TÜRK LOYDU

Part C

Chapter 34 - Tentative Rules for the Classification of Special Crafts – Patrol Boat

2019

This latest edition incorporates all rule changes. The latest revisions are shown with a vertical line. The section title is framed if the section is revised completely. Changes after the publication of the rule are written in red colour.

Unless otherwise specified, these Rules apply to ships for which the date of contract for construction as defined in TL- PR 29 is on or after 1st of July 2019. New rules or amendments entering into force after the date of contract for construction are to be applied if required by those rules. See Rule Change Notices on TL website for details.

"General Terms and Conditions" of the respective latest edition will be applicable (see Rules for Classification and Surveys).

If there is a difference between the rules in English and in Turkish, the rule in English is to be considered as valid. This publication is available in print and electronic pdf version. Once downloaded, this document will become UNCONTROLLED. Please check the website below for the valid version.

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This rule has been published tentative version of Special Craft for Patrol Boats and planned to cover other special type of craft such as Passenger Craft, Crew Boat, Pilot Boat, etc. During the application of the rules, Türk Loydu reserve the rights to modify the rules in order to achieve targeted safety level.

TÜRK LOYDU

Head Office Postane Mah. Tersaneler Cad. No:26 Tuzla 34944 İSTANBUL / TÜRKİYE

Tel : (90-216) 581 37 00

Fax : (90-216) 581 38 00

E-mail : info@turkloydu.org

http://www.turkloydu.org

Regional Offices

Ankara Eskişehir Yolu Mustafa Kemal Mah. 2159. Sokak No : 6/4 Çankaya - ANKARA / TÜRKİYE

Tel : (90-312) 219 56 34

Fax : (90-312) 219 68 25

E-mail : ankara@turkloydu.org

İzmir Atatürk Cad. No :378 K.4 D.402 Kavalalılar Apt. 35220 Alsancak - İZMİR / TÜRKİYE

Tel : (90-232) 464 29 88

Fax : (90-232) 464 87 51

E-mail : izmir@turkloydu.org

Adana Çınarlı Mah. Atatürk Cad. Aziz Naci İş Merkezi No:5 K.1 D.2 Seyhan - ADANA / TÜRKİYE

Tel : (90- 322) 363 30 12

Fax : (90- 322) 363 30 19

E-mail : adana@turkloydu.org

Contents

Section 1

General Requirements and References

A. Scope and Application

1. Intention

The intention of these Rules is to facilitate the use of the Rules of **TL** by clients who want to design and build Special Crafts. The purpose of these rules is to find out the applicable rules by using flow-charts in Section 8. The types of Special Crafts are defined in B.2.

2. Application

2.1 These Rules are applicable:

– hull structures for monohulls, catamarans, SWATH, hydrofoil
– materials for hull structures including steel, austenitic stainless steel, aluminium alloys, fibre reinforced plastics (FRP), wooden and polyethylene
– ship equipment
– complete propulsion plants with diesel engines, gas turbines or any other propulsion plants.
– electrical and electronic equipment
– relevant automated equipment
– relevant auxiliary systems
– non-crew persons up to 60 persons
– up to 12 passengers

2.2 These Rules do not consider:

– steam propulsion
– low speed diesel engines and reversible two-stroke diesel engines
– heavy fuel operation and treatment
– outboard motors using gasoline for the propulsion of the Craft.
– lifting appliances and lifts
– special, complex equipment for replenishment at sea, besides replenishment of liquids via the stern
– amphibious warfare
– aircraft handling
– provision for flight operations other than winching
– special requirements for weapon systems besides foundations
– auxiliary steam boilers and oil firing equipment
– diving systems and systems for breathing gases
– non-crew persons above 60 persons
- more than 12 passengers

3. Scope

These Rules summarize relevant **TL** Rules (and also the Code of Safety for Special Purpose Ships, 2008) which can be used for the Classification of naval and non-naval Patrol Boats and other special type of crafts less than 50 m. waterline length.

4. Equivalence

Special Crafts deviating from the **TL** Rules in structure or equipment or some of their parts may be classed, provided that their structures or equipment are found to be equivalent to the **TL** requirements for this Class of vessels.

5. Statutory rules and regulations

For application of statutory rules and regulations, refer to **TL** Classifcation and Surveys Rules.

In case of craft is classed as a Naval Craft relevant requirements to be applied are defined for Naval Patrol Crafts in **TL** Naval Ship Technology, Chapter 101 instead of **TL** Classification and Surveys.

B. Definitions

1. General

1.1 High speed craft

1.1.1 High speed craft according to the International Code of Safety, 2000 (HSC-Code) are passenger and cargo craft which do not proceed in the course of their voyage more than 4 hours at operational speed from a place of refuge (8 hours for more than 500 gross tonnage for cargo crafts) and are capable of a maximum speed of at least:

$v_{max} = 3,7 \cdot \Delta^{0,1667}$ [m / s]

Δ = displacement volume at design water line [m^3]

Craft the hull of which is supported completely clear above water surface in non-displacement mode by aerodynamic forces generated by ground effect are excluded. The Code does originally not apply to craft of war and troop craft.

1.2 Non-crew persons

Non-crew persons are special personnel, embarked personnel and passengers for whom permanent accommodation is provided on board. The number of non-crew persons may include up to 12 passengers.

1.3 Special personnel

The term "Special Personnel" is as defined in the IMO's "Code of Safety for Special Purpose Ships, 2008" (see.IMO MSC.266(84) as amended by MSC.299 (87)).

1.4 Embarked personnel

Embarked personnel are persons who are not members of the crew and carried on board in conjunction with the purpose of the boat. Embarked personnel are expected to be very fit, well-disciplined and able-bodied.

1.5 Passenger

The term "Passenger" is as defined in **SOLAS 74** as amended.

1.6 Main dimensions

The principal dimensions of Special Crafts are defined in:

– **TL** Rules for High Speed Craft (Chapter 7), Section 1, 1.4.

– **TL** Rules for Construction and Classification of Yachts (Chapter 9), Section 2, A.4.

2. Types of Special Crafts

2.1 Patrol Boat

A patrol boat is a small naval, coast guard or police vessel, smaller in size than a corvette, commonly engaged in various border protection roles, including anti-smuggling, anti-terrorist, anti-piracy, fishery patrols and immigration law enforcement. It is also often used for rescue operations and can be diversified in smaller Inshore Patrol Vessels and larger Offshore Patrol Vessels.

In general Patrol Boats are classed **1 A5 PATROL BOAT** or **1 A5 PATROL, 1 N5 PATROL BOAT**; please refer to Section 2 and **TL** Classification and Surveys.

C. Required Data and Documents

1. General information and data

In order to estimate the scope of Classification and Services, **TL** is to be provided with general information and project data as far as already available in the application phase. Naval Authority Requirements and Regulations should be included to general information data in case of a naval patrol boat.

1.1 Functional demands

The functional demands include:

– main task of special crafts, like general patrol

– additional secondary tasks, like rescue, boarding, transport, etc.

1.2 Basic Special Crafts parameters

The basic parameters are:

– type of hull, like monohull, catamaran, SWATH, hydrofoils

– main design parameters

– area of operation

– ambient and environmental conditions

– expected lifetime [years]

– materials for construction including special properties, corrosion protection measures, etc.

1.3 Regulations

Additional international and national regulations, as well as requirements of the Owner are to be defined.

1.4 Building specification

The preliminary building specification or the technical part of a building contract (including sister ships, if any), if already available, shall be submitted.

2. Documents to be submitted for approval

2.1 Submission

The documents are to be submitted in hard copy at least in triplicate. Operation manuals shall be submitted in a single set for information only.

All documents have to indicate the project and revision number and the name of the Owner and/or the name of Shipyard.

All documents are to be submitted at a sufficiently early date to ensure that they are approved and available to the Surveyor at the beginning of the construction or installation of the boat or of important components.

2.2 Language

All documents have to be submitted to **TL** in Turkish or English.

2.3 Calculations

Calculations shall contain all necessary information concerning reference documents (parts of the specification, relevant drawings, etc.). Literature used for the calculations has to be cited. Any non-standard symbols used are to be explained in definitions.

2.4 Computer programs

2.4.1 In order to increase the flexibility in the structural design of Special Crafts **TL** also accepts direct calculations with computer programs. The aim of such analyses should be the proof of equivalence of a design with the rule requirements.

2.4.2 Direct calculations may also be used in order to optimise a design; in this case only the final results are to be submitted for examination.

2.4.3 A computer program that has been demonstrated to produce reliable results to the satisfaction of the Classification Society is regarded as a recognised program. The purpose of such analyses should be the proof of equivalence of a design with the rule requirements. It is recommended that the designers consult the Classification Society on the suitability of the computer programs intended to be used prior to the commencement of any analysis work.

2.4.4 Direct calculations may be used in the following areas

– global strength

– longitudinal strength

– beams and grillages

– detailed strength

For such calculations the computer model, the boundary conditions and load cases are to be agreed upon with **TL**. The calculation documents are to be submitted including input and output. During the examination it may prove necessary that **TL** perform independent comparative calculations.

2.5 List of documents

For classification of a Special Craft the documents defined in Table 1.1 at the end of this Section have to be submitted, as far as applicable.

2.6 Additional documentation

TL reserve the right to request additional documentation for an assessment.

2.7 Modifications and extensions

Once the documents submitted have been approved by **TL** they are binding for the execution of the work. Subsequent modifications and extensions require the approval of **TL** before becoming effective.

2.8 Surveys

Survey of the Special Crafts' construction will be carried out on the basis of approved documents. The documentation has to contain all data necessary for final approval of the Special Crafts.

3. Production standard

A production standard which considers the special requirements for the manufacturing of Special Crafts has to be defined by the Shipyard and accepted by **TL**.

4. Documents to be carried on board

4.1 The documents to be carried on board to allow quick action in case of surveys, special operation and damage are primarily defined in:

– **TL** Rules for Naval Ships, Chapter 101, Section 1, F. for Class Certificate, survey statements, Stability Handbook, Loading Manual, as built drawings, etc.

4.2 Further data is contained in:

– **TL** Rules for High Speed Craft (Chapter 7), Section 1, 1.12 and Section 18, 18.2 for Craft Operating Manual, Route Operational Manual, Training Manual, Maintenance and Servicing Manual / System.

D. Rules and Regulations to be considered

1. TL Rules

The following **TL** Rules are to be considered and therefore reference is made to them in these Rules:

– Classification and Surveys

– Chapter 1, Hull

– Chapter 2, Material

– Chapter 3, Welding

– Chapter 4, Machinery

– Chapter 4-1, Automation

– Chapter 5, Electrical Installation

– Chapter 7, High Speed Craft

– Chapter 9, Construction and Classification of Yachts

In case of craft is classed as a Naval Craft relevant requirements to be applied are defined for Naval Patrol Crafts in **TL** Part E, Naval Ship Technology Rules.

2. TL Recommendations

The recommendations of **TL** have to be consid ered as appropriate, e.g.:

– **TL**- G 99, Section 2 – FireSafety Measures

3. International Conventions and Codes

Where reference is made to International Conventions and Codes these are defined as follows, e.g.:

– **ICLL:** International Convention of Load Lines, 1966, as amended

– **MARPOL:** International Convention for the Prevention of Pollution from Ships, 1973 including the 1978 Protocol as amended

– **SOLAS:** International Convention for the Safety of Life at Sea, 1974, as amended

– **IMO Resolution MSC.266(84) as amended by MSC.299(87):** Code of Safety for Special Purpose Ships, 2008

E. Technical Requirements

1. Ambient conditions

1.1 The ambient conditions are primarily defined in:

– **TL** Naval Rules for Hull Structures and Ship Equipment (Chapter 102), Section 1, A.4., Table 1.1 respectively **TL** (Chapter 107), Section 1, D. for inclinations and movement of the Special Crafts.

– In case of Naval Patrol Boats more stringent requirements are defined there for Class Notation **AC1**, more flexible requirements may be defined for Class Notation **ACS**.

– In case of Naval Patrol Boats vibration should be considered for design, construction and installation because of causing additional stresses. More information is contained in the **TL** Naval Rules for Hull Structures and Ship Equipment (Chapter 102), Section 16 and the **TL** Naval Rules for Propulsion Plants (Chapter 104), Section 1, D.2.

– In case of Naval Patrol Boats if noise is to be considered, the requirements of the **TL** Naval Rules for Hull Structures and Ship Equipment (Chapter 102), Section 16, B. are to be observed, but this is in general not subject to Classification.

1.2 Further data is contained in:

– **TL** Rules for High Speed Craft (Chapter 7), Section 9, C.9.1.16, Table 9.1.

– **TL** Rules for Construction and Classification of Yachts (Chapter 9), Section 7, A.4.2., Table 7.1.

2. Environmental conditions

2.1 The environmental conditions are primarily defined in:

– In case of Naval Patrol Boats **TL** Naval Rules for Hull Structures and Ship Equipment (Chapter 102), Section 1, A.4., Table 1.2 for conditions of water, air, wind, ice, etc.

– In case of Naval Patrol Boats if shock is to be considered, the requirements of the **TL** Naval Rules for Hull Structures and Ship Equipment (Chapter 102), Section 16, D. are to be observed, but this is in general not subject to Classification.

2.2 Further data is contained in:

– **TL** Rules for High Speed Craft (Chapter 7), Section 9, 9.1.16, Table 9.2.

– **TL** Rules for Construction and Classification of Yachts (Chapter 9), Section 7, A.4.2., Table 7.2, 7.3 and 7.4.

3. Workmanship

The requirements for proper workmanship to be applied for Special Crafts are defined in the **TL** Rules for Hull (Chapter 1), Section 1, N.

In case of Naval Patrol Boats the requirements for proper workmanship to be applied for Special Crafts are defined in the **TL** Naval Rules for Hull Structures and Ship Equipment (Chapter 102), Section 1, E.

4. Corrosion protection

The requirements to reduce the corrosion risk by measures in design are defined together with protection measures during construction and operation in the **TL** Rules for Hull (Chapter 1), Section 22.

In case of Naval Patrol Boats the requirements to reduce the corrosion risk by measures in design are defined together with protection measures during construction and operation in the **TL** Naval Rules for Hull Structures and Ship Equipment (Chapter 102), Section 3, E. and F.

5. Essential equipment

The definition of essential equipment and list of essential components are contained.

Table 1.1 Documentation to be submitted for Classification of Special Crafts

No.	Description
	General
1	General arrangement plan
2	Technical specification
3	Lines plan / Offset tables
4	Tank & capacity plan
	Hull Structures and Ship Equipment
	Hull
5	Midship section
6	Other typical sections
7	Bottom structure
8	Engine room structure (including engine foundation)
9	Shell expansion plan
10	Ice strengthening, if applicable
11	Decks
12	Superstructures and deckhouses
13	Bulkheads
14	Rudder body
15	Rudder stock
16	Rudder bearing, pintles and couplings, etc.
17	Large openings
18	Foundations
19	Welded joints for steel or aluminium
20	Coating plan
21	NDT-plan (Non-Destructive-Testing)
22	Equipment number and anchoring equipment
23	Mooring equipment
	Supporting Calculation (Structure)
24	Design loads summarized in a load plan
25	Longitudinal strength calculation (if required by Naval Authority)
26	Local stress calculations, if applicable
27	Finite element analysis, if applicable
	Safety Requirements of the Hull
28	External watertight integrity plan / Freeboard plan
29	Bulwarks and guard-rails
30	Intact stability calculations
31	Damage stability calculations
32	Damage control plan
33	Inclining test report
34	Structural fire protection
35	Documentation on storage rooms and transport lines for explosives (ammunition, missiles, etc.)
36	Masts

	Machinery Installations **General**
37	General arrangement of machinery spaces
	Internal Combustion Engines
38	Data on main parameters for each type of internal combustion to be used
39	Detailed drawings of the complete engine, including cross/longitudinal sections
40	Documentation on provisions or additional equipment for low load operation of the engines, if applicable
	Propulsion Systems
41	General drawings of the entire shafting
42	Component parts transmitting torque (shafting, couplings, bearings, etc.)
43	Propeller shaft brackets
44	Stern tube arrangement
45	Cast resin mount
46	Shaft alignment calculation
47	Assembly and sectional drawings of gears and couplings (calculations, parts list)
48	Design drawings of propeller in main propulsion (for engine output in excess of 300 kW)
49	Design drawings of transverse thrust systems (for engine output in excess of 100 kW)
50	General drawings, sectional drawings and functional characteristic of controllable pitch propeller unit
51	Rudder propeller/Podded drives, if applicable
	Electrical Installations
	Power Plant
52	Details of the scope and type electrical plant
53	Details about the construction of electrical equipment in hazardous areas
54	General layout for electrical power generation and distribution
55	Details on generations and UPS units
56	Details on hazardous areas
57	Short circuit calculation
58	Electrical power balance
59	Details on main and emergency switchgear, main distribution boards
60	Details on lighting network
61	Details on concept to avoid radiation hazards
62	Documentation on switchgear, monitoring and controls for the refrigerating plant
63	Main cableways for different voltage systems
64	Details in electromagnetic compatibility measures
65	Bulkhead/deck penetrations
66	Cable layout/-list
	Manoeuvring System
67	Details on steering gear drive and control system
68	Details on rudder propeller and lateral thrust system, if applicable
69	Controllable pitch propeller system, if applicable

70	Details on dynamic positioning system, if applicable
	Lighting
71	Lighting arrangement
72	Documentation on light fittings and sockets used
	Control and Alarm System
73	Monitoring and safety systems for machinery
74	Starting arrangements for main and auxiliary engines
75	Control and regulation for essential equipment and drives
76	Documentation on general and special alarm systems
77	Documentation on position and navigation lights
78	Documentation on fire and CO_2 alarm system
79	Documentation on watertight and fire door operation and position monitoring system
80	Documentation on tank level indicators, alarms, shut-off facilities
81	Documentation on all essential intercommunication systems
	Board Computer
82	Hardware and software documentation on computers (as relevant for Classification)
	Propulsion
83	Electrical propulsion plants, if applicable
	Automation
84	General layout and arrangement
85	Description of functional relationships
86	Software documentation
87	List of sensor types and location for the monitoring system
88	Safety programmes giving details of limit values
89	Details of bridge arrangement
	Auxiliary Systems and Equipment
	Pressure vessels
90	List of pressure vessels and equipment
	Tanks and piping
91	Details on fuel and oil tanks
92	Diagrammatic plans of all piping systems
93	Details on remotely controlled valves
94	Replenishment at sea system
	Fire extinguishing systems
95	Water fire extinguishing equipment
96	CO_2 fire extinguishing system, if applicable
97	Foam extinguishing systems
98	Details of all other fire fighting systems and equipment
99	Fire control plan
	Equipment
100	Steering gear
101	Rudder propeller units, if applicable
102	Anchor windlasses
103	Fire door control system
104	Replenishment at sea system
105	Hydraulic systems for special devices, if safety-relevant
	Other Documents
106	Operation and maintenance manuals, if required

Contents

Section 2

Classification and Surveys

For classification and survey requirements **TL** Rules, Classification and Surveys is to be applied.
In addition to this, the following requirements are applicable.

A-Classification

1. Classification of new buildings

In case of craft is classed as a Naval Craft relevant requirements to be applied are defined for Naval Patrol Crafts in **TL** Naval Ship Technology, Chapter 101, Section 1, E.1 instead of **TL** Classification and Surveys, Section 2, B.2.

2. Retention of class

In case of craft is classed as a Naval Craft relevant requirements to be applied are defined for Naval Patrol Crafts in **TL** Naval Ship Technology, Chapter 101, Section 1, D instead of **TL** Classification and Surveys, Section 2, C.

3. Class Designations

The ship type Notation **PATROL BOAT** is only valid for small watercraft from 6 to 24 m in length. For Patrol vessels or ships above 24 m in length, the ship type notation **PATROL** will be assigned.

In case of craft is classed as a Naval Craft relevant requirements to be applied are defined for Naval Patrol Crafts in **TL** Naval Ship Technology, Chapter 101, Section 2, B instead of **TL** Classification and Surveys, Section 2, D.

B-Surveys

- Surveys during construction
- Annual, intermediate and class renewal surveys
- Dry docking surveys
- In-water surveys
- Damage and repair surveys
- Propeller shaft survey
- Occasional survey
- Surveys in accordance with flag state regulations / Requirements of Naval Authority or Authorities
- Bottom Surveys
- Boiler Surveys (if applicable)

Above mentioned surveys and the relevant requirements to be applied are defined in **TL** Classification and Surveys.

In case of craft is classed as a Naval Craft relevant requirements to be applied are defined for Naval Patrol Crafts in **TL** Naval Ship Technology, Chapter 101, Section 3 instead of **TL** Classification and

Surveys, Section 3.

1. Special Survey Requirements

1.1 Special Requirements for Patrol Boats

1.1.1 Steel Crafts

TL Rules, Classification and Surveys, Section 3, A to K are to be applied for steel crafts.

1.1.2 Aluminium Alloy Crafts

In addition to **TL** Rules, Classification and Surveys, Section 3, A to K, following requirements are to be applied for aluminium alloy crafts:

1.1.2.1 Surveys in general

For all periodical surveys, the requirements of Section 3 are to be fulfilled. However, in the case of crafts more than 15 years old, the frequency of the bottom survey is subject to special consideration.

1.1.3 Fiber Reinforced Plastic (FRP) Crafts

In addition to **TL** Rules, Classification and Surveys, Section 3, A to K, following requirements are to be applied for FRP crafts:

1.1.3.1 Surveys in general

For all periodical surveys, the requirements of Section 3 are to be fulfilled. However, in the case of crafts more than 15 years old, the frequency of the bottom survey is subject to special consideration.

1.1.3.2 Surveys During Construction

1.1.3.2.1 With reference to lamination, special inspections are required at the following stages.

For hand lay-up lamination:

a) when the hull lamination starts with the application of gel-coat;

b) during the hull lamination at different stages;

c) before starting the arrangement of internal stiffeners;

d) when the hull is extracted from the mould;

e) when the connection of the hull to the deck starts;

f) before the installation of the dolly, if any;
g) when the core of sandwich structure is arranged.

1.1.3.2.2 For particular lamination processes in enclosed mould, such as infusion lamination, the lamination survey scope is to be agreed with the **TL** Surveyor, but in any case special inspections are required at the following stages:

a) at the application of the release agent and the gel coat prior to starting with application of the laminate;

b) when the dry reinforcements layers and cores are fitted on the mould;

c) at the vacuum application for the initial check prior to starting with the lamination and related to:

• consolidation of the bag
• vacuum application
• vacuum/leakage control

d) during the resin infusion to verify and record the following data:

• waiting time
• infusion time
• vacuum level during the infusion

e) after the bag take-off to inspect the result of the lamination

f) before starting the arrangement of internal stiffeners

g) when the hull is extracted from the mould for the final inspection;

h) when the connection of the hull to the deck starts;

i) before the installation of the dolly, if any.

1.1.3.2.3 When thermosetting resins are employed, attention is to be payed to the type and quantity of catalyst agent employed so as to be compatible with the resin and the temperature and humidity of the space where composite fabrication and the curing process take place.

1.1.3.2.4 On the basis of the internal controls of the shipyard, the **TL** Surveyor may not attend some of the above inspections, provided that satisfactory records and internal checks are be submitted.
1.1.3.2.5 In addition, during the supervision of the first hull, an inspection of the shipyard is performed in order to verify that it is provided with adequate equipment in relation to the materials used and to the type of manufacture and that the quality of the laminates is ensured.

1.1.3.3 Periodical hull surveys

1.1.3.3.1 Annual and intermediate surveys

In the case of hulls made of sandwich type structures, it is to be carefully checked that the parts are not detached from the core. The check is to be performed by hammering the shell and evaluating the differences in the sound heard or by means of checks with non-destructive methods recognised by **TL**.

The connection between hull and deck is to be carefully checked, in particular when hull and deck are made of different materials.

1.1.3.3.2 Class renewal survey (hull) and bottom survey in dry condition

In addition to the requirements for the intermediate surveys given in 15.2.1.3.3.1, the presence of "osmosis" phenomena in the laminates of the underwater body and/or of cracks in the gel-coat is to be verified.

To this end, the craft is to be made available for the bottom survey in dry condition before the application of any paint, so as to allow a careful visual inspection.

In-water survey in lieu of bottom survey in dry condition will be specially considered by **TL** on a case-by-case analysis.

1.1.3.4 Examination and testing – Additional items for composite craft

The bonded attachments of frames, floors, bulkheads, structural joinery, engine bearers, sterntubes, rudder tubes, and integral tank boundaries are to be examined.

The hull to deck joint together with any joints between the deck and deckhouses or superstructures are to be examined.

The structure in way of the bolted attachment of fittings including guardrail stanchions, windlass, shaft brackets, fendering, mooring bitts, mast steps, rigging chainplates, etc., is to be examined.

External hull structure are to be specially examined:

For composite hulls the gelcoat or other protective finish is to be examined for surface cracking, blistering or other damage which may impair the efficiency of the protection to the underlying laminate.

1.1.3.5 Suspect areas

Suspect areas are locations within the hull structure vulnerable to increased likelihood of structural deterioration and may include:

For composite hulls, areas subject to impact damage.

1.1.3.6 Ballast Keel

In composite crafts care is to be taken to prevent crushing of GRP laminates through overtightening of keel bolts.

In the case of composite structures, including steel and GRP, consideration will be given to the use of steel rivets.

Contents

Section 3

Hull Structures and Ship Equipment

A. Subdivision and Stability

1. Buoyancy

1.1 Selection of rules

The selection procedure for applicable rules and regulations for watertight and weathertight integrity of boats / crafts is shown in flow-chart in Section 8.

1.2 Special Crafts up to 24 m length

For special crafts up to 24 m length, ISO 12215 is to be applied. If $V_{HSC} \geq 3{,}7.\nabla^{0{,}1667}$ (V in m/s, ∇ in m^3) **TL** Chapter 7, Section 2 is to be applied.

1.2.1 General

The requirements defined hereinafter are to be checked by calculation and/or by trials with the prototype craft in the fully loaded ready for use condition. Trials are to be carried out under the supervision of a **TL** Surveyor.

Details of the execution of the trials are laid down by **TL** Head Office.

1.2.2 Number of persons

When the range of service is unlimited or the distance to the nearest port of refuge and the offshore distance is 200 nautical miles, adequate volume (including bed, seating group, etc.) is to be provided for crew.

In day-trip boats, there should be a seat for each person on board and also, number of required toilets, adequate volume, etc. as defined in regulations are to be provided.

1.2.3 Freeboard

1. In the case of a craft with a continuous watertight weather deck, which is neither stepped nor recessed nor raised, have a freeboard measured down from the lowest point of the weather deck of not less than 300 mm for crafts of 7 metres in length or under and not less than 750 mm for crafts of 18 metres in length or over. For a craft of intermediate length the freeboard should be determined by linear interpolation.

2. In the case of a craft with a continuous watertight weather deck, which may be stepped, recessed, or raised, have a freeboard measured down from the lowest point of the weather deck, of not less than 200 mm for crafts of 7 metres in length or under and not less than 400 mm for crafts of 18 metres in length or over. For a craft of intermediate length the freeboard should be determined by linear interpolation. The raised portion(s) of the watertight weather deck should extend across the full breadth of the craft and the average freeboard over the length of the craft should comply with 1. above for a craft with a continuous watertight weather deck.

1.2.4 Guard rails, guard rail stanchions

The dimensioning of guard rails is to be in compliance with ISO 15085.

1.3 Special Crafts with L ≥ 24 m and TL HSC Rules to be applied

The **TL** Rules for High Speed Craft (Chapter 7), Section 2 have to be applied and for Special Crafts the following requirements are to be considered:

2.1.8: Arrangement of watertight bulkheads

2.2: Intact buoyancy and watertight / weathertight integrity

2.2.5: Indicators and surveillance

2.2.6 Integrity of superstructure

2.2.7 Doors, windows, etc., in boundaries of weathertight spaces

2.2.8 Hatchways and other openings

2.2.9 Scuppers, inlets and discharges

2.2.10 Air pipes

2.2.11 Freeing ports

2.9: Marking and recording of the design waterline

1.4 Special Crafts with L ≥ 24 m and International Convention of Load Lines 1966/88 to be applied

The **TL** Rules Hull (Chapter 1), Sections 11 to 26 are to be applied and for Special Crafts the following requirements are to be considered:

Section 11, A.1: Watertight Bulkheads, General

Section 15, A.: Hatchways, General

Section 15, D.: Smaller Openings and Hatches

Section 16, A.: Side Scuttles, Windows and Sky- lights to E.: Ventilators

Section 16, F.2: Guard-Rails

Section 17, E.2 to E.3: Chain locker, as far as applicable

Section 26, E.4: External openings

For access openings the **TL** Rules Hull (Chapter 1), Section 16, A and for doors the **TL** Rules Hull (Chapter 1), Section 23 shall be applied.

2. Subdivision and Intact / Damaged Stability

2.1 Selection of rules

A selection procedure for the applicable rules and regulations concerning intact and damaged stability of Special Crafts is given in flow-chart in Section 8.

2.2 Compartment arrangement

Besides the requirements for intact and also damage stability descriptive instructions on the compartment

arrangement given in the rules are to be considered.

In case of waterjet system is used for propulsion, if the craft comply the damage stability rules, requirements of aft peak bulkhead will be specially considered.

2.3 Naval Special Crafts

If required by the naval administration/authority, **TL** Navy Rules shall be applied.

3. Marking of Maximum Draught

The marking of non-naval Special Crafts is to be pro- vided according to the **TL** Rules for Hull (Chapter 1), Annex.

B. Materials

TL Rules for Material (Chapter 2) is to be applied.

C. Design Principles

1. Selection of rules

The selection procedure for applicable rules and regulations for the hull structure of Special Crafts is shown in flow-chart in Section 8, 3.1.

2. Minimum plate thickness for steel and aluminium structures

Subject to flow-chart given in Section 8, minimum plate thicknesses for Special Craft must be determined for craft subject to yacht rules, see **TL** Chapter 9, Section 5, Table 5.2. For High Speed Craft, see **TL** Chapter 7, Section 3, Table K3.7.2.

3. Aluminium structures

Hull structures made of aluminium are to be designed according to flow-chart in Section 8.

4. Fibre-reinforced plastic

Hull structures made of fibre reinforced plastics are to be designed according to flow-chart in Section 8.

5. Other materials

Designs using other materials have to be agreed with **TL** case by case.

6. Catamarans

For Special Crafts in form of catamarans the requirements for direct calculations and transverse strength are defined in the **TL** Rules for High Speed Craft (Chapter 7), Section 3.

7. Waterjet support structure

The supporting structures of waterjets are dimensioned according to the **TL** Rules for High Speed Craft (Chapter 7), Section 3, K3.9.2.

D. Design Loads

1. High speed design loads

For Special Crafts with an expected maximum continuous ahead speed $V_{HSC} \geq 3{,}7.\nabla^{0{,}1667}$ (V in m/s, ∇ in m^3) special overall and local loads from the **TL** Rules for High Speed Craft (Chapter 7), Section 3, K3.4 and K3.5 are to be applied for dimensioning of the hull structures.

2. Catamarans

For Special Crafts the catamaran bending and torsional moments as well shear forces are defined in the **TL** Rules for High Speed Craft (Chapter 7), Section 3 under K3.4.2.

3. SWATH

For Special Crafts in the form of small waterplane area twin-hull (SWATH) the main loads, which are the side beam force and the transverse bending moments are defined in the **TL** Rules for High Speed Craft (Chapter 7), Section 3, K3.4.3 independent of the boat's speed.

4. Restricted service area

Restricted Service Area Notations are defined to determine the design loads for Special Crafts with certain service areas, see **TL** Classification and Survey Rules, Section 2, D.4.

5. Wave height restriction

For Patrol Boats with a service speed above $V_{HSC} \geq 3{,}7.\nabla^{0{,}1667}$ (V in m/s, ∇ in m^3) a speed/wave restriction curve will be defined by **TL**. Additionally a speed/wave restriction curve may be defined for catamaran and SWATH types of Special Crafts with speeds less than V.

E. Longitudinal Strength

Longitudinal strength will be specially considered by **TL**, if required.

F. Bottom and Shell Structures

1. A double bottom extending from the collision bulkhead to the after peak bulkhead is to be arranged as far as practicable and compatible with the design and mission of the Special Craft.

For large Special Crafts with more than 500 GT a double bottom according to **SOLAS** Chapter II-1, Regulation 9 has to be provided.

2. Special requirements resulting from applicable rules for subdivision and stability have to be considered.

G. Fatigue Strength

Fatigue strength analysis will be specially considered by **TL**, if required.

H. Noise and Vibration

Noise and vibration limits for working and living spaces should be contractually agreed between Owner and Shipyard and shall also to be in accordance with flag state requirements.

ACCOM and ACCOM+ (noise, vibration) additional notations will be assigned if crafts comply with the requirements related to only noise and vibration in **TL**, Chapter 1, Section 2.

I. Anchoring and Mooring Equipment

1. The minimum anchoring, mooring and towing equipment is to be determined according to;

- For yachts, **TL** Rules for Yachts (Chapter 9), Section 2, C.
- For high speed crafts, **TL** Rules for High Speed Crafts (Chapter 7), Section 6, 6.5.

2. For multihull Special Crafts the equipment numeral is to be defined in analogous way, details are given in;

- For yachts, **TL** Rules for Yachts (Chapter 9), Section 2, C.7, compare also flow-chart in Section 8.
- For high speed crafts, **TL** Rules for High Speed Craft (Chapter 7), Section 6, 6.5.2, compare also flow-chart in Section 8.

3. Steel wire and synthetic fibre ropes instead of chain cables may be used for Special Crafts according to;

- For yachts, **TL** Rules for Yachts (Chapter 9), Section 2, C.4.
- For high speed crafts, **TL** Rules for High Speed Craft (Chapter 7), Section 6, 6.5.5 or 6.5.6, respectively.

J. Hull Outfit

1. Guard rails or bulwarks are in general to have a height of according to ISO 15085.

2. Minimum structural strength of guard-rails

For more details see ISO 15085, items 10., 11. and 12.

3. Seat accommodation

For fast Special Crafts where high accelerations are to be expected, adequate seats which are able to withstand these accelerations are to be provided for all members of the crew and / or passengers. Sidely positioned seats are not allowed for a collision acceleration of $g_{coll} > 3$.

The value of g_{coll} to be calculated according to **TL** Rules for High Speed Craft (Chapter 7), Section 4, 4.4.5.

4. Securing of goods and provisions

For fast Special Crafts where high accelerations are to be expected, stores and lockers for goods and provisions are to be equipped with adequate means of securing the content against shifting and damage.

5. Rescue zone

If it can be expected that one of the missions of the Special Crafts will include operations to rescue persons drifting in the sea, on the main deck and at the boat's sides measures to establish a rescue zone are to be provided. This zone is to be equipped with equipment to help or even lift persons on board and shall be situated in a safe distance from hull appendages and the operation of the propellers.

It shall be possible to have visual control of this zone from the bridge and in the night adequate illumination of the zone has to be provided.

K. Structural Fire Protection

1. The terms used in this Section are as defined in **SOLAS 74** as amended.

2. Boats with a total of 12 non-crew personnel on board

2.1 Boats of less than 24 m in length

To comply with the **TL** Rules for Construction and Classification of Yachts (Chapter 9), Section 10, A.5.

2.2 Boats of 24 m in length and over

2.2.1 Boats of less than 500 GT made of steel or other equivalent material

To comply with TL- G 99, Chapter IV, Section 2.

2.2.2 Boats of 500 GT and over made of steel or other equivalent material

To comply with the **TL** Rules for Hull (Chapter 1), Section 21, C.

2.2.3 Boats made of material other than steel or equivalent

To comply with TL Rules for High Speed Craft (Chapter 7), Section 4, 4.7 and Section 7 as applicable for cargo craft. The application of these Rules is subject to the following conditions:

– Boats do not proceed during their voyage more than 8 hours at 90 % of maximum speed from a place of refuge.

– All persons on board can abandon the ship within a period less than the structural fire protection time for major fire hazard areas.

– Boats are capable of maintaining the main functions and safety systems of unaffected spaces after fire in any one compartment on board. Boats need not be able to return to a place of refuge under their own power.

3. Boats with more than 12 non-crew personnel but not more than 60 persons on board

3.1 Boats made of steel or other equivalent material

The requirements of 2.2.2 apply.

3.2 Boats made of material other than steel or equivalent

The requirements of 2.2.3 apply.

4. Rule application diagram

The flow-chart in Section 8 which is related with structural fire protection gives an overview of the application of the **TL** Rules for Special Crafts.

The following Sections are in general not applicable for Special Crafts:

L. Residual Strength

M. Amphibious Warfare

N. Provisions for Flight Operations

1. In general for Special Crafts only a winching area for vertical transfer of personnel and light sup- plies has to be provided. If there would be a helicopter landing deck (even without refuelling system), then a fire fighting system will be required, see the **TL** Rules for Machinery (Chapter 4), Section 18.

Contents

Section 4

Propulsion Plants

Preamble

If it is a navy patrol boat/vessel, and if the Machinery rules do not address the system or component, Navy Rules can be applied at the discretion of the **TL**.

A. General Rules and Instructions

1. Essential equipment

For essential equipment see **TL** Rules for Machinery (Chapter 4), Section 1, H.

B. Internal Combustion Engines

TL Chapter 4, Section 2, Table 2.1 is to be applied for approval.

For approved materials and type of test Certificate the new designations for test Certificates are to be used. For the reference or materials and type of test certificate refer to **TL** Chapter 4, Table 2.2.

For pressure tests see **TL** Chapter 4, Section 2, Table 2.8.

1. Shipboard trials (harbour and sea trials)

TL Additional Rules for "Gemilerde yapılacak seyir tecrübeleri ile ilgili esaslar" (Sea Trials of Motor Vessels) can be used.

2. Crankcase safety devices

TL Rules for Machinery (Chapter 4), Section 2, F.4. is to be applied.

3. Control equipment and alarms

TL Rules for Machinery (Chapter 4), Section 2, I. and J. are to be applied.

C. Thermal Turbomachinery

TL Rules for Machinery (Chapter 4), Section 3 is to be applied to Special Crafts.

D. Main Shafting

1. Cast resin mounting

This subject is to be considered with **TL** specifically.

2. Shaft alignment

For the arrangement of the shaft bearings of the propulsion plant an alignment calculation, including alignment instruction, has to be submitted. With consent of **TL** for shafting with an intermediate shaft diameter < 200 mm the alignment calculation may be waived.

3. Shaft earthing

Shaft earthing is to be provided according to **TL** Rules for Machinery (Chapter 4), Section 2, E.6.4.

E. Gears, Couplings

1. Application factor K_A

The application factor K_A takes into account the increase in rated torque caused by superimposed dynamical or impact loads. K_A is determined for main and auxiliary systems in accordance with **TL** Chapter 4, Section 7, Table 7.3.

2. Flexible Couplings

TL Rules for Machinery (Chapter 4), Section 7, G.2. is to be applied.

3. Clutches

TL Rules for Machinery (Chapter 4), Section 7, G.4. is to be applied.

F. Propeller

For design and dimensioning of propellers see **TL** Chapter 4, Machinery, Section 8.

Alternative design methods which guarantee the same safety level may be submitted to **TL** for approval.

G. Lateral Thrust Units

For lateral thrust units see **TL** Chapter 4, Machinery, Section 9, C.

H. Torsional Vibrations

For torsional vibrations see **TL** Chapter 4, Machinery, Section 6.

I. Spare Parts

Depending on the Service Area Notation it may be discussed with **TL** to determine an adequate amount of spare parts in similar way as practiced in the **TL** Rules for Machinery (Chapter 4), Section 17.

J. Ice Class

For ice class notation see **TL** Chapter 4, Machinery, Section 19.

Contents

Section 5

Electrical Installations

A. General

The selection procedure for applicable rules and regulations for electrical installations of Special Crafts is shown in flow-chart in Section 8, 5.1.

B. Requirements

As far as no comments to the respective rules and regulations shown in flow-chart in Section 8 are given in the following, the requirements therein are valid for all types of Special Crafts.

1. Emergency power supply

1.1 Types of power supply

1.1.1 For the emergency power supply may be provided:

– batteries (especially for smaller Special Crafts)

– diesel generator set

– second power station

1.1.2 If other types as lead-acid or nickel-cadmium batteries are planned, this has to be agreed with **TL**.

1.1.3 Ventilation of battery compartments is primarily to be provided for lead-acid batteries. Reference is made to the **TL** Rules for Electrical Installation (Chapter 5), Section 2, C.3.

1.2 Emergency consumers

For non-naval Special Crafts the following emergency consumers are to be considered:

– emergency lighting

– navigation lights

– radio equipment

– fire detection and fire alarm system, as far as applicable

– fire extinguishing equipment, as far as applicable

– internal signal and communication system, general alarm

– sound signalling system, if electrically powered

– daylight signalling lamp, if applicable

1.3 Power balance

1.3.1 A power balance for main power supply as well as for emergency power supply is to be established under consideration of simultaneous operation.

1.3.2 If only one main generator is provided, its performance shall be designed for at least 110 % of the maximum required power according to the power balance.

1.3.3 Switching-on and switching-off of the greatest consumer shall be possible (without battery buffering).

1.4 Required duration of emergency power supply

For the rules and regulations defined in flow-chart in Section 8 the following minimum required durations of emergency electrical power supply are to be considered:

– Yachts < 24 m: 8 hours
– Special Purpose Ships: 18 hours
– Yachts ≥ 24 m: 12 hours
– Seagoing Ships: 18 hours
– High Speed Craft: 5 resp.12 hours

2. Cables and their installation

2.1 Wire braids

Outer metallic wire braids shall have a coating of protective paint, which shall be lead-free and flame-retardant. The paint shall be of sufficiently low viscosity when applied to enable it to penetrate readily into the wire braid. When dry, it shall not flake off when the cable is bent around a mandrel with a diameter of 15 times that of the cable.

2.2 Cable laying for circuits (systems with return)

In three-phase systems with hull return the asymmetry of the currents in the three conductors of three-core cables shall not exceed 20 A.

2.3 Installation of non-metallic pipes and ducts

Further design details are contained in the **TL** Rules for Electrical Installation (Chapter 5), Section 12, D.6.

2.4 Cable installation in refrigeration spaces

Only cables without hull return are permitted in refrigerated rooms and in associated air cooler spaces. The earthing conductors shall be run together with the other cables from the relevant distribution panes.

3. Tests

3.1 One's own-responsibility tests made by the manufacturers in its works

There is the possibility that certain products may be tested on the manufacturer's own responsibility if the following pre-conditions are fulfilled:

– the product is agreed with **TL**
– a QM system recognized by **TL** is available
– **TL** has carried out type tests of the products
– the one's-own responsibility tests have been agreed with **TL**

Reference is made to the **TL** Additional Rules for “Mekanik ve Elektroteknik Ürünlerin Muayenesi İçin Kurallar” (the Inspection of Mechanical and Electrotechnical Products).

3.2 Type tests

The following products are additionally subject to mandatory type tests:

- Cable trays/protective casings made of plastic materials are to be type tested in accordance with IACS UR E16. For guidance on testing, refer to IACS REC 73.

Contents

Section 6

Automation

A. General

1. Selection of rules

The selection procedure for applicable rules and regulations for automation of Special Crafts is defined in flow-chart in Section 8.

B. Remote Control

1. Special requirements for remote control of main engines may be applied as defined in the **TL** Rules for Fishing Vessels (Chapter 14), Section 38.

2. The Class Notation **K** (Coastal Service) is not valid for Special Crafts.

3. Special Crafts having machinery plants built, equipped, surveyed and tested in compliance with the remaining requirements may be assigned the Class Notation **R**-Remote Control.

Contents

Section 7

Ship Operation Installations and Auxiliary Systems

A. General Rules and Instructions

1. Essential equipment

For essential equipment see Section 1, E.5.

2. Steering Gears and Stabilizers

For steering gears and stabilizers see **TL** Rules for Machinery (Chapter 4), Section 9.

3. Lifting Appliances and Lifts

For lifting appliances and lifts see **TL** Rules for Regulation for Lifting Appliances (Chapter 50).

4. Starting Equipment and Air Compressors

Starting of multi-engines installations with compressed air **TL** Additional Rules for "Gemilerde yapılacak seyir tecrübeleri ile ilgili esaslar" (Sea Trials of Motor Vessels) may be observed.

5. Storage of Liquid Fuels, Lubricating and Hydraulic Oils as well as Oil Residues

5.1 Selection of rules

A selection procedure for the applicable rules concerning storage of liquids in tanks of Special Crafts is given in flow-chart in Section 8, 6.1.

Changeable tanks are tanks which may be used alternatively for liquid fuels or ballast water. Changeable tanks are to be treated as fuel tanks.

If tank heating for liquid fuels becomes necessary (e.g. for Special Crafts with ice class), the requirements of the **TL** Rules for Machinery (Chapter 4), Section 16, V.2.5 are to be considered.

5.2 Special Crafts up to 24 m length

The **TL** Rules for Construction and Classification of Yachts (Chapter 9), Section 7, E.9 are to be applied and the following requirements are to be considered:

5.2.1 Portable fuel tanks are not permitted.

5.2.2 The storage of gasoline/petrol and gasoline tanks are not permitted for the propulsion of the Patrol Boat as outboard motors are excluded, compare Section 1, A.2.2.

5.2.3 Fuel tanks made of plastics are not permitted.

5.3 Other Rules

Other Rules are to be applied according to flow-chart in Section 8.

6. Piping Systems, Valves and Pumps

6.1 Selection of rules

A selection procedure for the applicable rules and regulations concerning piping systems, valves and pumps of Special Crafts is given in flow-chart in Section 8.

If plastic pipe systems shall be installed, the requirements of the **TL** Rules for Machinery (Chapter 4), Section 16, B.2.6. are to be considered. Plastic pipes are pipe class III and need a Manufacturer Test Report for approval.

Testing of materials under supervision of **TL** is only necessary for pressure pipes with nominal diameter DN > 50 mm.

Pipes of aluminium or aluminium alloys are pipe class I or II and need for PB x DN > 1500 a **TL** Material Certificate and for PB x DN ≤ 1500 a Manufacturer Inspection Certificate for approval.

6.2 Special Crafts with L up to 24 m and TL HSC Rules not to be applied

Special Crafts shall meet the requirements of the **TL** Rules for Construction and Classification of Yachts (Chapter 9), Section 7, E. and Appendix and additional requirements defined case by case.

6.3 Special Crafts with 24 m ≤ L ≤ 50 m and TL HSC Rules not to be applied

6.3.1 On principle Special Crafts shall meet the requirements of the **TL** Rules for Machinery (Chapter 4), Section 16 for "cargo ships" as far as applicable.

The exceptions from this principle and/or special, deviating requirements are defined in the **TL** Rules for Construction and Classification of Yachts (Chapter 9), Section 7, E. and Appendix.

6.3.2 For Special Crafts of a length ≤ 50 m, Manufacturer Inspection Certificates according to the **TL** Rules for Material (Chapter 2) are sufficient for materials of fittings and valves in pipe classes I and II.

6.4 Special Crafts where HSC terms are met

If the HSC terms according to the **TL** Rules for High Speed Craft (Chapter 7), Section 1, 1.3 (Application) or Owner's request are met, the requirements for Auxiliary Systems of Section 10, Part A+C or Part A+B are to be considered.

7. Fire Protection and Fire Extinguishing Equipment

7.1 Selection of rules

The selection procedure for applicable rules and regulations for fire extinguishing systems of Special Crafts is given in flow-chart in Section 8.

7.2 Naval and Non-naval Special Crafts

The rules and regulations as shown in flow-chart in Section 8. are to be applied.

8. Solid Waste Handling System

It can be assumed that only some waste compacting is applicable to Special Crafts.

9. Ventilation Systems

For ventilation systems see **TL** Rules for Ventilation (Chapter 28).

10. Hydraulic Systems

Testing of materials under supervision of **TL** is only necessary for pressure pipes with nominal diameter DN > 50 mm.

11. Pressure Vessels

11.1 In the case of hydrophore tanks with a maximum allowable working pressure of up to 7 bar gauge and a maximum working temperature of 100 °C an examination of the drawings can be dispensed with.

11.2 The requirements of this Section may not apply to pressure vessels with a maximum allowable working pressure of up to 0,5 bar gauge.

11.3 Electrically heated equipment has to be equipped with a temperature limiter besides of a temperature controller.

11.4 The equipment on pressure vessels has to be suitable for the use on ships. The limiters for e.g. pressure, temperature and flow are safety devices and have to meet the requirements of the **TL** Additional Rules for the "Tip Testlerinin Yapılması İle İlgili Kurallar" (Regulations for the Performance of the Type Tests).

11.5 It is recommended to perform the testing of gas cylinders according to the **TL** Rules for Machinery (Chapter 4), Section 14, G.5. Recognition of other tests may be agreed, if the requirements defined in the **TL** Rules for Machinery (Chapter 4), Section 14, G.7. are considered.

12. Oil Firing Equipment

As boilers will in general not be provided for Special Crafts this item is in general not relevant.

13. Spare Parts

Depending on the Service Are Notation it may be discussed with **TL** to determine an adequate amount of spare parts in similar way as practiced in the **TL** Rules for Machinery (Chapter 4), Section 17.

Contents

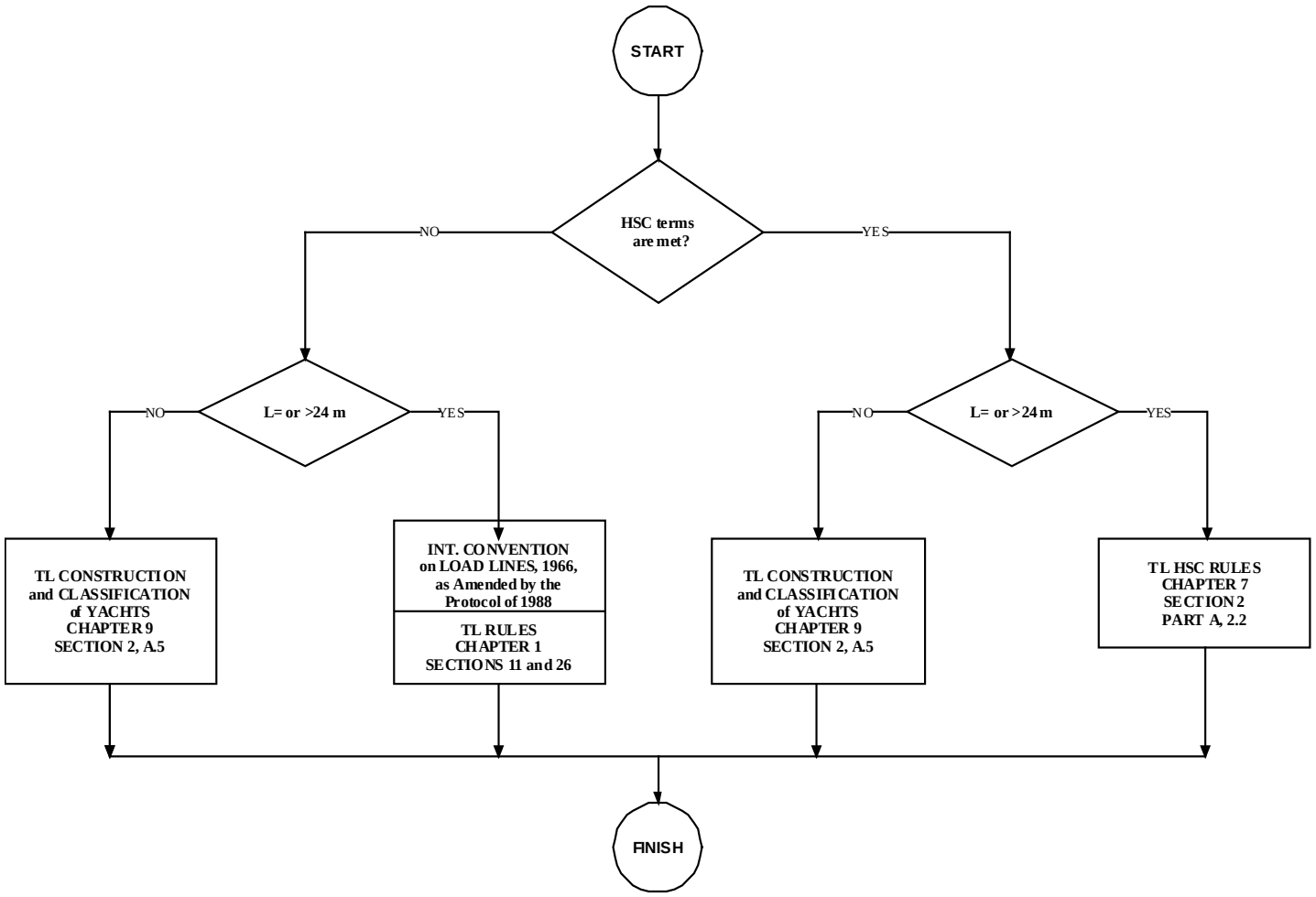
A. PATROL BOAT

1. Watertight/Weathertight Integrity

1.1 Flow-chart

Following flow-chart is to be applied for patrol boats.

Selection of rules and regulations for the watertight/weathertight integrity

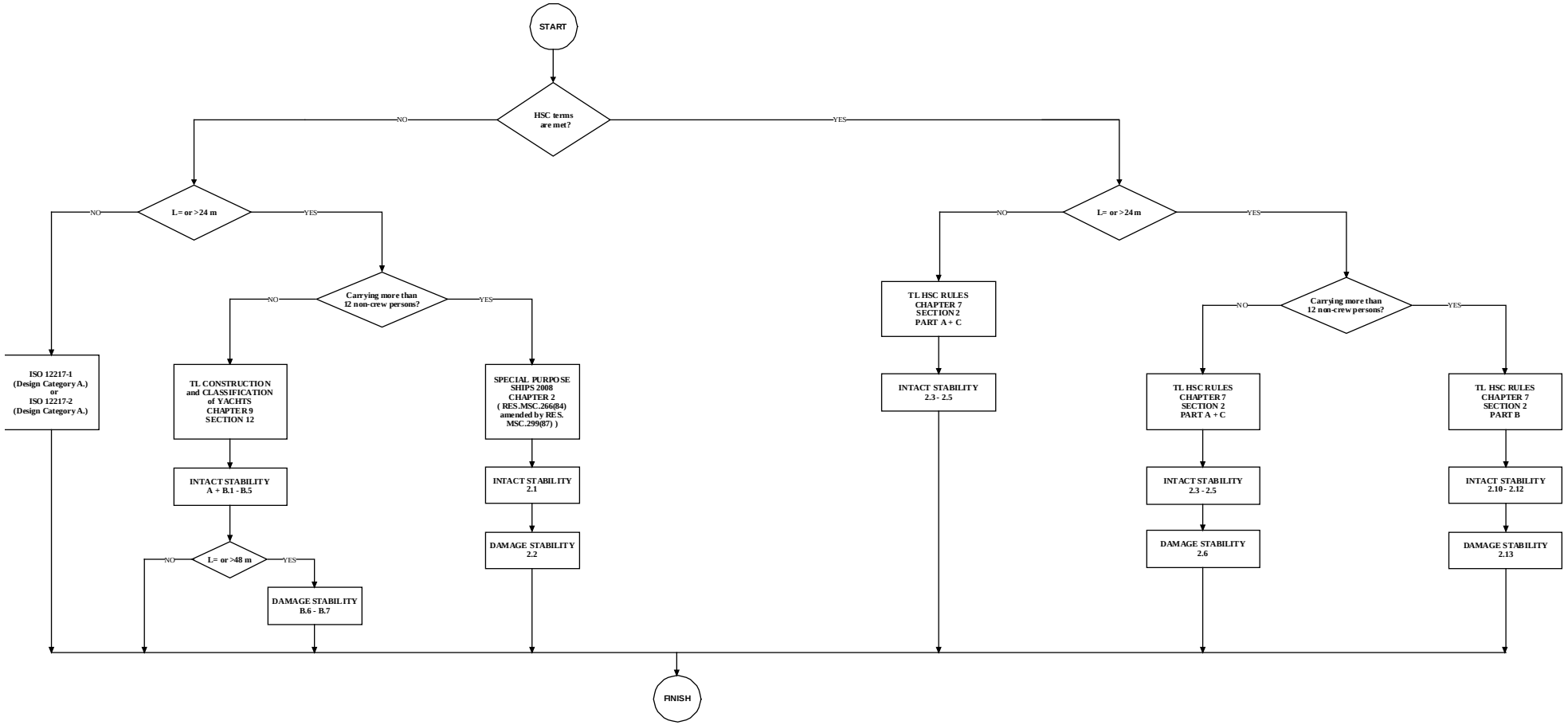


2. Stability

2.1 Flow-chart

Following flow-chart is to be applied for patrol boats.

Selection of rules and regulations for stability



2.2 Further Requirements

Following requirements are to be applied for patrol boats:

2.2.1 Intact Stability

The stability requirements for assignment of main class are to be complied with.

2.2.2 Reserve buoyancy

2.2.2.1 Internal foam buoyancy units or similar may be accepted when inspection of structure is possible. Parts of essential structures should be readily accessible via a hatch or equivalent.

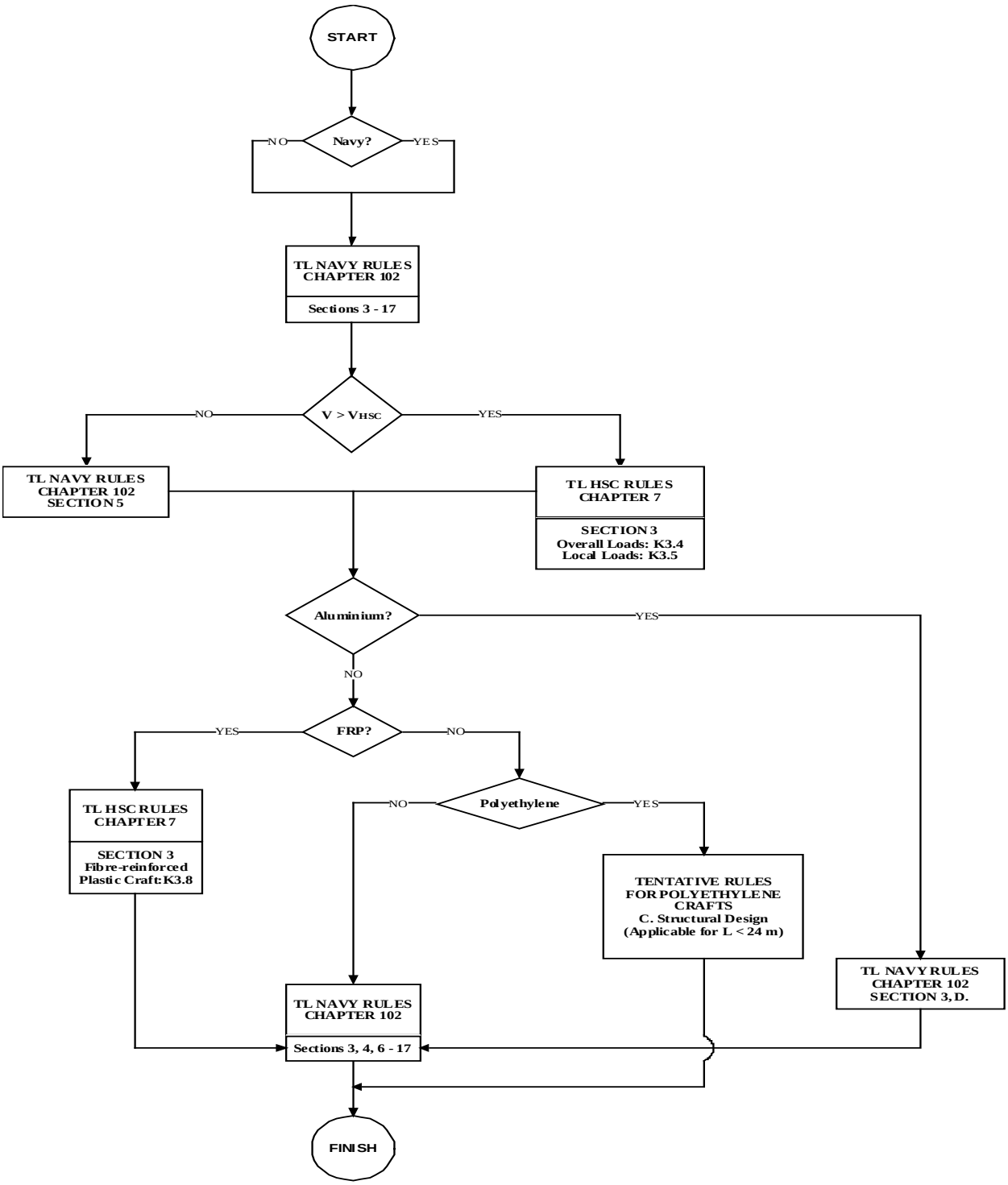
2.2.2.2 Foam buoyancy in the hull below waterline and enclosed superstructure may be included in the reserve buoyancy.

3. Design of Hull Structures

3.1 Flow-chart

Following flow-chart is to be applied for patrol boats.

Selection of rules and regulations for the design of hull structures

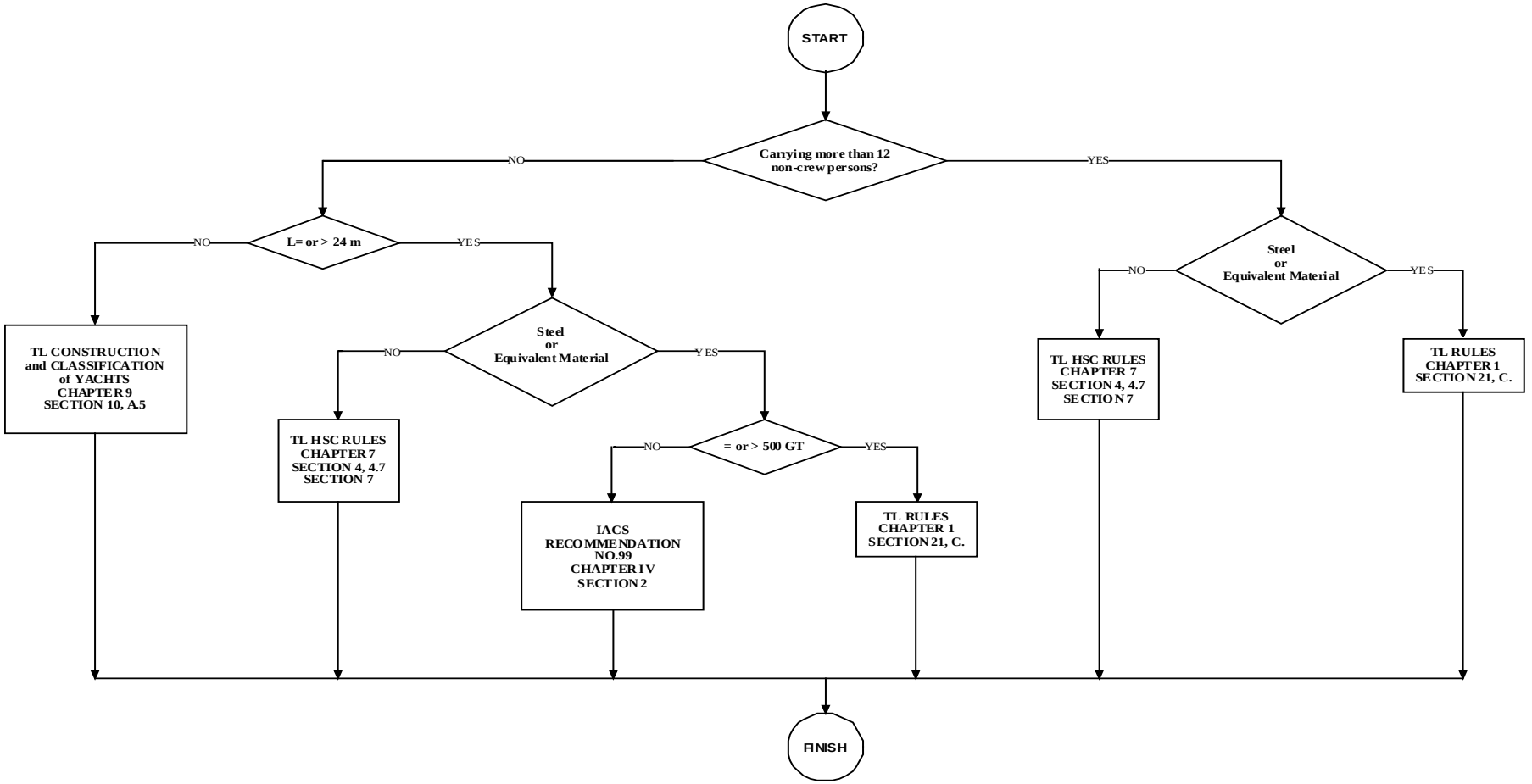


4. Structural Fire Protection

4.1 Flow-chart

Following flow-chart is to be applied for patrol boats.

Determination of the structural fire protection rules



4.2 Further Requirements

Following requirements are to be applied for patrol boats:

4.2.1 General

For crafts which are less than 24 m.;

4.2.1.1 Machinery spaces of major fire hazard, galleys above 10 m^2 and storage spaces for ammunition shall be enclosed by steel or equivalent fire resisting divisions. For ammunition stores, the insulation shall be provided on the external boundaries of the space, except where bounding tanks, voids and open spaces.

4.2.1.2 Principal partition is to have an A-30 insulation. For steel structures, A-0 towards void and open spaces is considered sufficient.

Note: *A principal partition is the partition (bulkhead or deck) between machinery space on one hand and the steering position or cabin above or adjoining on the other.*

4.2.1.3 No structural fire protection requirements are applicable to areas other than specified in first paragraph.

4.2.1.4 In spaces where the penetration of oil products is possible, the surface of insulation shall be impervious to oil or oil vapors.

4.2.1.5 Paints, varnishes and other finishes used on exposed interior surfaces are to be of an approved low flame-spread type and shall not be capable of producing excessive quantities of smoke and toxic products.

4.2.1.6 No requirements related to restricted use of combustible materials and smoke-tight division will apply.

4.2.2 Escape ways and arrangement

4.2.2.1 All spaces shall be provided with satisfactory means of escape through corridors, stairways or other spaces independent of the space considered, all with a minimum free opening of 700 mm in all directions. Where a secondary means of escape is required, this can be provided by a permanent ladder and hatch arrangement with a free opening of minimum 500 mm in all directions. Doors and hatches not capable of being unlocked from both sides shall not be regarded as an escape way.

4.2.2.2 Escape routes shall be separated from adjacent spaces by at least class B divisions.

4.2.2.3 Dead-end situations exceeding 7 m in length shall be avoided in any case.

4.2.2.4 For accommodation spaces, two means of escape from every restricted space or group of spaces shall be provided unless there is a means of escape that leads directly to the open deck.

4.2.2.5 For machinery spaces of major fire hazard, two means of escape shall be provided, except where the space has a length of less than 5 m and direct access to open deck is provided.

4.2.2.6 Below the lowest open deck at least one means of escape shall be independent of watertight doors.

4.2.2.7 Fire doors need not be remotely operated or self closing. However, where fire doors bounding areas of major fire hazard are not self closing, they shall be normally shut and fitted with indicators to provide warning in the control station when the doors are not completely closed.

4.2.2.8 Fuel oil tanks may be located contiguous to machinery spaces of major fire hazard provided the boundary between such spaces and fuel oil tanks are protected with 60 minutes fire-resisting divisions.

4.2.2.9 Petrol for auxiliary purposes may be stored in limited volume. Petrol shall only be stored on open deck or in compartments effectively ventilated to open deck. The storage position shall be so arranged that under no circumstances can inflammable or explosive fluids or gases accumulate, for example, in lower parts of the hull.

4.2.3 Fire Detection

4.2.3.1 Fire detection systems

4.2.3.1.1 An approved automatic fire detection and alarm system shall be installed, to indicate, at the craft's control station, the location of an outbreak of fire. In the event that the control station is unmanned, an audible alarm shall be automatically sounded throughout the crew compartments.

4.2.3.1.2 All enclosed spaces, except areas of no fire risk and limited areas of minor fire risk such as void spaces and bathrooms of limited area within cabins, shall be provided with fire detectors. Spaces with floor area below 4 m^2 and ceiling area below 6 m^2 shall in this context be considered spaces of limited area.

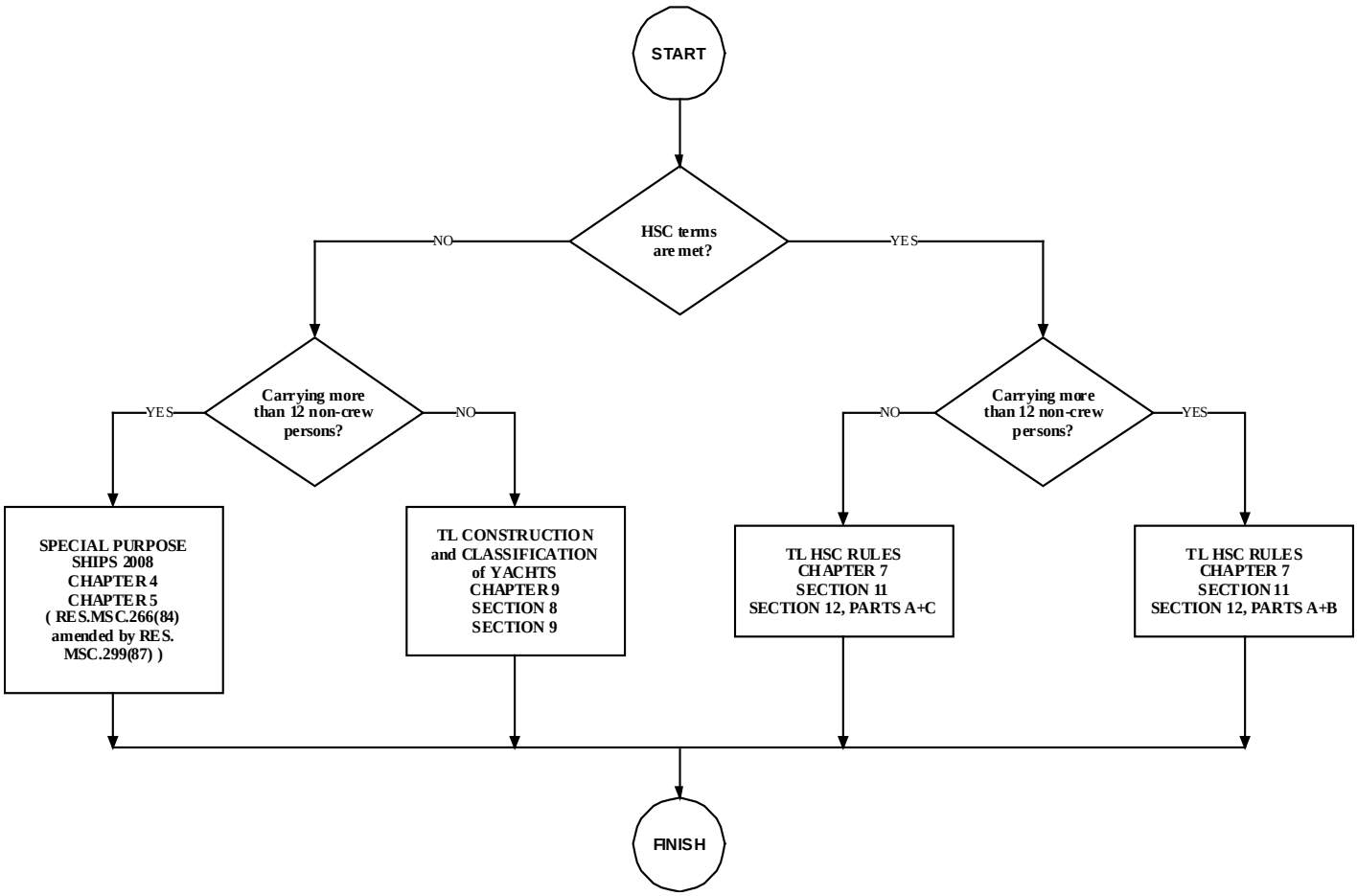
4.2.3.1.3 Patrol boats need not be fitted with TV cameras in main propulsion machinery room.

5. Electrical Installations and Automation

5.1 Flow-chart

Following flow-chart is to be applied for patrol boats.

Selection of rules and regulations for electrical installations and automation



5.2 Further Requirements

Following requirements are to be applied for patrol boats:

5.2.1 Emergency source of electrical power

5.2.1.1 Vessels with service area notation Y shall have an emergency source of electrical power located above the uppermost continuous deck and readily accessible from open deck.

The services given in **TL** Rules for Electrical Installation (Chapter 5) shall be supplied by the emergency source of power for the period.

5.2.1.2 Vessels with service area notation Y - K50/20:

Shall be provided with an emergency source of electrical power situated above the uppermost continuous deck and outside the machinery casings, capable of, for minimum 3 hours, supplying the following consumers:

a) Emergency lighting at stowage positions of life-saving appliances, at all escape routes, in machinery spaces and the main and emergency generating spaces including their control positions, at control stations, at steering gears.

b) Main navigation lights and “not under command” lights.

c) Daylight signalling lamp (intermittent operation).

d) Electrical internal communication equipment.

e) Craft radio facilities (GMDSS).

f) Craft's whistle (intermittent operation).

g) Fire detection system. Fire alarm to have capacity for 0.5 hour.

h) General alarm system (0.5 hour capacity for alarm).

i) Remote control devices of fire-extinguishing systems (if fitted).

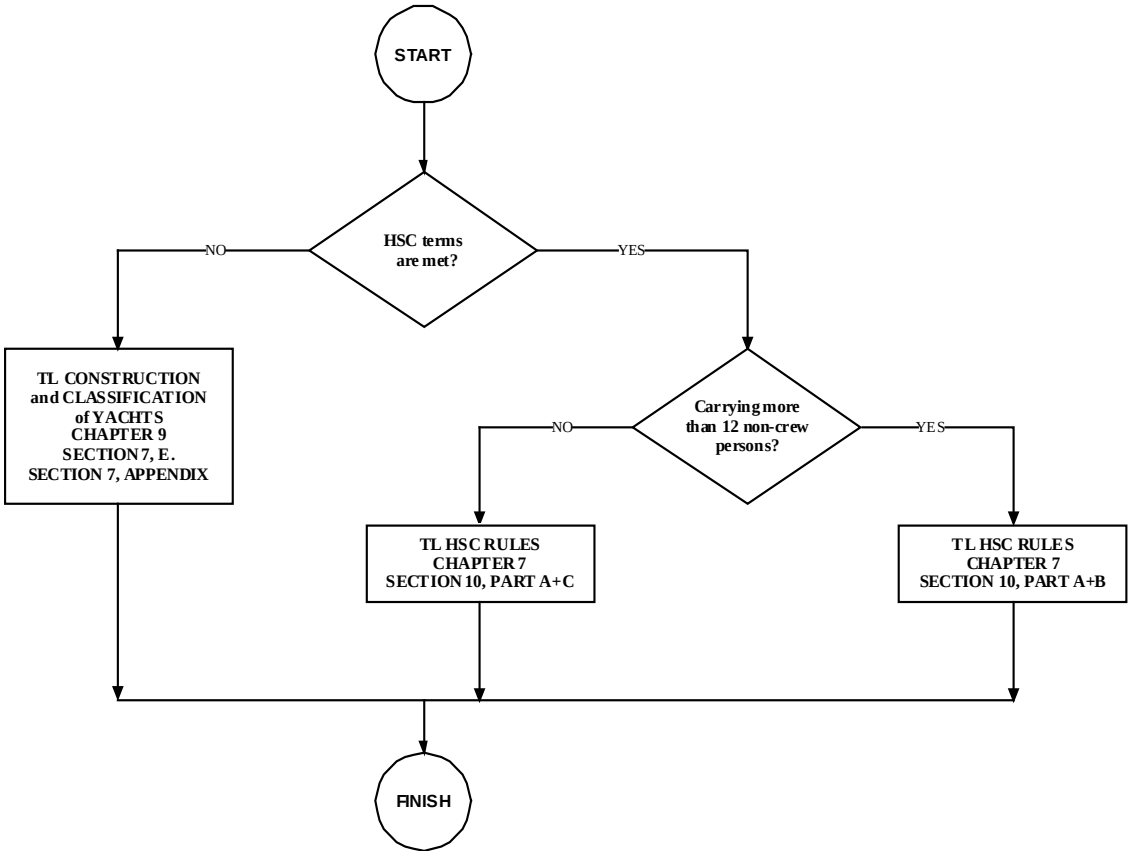
j) Emergency fire pump when electrically driven (if fitted).

6. Tanks, Piping Systems and Pumps

6.1 Flow-chart

Following flow-chart is to be applied for patrol boats.

Selection of rules and regulations for tanks, piping systems and pumps



6.2 Further Requirements

Following requirements are to be applied for patrol boats:

6.2.1 General

Patrol boat is in general to comply with the requirements in Chapter 4, Section 16 with the modifications specified in this section.

6.2.2 Bilge Pumping

Leakage detection shall be provided in all main compartments below the waterline i.e. forepeak, accommodation, double bottom, engine compartment etc.

6.2.3 Pumps

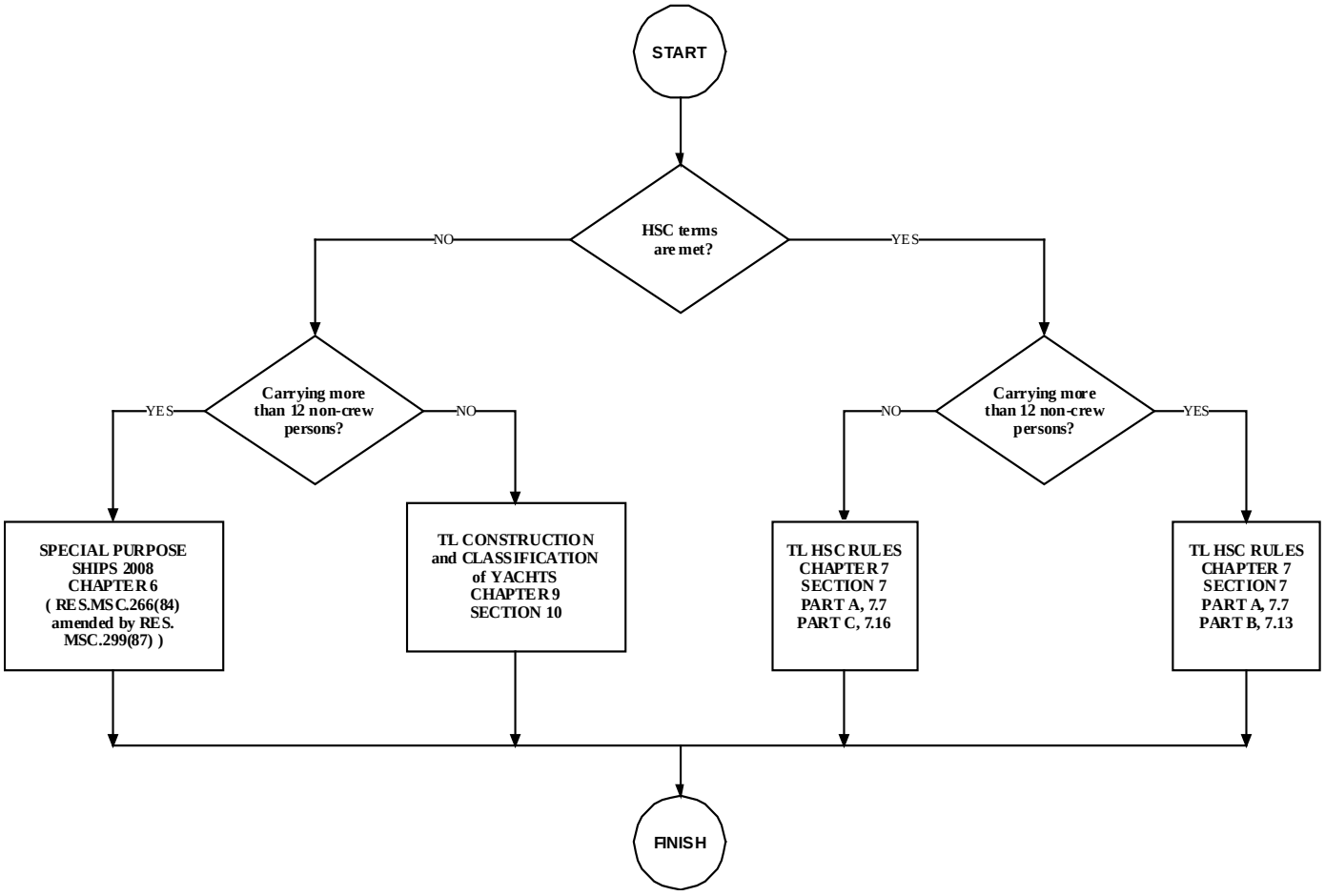
The requirements for certificates for pumps will be specially considered.

7. Fire Extinguishing Systems

7.1 Flow-chart

Following flow-chart is to be applied for patrol boats.

Selection of rules and regulations for fire extinguishing systems



7.2 Further Requirements

Following requirements are to be applied for patrol boats:

7.2.1 Extinguishing Systems

7.2.1.1 Spaces and galleys above 10 m^2 shall be fitted with a fixed fire extinguishing system according to 2000 HSC Code Ch. 7.7.3.

7.2.1.2 For areas of major fire hazard, remote control of the fixed extinguishing system from the control station is not required provided local manual control is in a safe and readily available position.

7.2.1.3 The quantity of gas required for one discharge is accepted as being sufficient where gas is used as the extinguishing medium. A minimum capacity of 40% of the gross volume of the complete machinery space is to be provided for when using CO_2 systems.

7.2.1.4 For non-naval patrol boats deep fat cooking equipment and galley ducts, fixed extinguishing systems are not required.

7.2.1.5 Sprinkler system in accommodation is not required, irrespective of size.

7.2.2 Portable extinguishers

7.2.2.1 The number and type of extinguishers shall be according to MSC/Circ 1275. In any case, for each deck and main engine room at least 1 (one) extinguisher shall be provided.

7.2.2.2 The capacity shall be according to Fire Safety Systems Code (FSS Code) Chapter 4.3.1.1.

7.2.3 Fire pumps and fire main

7.2.3.1 Minimum one main fire pump shall be provided.

7.2.3.2 The capacity shall be at least 25 m^3/hr.

7.2.3.3 The pressure at hydrants shall be minimum 2.7 bars with any two hydrants in simultaneous operation.

7.2.3.4 Craft with an overall length of more than 40 m, or where the main fire pump is installed in a space not protected by a fixed fire extinguishing system, shall be fitted with an emergency fire pump with minimum capacity of 15 m^3/hr.

7.2.3.5 For hoses, hydrants and nozzles, 2000 HSC Code Ch.7.7.5 applies.

7.2.4 Equipments

7.2.4.1 A duplicate set of fire control plans is not required to be stored outside the deckhouse.

7.2.4.2 Patrol boats need not carry fireman's outfits.

8. Equipment Number

8.1 Flow-chart

Following flow-chart is to be applied for patrol boats.

Determination of rules and regulations for equipment number