CONSTRUCTION STANDARDS FOR SMALL FISHING VESSELS

Mechanical system

Section 9

General: (9.1.2)

Present requirements:

- Propulsion and auxiliary machinery plant design, requirements are defined by the Marine Machinery Regulations

Proposed requirements:

- Propulsion and ancillary systems on board vessel < 24 M shall meet various specific requirements

Impact:

- Low, already into practice
General Details (9.1.2)

- Machinery location and arrangement shall be easily accessed for normal maintenance
- Propulsion machinery is to be of a design, construction and power suitable for the design, purpose and dimensions of the vessel
- Inboard gasoline engine installation is not prohibited on all new construction > 12 M and voyages > 25 miles
- Propulsion and auxiliary machinery shall meet roll and heel under dynamic condition
- Means of controlling the risk of an engine over speed shall be provide
- Industrial or surface engine shall be marine adapted to manufacturer requirements

Outboard Engines/OM (9.1.4)

Present requirements:

- Propulsion outboard engines, no mandatory rules

Proposed requirements:

- Engines installation > 15 kW shall be bolted to the transom
- Installation of outboard engine for propulsion is limited to voyage < 25 miles

Impact:

- None
Machinery approvals: (Engines) (9.1.5)

Present requirements:
- Engine approvals and registration by TCMS, required under the *Marine Machinery Regulations*

Proposed requirements:
- All engines shall meet ISO 3046, *reciprocating internal combustion engine-performance* or ISO 8665 *Small craft-Marine propulsion engines* (except outboard and gasoline engine)
- Engines > 130 kW (175 HP) shall meet IMO NOX technical code
- Engines > 500 kW (670 HP) rated brake power shall be a type approved by a classification society or approved by Transports Canada

Impact:
- Moderate, has to be taken into consideration before purchasing any equipment

Gearing approvals: (reduction gear boxes) (9.1.5)

Present requirements:
- Gearing approval and registration by TCMS, required under the *Marine Machinery Regulations*

Proposed requirements:
- All gearings shall be from a serial construction and have a performance test to demonstrate reliability and sufficiency
- Gearings > 500 kW (670 HP) rated brake power shall be a type approved by a classification society or approved by Transports Canada
- Tunnel thrusters shall be approved by a classification society

Impact:
- Moderate, has to be taken into consideration before purchasing any equipment
Operating Station Controls and Gauges (9.1.8)

**Present requirements:**

- No mandatory requirements

**Proposed requirements:**

- All vessels shall have at the control station various gauges and indicators clearly and permanently identified

**Impact:**

- Low, already a practice in vessel construction

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Operating Station Controls and Gauges (9.1.8)

**General requirements:**

- Engine RPM, oil pressure, engine coolant temperature (except outboard engines)
- Hydraulic transmission gearing oil pressure and temperature
- Fuel gauge capacity or adequate means
- Battery charging indicators
- Control for navigating lights and steering gear
- Bilge indicators
- Fire detection panel and alarms
- Engine shut off device (steel rod or non-flammable electrical wires)
- Rudder angle indicator
- Local control on the machinery shall be provided in case of a remote system failure.
Shafting (9.1.9)

Present requirements:

- Vessels < 15 GT has no mandatory regulations
- Vessels > 15 GT requirements are with the actual regulation

Proposed requirements:

- Use the existing regulatory formula or use the ABYC, P-6 propeller shafting system
- Shaft end tapers shall conform to SAE J755
- Shaft couplings shall conform to rules and code or the propulsion machinery manufacturer

Impact:

- Low, already a practice in vessel construction

Propeller (9.1.10)

Present requirements:

- All vessels have no mandatory regulation, application of the good marine practice

Proposed requirements:

- Propeller minimum tip clearance of open water type propeller in its aperture shall be 10% of propeller diameter at the top and 6% at the bottom but not less than 50 mm

Impact:

- Low, already a practice in vessel construction
**Steering (9.1.11)**

**Present requirements:**
- Steering system for vessels < 15 GT has no mandatory regulation
- Steering system for vessels > 15 GT requirements for auxiliary steering only

**Proposed requirements:**
- All vessels shall have a mechanical means to move the rudder
- Steering system operable from the control station and be able to manoeuvre the ship under normal operating condition
- Design to move the rudder from 35 degrees one side to 35 degrees to the other side when the vessel is at full speed, and from 35 degrees on one side to 30 degrees on the other side no more than 28 seconds

**Impact:**
- Low, already a practice in vessel construction

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**Emergency Steering (9.1.12)**

**Present requirements:**
- Vessels < 15 GT has no mandatory regulation
- Vessels > 15 GT requirements are with the actual regulation

**Proposed requirements:**
- Emergency steering is required for vessel intended service in remote areas or where help is not readily available
- Exemption could apply
- Where deems necessary for the safe operation of the system a means of communication shall be provided between the wheelhouse and steering space

**Impact:**
- Medium, already a practice in vessel construction except for the communication means
Emergency Steering (9.1.12)

Emergency steering system not required for:

- Multiple screws with independent control
- Steering obtained by a directional setting of propulsion units
- Vessel fitted with a rudder and hand tiller
- Vessel fitted with adjustable trim tab and can be steered at slow speed
- Vessel fitted with a bow thruster

Rudders and Rudder Stocks (9.1.13)

Present requirements:

- Vessels < 15 GT has no mandatory regulation
- Vessels > 15 GT requirements are with the actual regulation

Proposed requirements:

- Rudders and rudders stock shall be constructed to rules and code recognized by the marine community or as per actual regulation formula of rudders stock sizing
- Permanent means preventing rudder from swinging beyond normal operating range and permanent means to secure the rudder in a fixed position in an event of steering failure

Impact:

- Medium, already a practice in vessel construction
**Exhaust System (9.1.14)**

**Present requirements:**
- Vessels < 15 GT has no mandatory regulation
- Vessels > 15 GT requirements are with the actual regulation

**Proposed requirements:**
- All system shall be gastight, insulated, with protective guard and spark or flame arrester
- All exhaust fitting, joints, clamp shall be accessible for inspection and repairs
- Threaded pipe and fittings shall be schedule 80 pipe or equivalent
- Non metallic exhaust system shall comply with UL1129, standard for wet exhausts or SAE J2006 Marine exhaust hose

**Impact:**
- Low, already a practice in vessel construction

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**Bilge Pumping Arrangement (9.2.)**

**Present requirements:**
- Vessels < 15 GT as no mandatory regulation
- Vessels > 15 GT have detailed requirements with the actual regulation

**Proposed requirements:**
- Changes from actual requirements

**Pumping:**
- Pumps capacity slightly raised
- Volumetric pump with rubber impeller are not allowed
- Pump quantities related to ship length
Bilge Pumping Arrangement (9.2)

Bilge system requirements:

- Overboard discharge shall be above vessel loaded waterline
- Piping made of metal, rigid plastic and GRP, non collapsible and non-oil degradable hose with flange or robust double clamp connections
- Vessels > 12 M, engine room piping shall be metallic or be fire resistant
- Vessel < 12 M, piping shall have minimum diameter of 25 mm (1 inch)
- Vessel > 12 M, piping shall have a diameter of 38 mm (1 ½ inches)

Bilge Pumping Arrangement (9.2)

Bilge high level detection system (bilge)

- Vessels > 6 M, if the ship bottom is not easily observed, it shall have an audible and visual alarms to the wheelhouse et crew quarters
  - High level within an unoccupied machinery compartment or any other space where the hull as a penetration under the water line
  - When an automatic pump is operating

Impact:

- Important, for vessels < 12 M
**Prevention of Oil Pollution (9.3.25)**

**Present requirements:**
- Vessels > 100 GT, save-all installed for fuelling operation as per the *Oil pollution prevention regulation*

**Proposed requirements:**
- Vessels > 18 M shall have a bilge water holding tank. The tank shall be fitted with a pipe leading to a deck connection used to discharge the contents to a reception facility or several portable tanks not exceeding 25 litres may be used.
- Exemption for holding tanks: No tank is required if the vessel is equipped with an oily water separating device approved as per the Oil Pollution Prevention Regulations

**Impact:**
- Important, construction and installation cost are high

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**Rigid plastic or fibre reinforced plastic piping (9.2.8)**

**Present requirements:**
- Vessels < 15 GT, no mandatory requirements
- Vessels > 15 GT, no mandatory requirements with the actual regulation but the *Marine Machinery Regulations* was applied

**Proposed requirements:**
- All vessels will be allowed to use plastic piping for definite system and under restricted conditions
- Plastic or reinforced plastic piping and components shall be fire retardant / non combustible and approved by UL, ULC and NFPA

**Impact:**
- Moderate, plastic piping installation is not expanded to Québec vessel construction
Rigid plastic or fibre reinforced plastic piping (9.2.8)

Specifics for piping and fitting usages: (may be used)

- Domestic and sanitary salt water, fresh water and waste water
- Scupper draining inboard provided the piping is visible and easily accessible
- Ballast water and fresh water piping situated inside tanks used only for ballast water or fresh water
- Sounding and vent pipes to tanks used only for ballast water and fresh water except section above the deck. Sounding pipe in hold spaces
- Chilled or refrigerated sea water piping for fish holds or tanks
- In accommodation areas provided the piping is kept to a minimum and protected from heat source

Rigid plastic or fibre reinforced plastic piping (9.2.8)

- Divisions other than steel, a system utilizing plastic or GRP shall not compromise the integrity of the area where the penetration occurs
- Through a metallic bulkhead or decks, a metallic spool piece attached to the bulkhead or deck and shall be installed to maintain the integrity of the divisions
- With metallic watertight or fire retardant divisions and metallic shut-off valves which shall be remotely control from above the bulkhead deck
- The remote operable control will not be required if:
  - Piping of one side of the bulkhead or deck is metallic and a valve is fitted to the metallic piping and easily accessible
  - Two valves are installed, one on either side of the bulkhead or deck
Thank you

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