steam at a pressure not exceeding 345 kPa or for heating water to a temperature exceeding 99°C together with their associated mountings (not being a boiler referred to in items 16 and 23).
- 11 Inspection of the liquified petroleum gas installation.
- 12 Inspection of cargo handling, fishing and trawling gear.
- 13 Inspection of escapes from engine room and accommodation spaces.
- 14 Inspection of personnel protection arrangements in machinery spaces.
- 15 Inspection of casings, superstructures, skylights, hatchways, companionways, bulwarks and guard rails, ventilators and air pipes, together with all closing devices.
- 16 A boiler and its mountings where the boiler has been in service for more than eight years (not being a pressure vessel referred to in item 10).
- 17 An evaporator and its mountings which has been in service for more than eight years, and in which the operating pressure is above atmospheric.

Two Yearly Surveys

- 18 Hull externally and internally except in way of tanks forming part of the structure.
- 19 Sea cocks and valves, bilge injection valves and overboard discharge valves, of ferrous construction.
- 20 Inspection of propellers, rudders and under water fittings.
- 21 Operational test of bilge pumps, bilge valves and bilge alarms.

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- 22 Pressure vessel and associate mountings of an air pressure/salt water system having a working pressure of more than 275 kPa.
- 23 A boiler and its mountings where the boiler has been in service for less than eight years (not being a pressure vessel referred to in item 10).
- 24 An evaporator and its mountings, which has been in service for less than eight years, and in which the operating pressure is above atmospheric.

Four Yearly Surveys

- 25 Sea cocks and valves, bilge injection valves and overboard discharge valves, of non ferrous construction.
- 26 Bilge pumps.
- 27 Independent pumps used for pumping sea water, fresh water, fuel oil, condensate and boiler feed.
- 28 Air receivers and mountings, selected sections of air piping and explosion protection devices.
- 29 Main propulsion intermediate shafting.
- 30 Evaporators and mountings in which the operating pressure is at or below atmospheric pressure.
- 31 Anchors and cables and all links and joining shackles.
- 32 Windlass.
- 33 Condensers, lubricating oil coolers, jacket water coolers, drain coolers, distillers and air ejectors.
- 34 Boiler feed water heaters.
- 35 Oil fuel heaters.
- 36 Gear boxes to such extent necessary to ensure satisfactory condition.
- 37 Screw and tube shafts.
- 38 Internal combustion engined auxiliary generators other than emergency generators.
- 39 Turbo-generators.
- 40 Main engine, steam turbines.
- 41 Main engine, internal combustion engines.
- 42 Selected lengths of steel steam pipes having bolted joints and carrying steam at a temperature exceeding 455°C. Also hydraulic test of those lengths.
- 43 Steel pipes having welded joints carrying steam at a temperature exceeding 455°C. Also hydraulic test of those lengths.
- 44 Pressure vessel and associated mountings of an air pressure/fresh water system having a working pressure of more than 275 kPa.
- 45 After the twelfth year in service all solid drawn copper steam pipes having an internal diameter exceeding 75 mm are to be annealed and hydraulically tested.
- 46 After the twelfth year in service selected lengths of steel steam pipes having an internal diameter exceeding 75 mm and carrying steam not exceeding 455°C are to be hydraulically tested.

Five Yearly Surveys

- 47 Peak tanks internally. Peak tanks are to be tested to a head sufficient to give the maximum pressure that can be experienced in service.
- 48 Deep tanks (except those tanks used exclusively for oil fuel) internally. All deep tanks are to be tested to a head sufficient to give the maximum pressure that can be experienced in

service. Deep tanks used exclusively for oil fuel need not be examined internally subject to satisfactory external survey and hydraulic test.

- 49 Double bottom tanks (except those tanks used exclusively for oil fuel) internally. All double bottom tanks are to be tested to a head sufficient to give the maximum pressure that can be experienced in service. Double bottom tanks used exclusively for oil fuel need not be examined internally subject to satisfactory external survey and hydraulic test.
- 50 Ballast tanks and tanks forming part of the ship's main structure internally. Ballast tanks and tanks forming part of the ship's structure are to be hydraulically tested to a head sufficient to give the maximum pressure that can be experienced in service.

Six Yearly Survey

- 51 Independent pumps used solely for pumping lubricating oil (except those pumps used for the supply of oil under pressure to hydraulically operated machinery).

Eight Yearly Surveys

- 52 Independent pumps used for the supply of lubricating oil under pressure to hydraulically operated machinery.
- 53 Electrically operated or hydraulically operated steering gear.
- 54 All solid drawn copper steam pipes having an internal diameter exceeding 75 mm are to be annealed and hydraulically tested.
- 55 Selected lengths of steel steam pipes having an internal diameter exceeding 75 mm and carrying steam at a temperature not exceeding 455°C are to be hydraulically tested.

Other Survey Periods

- 56 Emergency generator i.e. generator used normally for emergency purposes shall be surveyed once in the first 12 years and there after once in every subsequent period of eight years.
- 57 One deep tank that is used exclusively for fuel oil to be surveyed internally every five years starting when the ship is 10 years old and all such deep tanks to be surveyed by the time the ship is 25 years old.
- 58 At least one double bottom tank that is used exclusively for fuel oil to be surveyed internally every five years starting when the ship is 10 years old and all such double bottom tanks to be surveyed by the time the ship is 25 years old.
- 59 The survey period for an item not specified in this Part shall be that period determined by the Authority.

Appendix III

RECOMMENDED PROCEDURE FOR THE SURVEY OF G.R.P. HULLS DURING MANUFACTURE

- 1 This procedure shall be read in conjunction with 1.4 to 1.6 inclusive of sub-section 5K of the U.S.L. Code.
- 2 The recommended procedure for the survey of G.R.P. hulls is as follows:
- (a) each vessel shall be sighted by a Surveyor at the stages of lay up nominated on the G.R.P. Construction Survey Report sheet;
 - (b) the builder shall keep an accurate record of the mass of all reinforcement and resin used in both the hull laminate and the deck and superstructure laminate. The quantities shall be entered in the G.R.P. Construction Survey Report;
 - (c) on removal from the mould the hull shall be thickness gaged in at least the centre of each panel and, where additional reinforcement such as chine, keel and bottom and side shell to transom is required by this U.S.L. Code, the gauge readings shall be entered on the G.R.P. Hull Thickness Report.
- 3 The surveyor shall inspect the hull at each stage of fabrication to ensure that:

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- (a) the reinforcement is uniformly impregnated and thoroughly wetted through and that there are no resin rich areas;
 - (b) the reinforcement is in intimate contact with the gel coat or preceding plies;
 - (c) the resin is correctly catalysed;
 - (d) there are no significant air inclusions;
 - (e) there is no foreign material in the laminate;
 - (f) there is no uneven distribution of the reinforcement due to excessive pressure being used while rolling-out;
 - (g) the correct overlap is used at joints between plies of reinforcement;
- Any deficiency shall be recorded and prompt corrective action taken.

4 *G.R.P. Construction Survey Report*

The builder shall complete this report in duplicate. One copy is to be held by the builder and the other returned to the Authority on completion of laminating. The builder shall notify the Authority when an inspection is required. When each inspection has been made, the surveyor shall sign the appropriate entry in the report, which the builder shall countersign. The next stage of the lamination may then commence. To determine the quantity of reinforcement it is sufficient that the builder records the number of coils of rovings and the area of woven roving mat used in square metres. The drum of resin may be mounted on a weighing machine, and the weight on commencement and at the finishing of laminating recorded.

5 *G.R.P. Hull Thickness Report*

This report shall be completed by the Authority in duplicate. One copy shall be given to the builder and the other retained by the Authority. Any areas of laminate which are less than the required thickness shall be made good.

- 6 The glass content and the mass/m² reinforcement of the laminate shall be determined using the following equations:

Glass content

$$\begin{aligned} &= \frac{\text{Total mass of glass}}{(\text{Total mass of resin} \times 0.93) + \text{total mass of glass}} \\ &= \frac{\text{Laminate reinforcement}}{2.55 - (1.35 \times \text{glass content})} \quad \text{g/m}^2 \\ &= \frac{3000 \times \text{glass content}}{2.55 - (1.35 \times \text{glass content})} \quad \text{g/m}^2 \end{aligned}$$

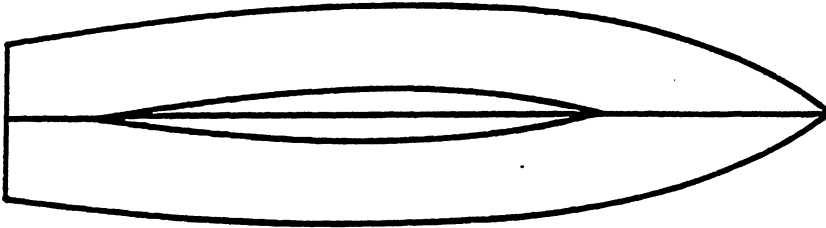
NAME OF VESSEL					
OWNER					
BUILDER					
HULL LAY-UP	BOTTOM				
	SIDE				
	DECK				
	SUPERSTRUCTURE				
FRAME LAY-UP		WEB FRAMES		LONGITUDINAL FRAMES/GIRDERS	
		BOTTOM	SIDE	BOTTOM	SIDE
HEIGHT (mm)					
FACE AREA (mm)					
WEB THICKNESS (mm)					
MATERIALS		TYPE	MANUFACTURER	WEIGHT USED (kg)	
				HULL	DECK AND S/STRUCTURE
GELCOAT					
RESIN					
CS MAT					
WOVEN ROVINGS					
CHOPPED ROVINGS					

INSPECTION OF HULL DECK SUPERSTRUCTURE LAY-UP

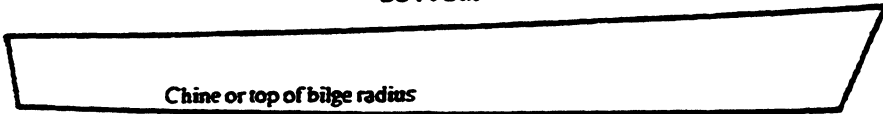
ON COMPLETION OF:	DATE	TEMP(°C)	HUMID(%)	SATIS-FACTORY	SURVEYOR	BUILDER
HULL						
GELCOAT & 1ST CSM/CR						
1ST CR-WR-CR						
2ND CR-WR-CR						
3RD CR-WR-CR						
WEB FRAMES						
LONGITUDINAL FRAMES						
TRANSVERSE FRAMES						
LONGITUDINAL GIRDERS						
DECK						
GELCOAT & 1ST CSM/CR						
1ST CR-WR-CR						
2ND CR-WR-CR						
3RD CR-WR-CR						
DECK GIRDERS						
BEAMS & BEAM SHELF						
SUPERSTRUCTURE						
GELCOAT & 1ST CSM/CR						
1ST CR-WR-CR						
2ND CR-WR-CR						
BEAMS & KNEES						



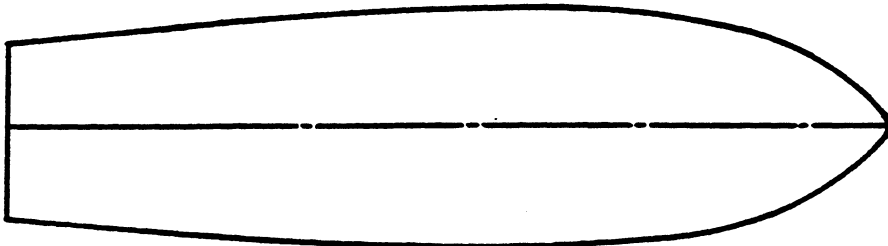
PORT SIDE



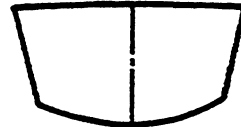
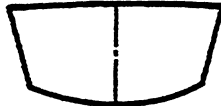
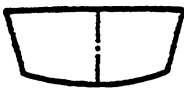
BOTTOM



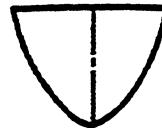
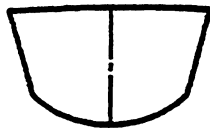
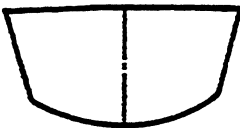
STARBOARD SIDE



DECK



Location: TRANSOM



TRANSOM BULKHEAD

Approved thicknesses (mm)

BOTTOM
TOPSIDE
TRANSOM
KEEL
STEM

CHINE BOTTOM

NAME/IDENT.
PLAN No.
BUILDER
OWNER
SURVEYOR
DATE
SIGNED

Appendix IV**ALTERNATIVE SURVEY PROCEDURES FOR GRP VESSELS**

1. This Appendix shall be read in conjunction with 1.4 to 1.6 inclusive of Sub-section 5K of this Code.
2. *Vessels Holding a Valid Certificate of Class*
 - 2.1 Where a vessel holds a valid certificate of class issued annually by a Classification Society, all plans approved by the Society shall be submitted to the Authority together with other information required by 14.2.2 of Section 1. The vessel shall be surveyed by the Authority to ensure compliance with the requirements of this Code.
3. *Vessels Originally Constructed to Class*
 - 3.1 Where a vessel was originally constructed to class and has held a valid certificate of class that has lapsed, the owner may elect to have the certificate of class reinstated, in which case the procedure shall be as set out in 2 of this Appendix. Alternatively the owner may elect to have the vessel surveyed in accordance with the procedures in 4 of this Appendix.
4. *Vessels That Have Not Held a Valid Certificate of Class*
 - 4.1 Plans and specifications in accordance with 14.2.2 of Section 1 of this Code, and including details of the lay up, shall be prepared and submitted to the Authority. Where the Authority considers that the scantlings are adequate the quality of the laminate shall be determined from samples of the laminate obtained in accordance with 5 of this Appendix. Where the results of the tests indicate that the hull laminate may be considered acceptable, the vessel shall be surveyed by the Authority to ensure compliance with the requirements of this Code.
5. *Samples of Laminate for Quality Assessment*
 - 5.1 Each sample of laminate shall be of sufficient size to encompass a rectangle of 260 mm by 65 mm. For practical purposes, test pieces taken from the laminate should be as flat as possible and shall consist of the basic laminate only, free of any gelcoat.
 - 5.2 Where a vessel is constructed to plans approved by the Authority prior to construction and an application for survey has been received by the Authority but inspections are not conducted as required by Appendix III of this section, the sample of laminate may consist of a test panel laid up at the same time as the moulding of the hull. The test panel shall be laid up to the same specification as the bottom laminate. Where a test panel is not available, samples shall be removed from the hull in accordance with 5.3 of this Appendix. An affidavit shall be supplied by the manufacturer stating that the vessel and the test panel have been laid up in accordance with the approved plans.
 - 5.3 Where a vessel is constructed to plans that were not submitted to the Authority and approved prior to construction, a number of samples shall be removed from the hull. The number of samples shall be obtained by dividing the measured length by five and rounding down without decimals but in no case shall be less than three. At least one sample shall be taken from each of the bottom and side shell laminate. The location of the samples shall be nominated by the surveyor, who shall identify each sample.
6. *Laminate Quality Assessment*
 - 6.1 For vessels in 4 of this Appendix the hull shall be thickness gauged in at least the centre of each panel in the case of stiffened hulls and as nominated by the surveyor in the case of unstiffened hulls. The thickness shall be measured also where additional reinforcement is required by Sub-section 5K. The thickness gauge readings shall be entered on the GRP Hull Thickness Report as required by Appendix III.

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6.2 The samples as required by 5 of this Appendix shall be tested in accordance with the following:

- (a) tensile strength and modulus of elasticity E_s established in accordance with ISO/R 527-1966;
- (b) bending strength and modulus of elasticity E_b established in accordance with ISO 178-1975; and
- (c) glass reinforcement content in cured laminate measured in accordance with ISO 1172-1975, except that, upon approval by the Authority, the number of tests may be reduced to two.

6.3 Where the shell of the vessel's hull is constructed of isotropic glass reinforced plastic, the mechanical properties measured according to 6.2, based on a mass of reinforcement material of 430 g/m² per mm of laminate thickness, shall be at least:

- (a) tensile strength of 80 MPa and modulus of elasticity E_s of 7000 MPa;
- (b) bending strength of 120 MPa and modulus of elasticity E_b of 7000 MPa; and
- (c) glass content of between 28.5 and 40 per cent by mass, with variation between individual samples as far as possible not to vary by more than 4 per cent.

6.4 Where the shell of the vessel's hull is constructed of materials other than those specified in 6.3, the Authority shall require to be satisfied that the strength of the hull is at least equivalent to that required under 6.3

6.2 The samples as required by 5 of this Appendix shall be tested in accordance with the methods specified in 4.2, 4.3 and 4.5 of Sub-section 5K. The mechanical properties of the laminate shall meet the requirement of 4.1.1 and 4.4 of Sub-section 5K.

7 *Repair Where Samples are Removed from the Hull*

7.1 Where samples are removed from the hull of a vessel as required by 5.3, information in relation to the repair of the vessel shall be submitted to the Authority. Such repairs shall be carried out to the satisfaction of the surveyor.

8. *Inspections*

8.1 Where a vessel is not constructed under the survey of an Authority or a Classification Society the Authority shall require inspections to be carried out during the first year of survey. These inspections shall take place as follows:

- (a) out of the water after 3 months.
 - (b) in the water after 6 months
 - (c) out of the water after 12 months
- and thereafter at intervals specified by the authority.

9 *Vessels Failing to Meet Survey Requirements*

9.1 Failure to meet the survey requirements of an Authority as regards the hull moulding would preclude the vessel from being considered for commercial service by any other Authority. Where a vessel submitted for survey so fails, information relating to the failure is to be forwarded to all Authorities.