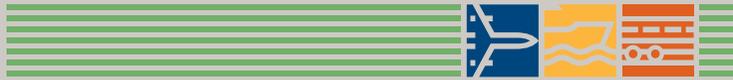




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TP 14070E
(12/2010)

Small Commercial Vessel

Safety Guide



Canada 

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This document is a guide only. It does not replace the applicable regulations, standards, advisory materials or other guidance documents. It is not meant to be, nor should it be seen as, a substitute for the expertise of marine surveyors, consultants or those who modify, repair or maintain the types of vessels covered in this guide.

The information it contains has been updated to reflect changes brought about by the entry into force, in July 2007, of the *Canada Shipping Act, 2001* and the requirements as of time of printing of new and amended regulations.

The guide explains many of the requirements for small vessels, but because laws and regulations can change over time, the information in this guide may not be current. If in doubt about the status of the information presented or how it affects your vessel, check the Transport Canada Marine Safety website (<http://www.tc.gc.ca/marinesafety/menu.htm>) to determine the laws and regulations that apply. If you are still not sure, contact your local Transport Canada Centre (see Appendix 2).

For the purposes of interpretation and application of the specific Acts and regulations, please consult the Department of Justice website (www.laws.justice.gc.ca).

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Who should read this guide?

This guide is for owners and operators of small commercial vessels because **you** are responsible, by law, for knowing, controlling and defending against the risks related to your vessel and its use. The purpose of this guide is to inform you of these responsibilities, and to let you know the safety requirements that apply to your operation and how to comply with them to avoid accidents.

The information in this guide relates to:

- passenger-carrying commercial vessels that are not more than 15 gross tonnage and that carry no more than 12 passengers; and
- workboats (commercial vessels that do not carry passengers) that are not more than 15 gross tonnage.

For more information on which vessels are covered in this guide and how to determine which requirements apply to your operation, refer to Table 1-1, Vessel Categories, Purposes and Applicable Small Vessel Regulations.

Note: While the information in this guide is intended mainly for owners and operators, anyone who works on or with small commercial vessels may find it useful. The general safety information can also be helpful for owners of vessels of more than 15 gross tonnage or carrying more than 12 passengers, as well as small fishing vessel owners, even though the regulatory requirements for such vessels may be different.

Introduction





Accidents don't just happen. Unsafe water conditions, crew error, equipment failure — any one or a combination of these can turn random events into accidents... sometimes with tragic results.

Laws can't eliminate human error and equipment failure. However, you can increase the safety of your vessel if you:

- comply with regulations;
- apply best practices;
- increase crew knowledge; and
- improve vessel condition and emergency preparedness.

This guide can help you do that. It doesn't cover every marine regulation or standard, but if you own, operate or crew a commercial vessel that is not more than 15 gross tonnage and does not carry more than 12 passengers, it can help you make sure that your vessel is ready to operate safely and is properly equipped for emergencies. Practical tools such as the sample maintenance schedule and compliance checklist at the end of this guide can help you check that you meet minimum safety requirements, as well as keep your vessel in top running order and prevent dangerous situations and costly breakdowns.

This guide and the operations and training manual templates available on the Transport Canada Marine Safety website (www.tc.gc.ca/marinesafety/debs/small-vessels/procedures.htm) are part of the program to promote safety. Read and use them to help you understand and comply with the law, and, most importantly, operate safely. Remember that this is a guide only. To know all the requirements that apply to your operation and the legal wording, you must refer directly to the *Canada Shipping Act, 2001* and its associated regulations.

Don't accept safety hazards as the cost of doing business. You have a duty to understand and comply with the laws and regulations that apply to your vessel. Your responsibilities under the *Canada Shipping Act, 2001* are summarized in Appendix 1. If you understand and comply with the *Canada Shipping Act, 2001* and its regulations and standards, as well as follow prudent marine practices, you will improve your operation's safety. You will find website URLs for the regulations referred to at the end of each chapter so that you can check the legal wording online if you have a question about a topic.

We suggest that you download the checklists, sample maintenance schedule, emergency procedures and other files and change them to reflect **your** vessel and operation. You can use them to make your own operations and training manual to help you run your business and meet your responsibilities for safety.

Definitions

Definitions for certain words used in this guide follow because they are used frequently and are either not defined in legislation, or are defined in legislation but another, more common, word has been used in their place.

“Authorized Representative”* – the person who is responsible under the *Canada Shipping Act, 2001* for acting with respect to all matters relating to the vessel that are not otherwise assigned by this Act to any other person. The authorized representative of a Canadian vessel is the owner of the vessel. Where a foreign vessel is brought into Canadian registry under a bare-boat charter, the authorized representative is the bare-boat charterer. If more than one person owns a vessel, the owners must appoint one of themselves as the authorized representative. If the owner is a corporation, the authorized representative is the corporation. In this guide, owner means authorized representative.

“Construction requirements” – requirements for vessel design and construction as set out in the *Small Vessel Regulations* and the *Construction Standards for Small Vessels* (TP 1332).

“Commercial vessel” – a vessel that is not a pleasure craft or used for commercial fishing. The *Small Vessel Regulations* do not define “commercial” but refer instead to “vessels other than a pleasure craft.” Both “commercial vessel” and “non-pleasure vessel” are used in this guide to mean “vessel other than a pleasure craft.” Vessels of all types, including human-powered vessels and vessels that are owned by any level of government and government entities like fire and police departments, are commercial vessels unless used only for pleasure.

A **small commercial vessel** is a vessel that is no larger than 15 gross tonnage and, if it is used to carry passengers, carries no more than 12 passengers.

“Fishing vessel” – a vessel used for commercially catching, harvesting or transporting fish or other living resources. Includes vessels that are less than 24 metres in length whose sole activity relates to the catch or harvest of another vessel or aquaculture facility (defined in the *Marine Personnel Regulations*). Vessels used for hire with a guide or crew for sport fishing charter operations are small commercial vessels, not fishing vessels. Vessels engaged in fishing for pleasure by their owner or renter are still pleasure craft.

“Gross tonnage”* – the measure of the overall size of a vessel as determined by a tonnage measurer or calculated according to the *Standard for the Tonnage Measurement of Ships* (TP 13430) Part 3. Calculation of gross tonnage is required when you register your vessel (see Chapter 3).

“Guest”* – a person on board a vessel that is used exclusively for pleasure that is carried without remuneration or any object of profit (from the definition of “passenger”).

“Pleasure craft”* – a vessel that is used for pleasure and does not carry passengers. If the vessel is used for the daily living needs of the operator, e.g., transportation or subsistence fishing/hunting, it is still considered a pleasure craft.

“Passenger”* – anyone on a vessel except for the master, a member of the crew or a person employed or engaged in any capacity on board the vessel on the business of that vessel, or a guest on board a pleasure craft. A fare does not have to be paid for a person to be considered a passenger.

A person employed or engaged in any capacity on board the vessel on the business of that vessel is a person who works on the vessel as part of the service provided by the vessel or to service the vessel, but is not part of the crew. Examples include waiters and tour guides. Persons employed by the person or company that operates the vessel who are being transported to their place of work are considered passengers.

The following are **not** passengers:

- people who are on board because the law says that the master must carry them, such as shipwrecked or distressed persons;
- people who are on board due to circumstances that neither the master nor the owner could have prevented; and
- people who are designated not to be passengers in regulations (described in the *Canada Shipping Act, 2001* as “persons of a prescribed class”).

“Owner” – in this guide means the “authorized representative” as defined in the *Canada Shipping Act, 2001*. See “authorized representative,” above.

“Operator” – means the person in command and charge of a vessel. This guide uses the terms “operator,” the more common term for the person in charge of a small vessel, and “master,” the term used in the *Canada Shipping Act, 2001* and regulations, interchangeably.

“Workboat” – a vessel that is not a passenger-carrying vessel, a fishing vessel, a human-powered vessel nor a pleasure craft (defined in the *Small Vessel Regulations*).

* defined in the *Canada Shipping Act, 2001*.

Note: The definitions may have been changed slightly for clarity. Refer to the relevant legislation for the legal wording.

Safety Is a Shared Responsibility

Owner/Operator

As a vessel owner and/or operator, your role in running a safe operation is crucial. When you take on a commercial marine operation, the law holds you responsible for the safety of everyone involved.

But you are not alone. Others have a supporting role to play in promoting safety.

Vessel Suppliers

Designers, builders, importers, resellers and repairers are responsible for providing safe vessels. They must make sure that every vessel they design, build, sell or repair meets the minimum safety requirements set out in regulation.

Government

Transport Canada is responsible for promoting the safe operation of vessels and protecting the marine environment from ship source pollution and damage due to navigation.

To do this, Transport Canada manages programs to help owners and operators understand how to operate safely. As well, Transport Canada puts laws, regulations and standards in place that establish minimum safety requirements for vessels and crew, and that set the rules for vessel operation.

To promote compliance with the law, Transport Canada Marine Safety and its enforcement partners — police forces, conservation officers and other agencies — work to raise the safety awareness and the understanding of safety requirements of everyone involved in the marine industry. They also monitor vessels on the water and at dockside to verify that all is in order.

This guide, as well as templates you can use to produce an operations and training manual containing the more common of the procedures required by the *Canada Shipping Act, 2001* are available on the *Transport Canada Marine Safety* website. They are all part of the program to promote small vessel safety. Read and use them to help you understand and comply with the law, and, above all, operate safely.

More Information

Transport Canada Centres (TCCs) are located throughout Canada. There you can get answers to questions you may have on the requirements and how they affect you. To find the TCC nearest you, please contact your regional office (see Appendix 2).

Visit the Transport Canada Marine Safety website at www.tc.gc.ca/marinesafety.

Operations and training manual templates are available at www.tc.gc.ca/marinesafety/debs/small-vessels/procedures.htm.

To research regulations that apply to **your** vessel, please consult the references provided throughout this guide.

Chapter 1

Know and comply with the requirements that apply to you





The safety requirements for all vessels relate to the risk linked to each type and use of vessel. As the vessel size, number of passengers, distance from shore and other environmental risk factors increase, the requirements change to protect the vessel and the people on it.

Consult the following sections for the information you need to determine which requirements apply to **your** vessel.

- Vessel purpose: What You Do Defines What You Are (below).
- Area of operation: Voyage Classes and Restrictions (page 12).
- Vessel size (determined when you register your vessel): Vessel Registration (in Chapter 3).

What You Do Defines What You Are

To know what requirements apply to your vessel, you must know what you are doing with it **in the legal sense**.

The *Small Vessel Regulations* contain safety requirements for five categories of vessels. Which requirements apply depends on the vessel's purpose (what it is used for). If your vessel is used for more than one purpose, such as commercial fishing and carrying passengers, it must meet the applicable fishing vessel requirements when you are fishing and the requirements in the *Small Vessel Regulations* for passenger vessels when you are carrying passengers.

Table 1-1 on page 10 indicates which parts of the *Small Vessel Regulations* apply to each category. Requirements of other regulations, such as the *Collision Regulations*, also apply to small vessels.

Table 1-1: Vessel Categories, Purposes And Applicable Small Vessel Regulations

Category	Purpose	Parts of the Small Vessel Regulations that apply										
		1	2	3	4	5	6	7	8	9	10	11
Pleasure craft	<p>A vessel used only for pleasure or to carry out the needs of daily living, e.g. personal transportation, fishing for one's own food.</p> <p>a) May carry guests (see Definitions, above).</p> <p>b) Includes vessels that are provided, without a master and crew, for pleasure use, as part of lodging rentals, for example.</p> <p>c) May include vessels rented or chartered for pleasure (see Chartered Vessel, page 11).</p>											
		X	X				X ³	X	X	X	X	X
Passenger-carrying	A vessel that carries one or more passengers				X		X ³	X	X	X	X	
Workboat (non-pleasure non-passenger-carrying)	<p>A power-driven or sail-powered vessel that is not used for pleasure and does not carry passengers or engage in commercial fishing.</p> <p>Includes vessels operated by agencies and departments of all levels of government.</p>					X	X ³	X	X	X	X	
Tug	<p>A vessel built or converted primarily for the purpose of towing.</p> <p>Does not include a vessel that is built or converted for the purpose of</p> <p>(a) salvaging logs; or</p> <p>(b) managing oil pollution booms and associated equipment.</p>					X	X ¹			X	X	
Human-powered non-pleasure vessel	<p>A human-powered vessel that is operated for non-pleasure purposes, whether or not it carries passengers.</p> <p>Includes a vessel that leads a guided excursion.</p>			X						X ²	X	X

1. Other regulations apply for construction, such as Part VIII of the *Hull Construction Regulations*, and the *Marine Machinery Regulations*.
2. Does not apply if the vessel is not designed to be propelled by a motor.
3. Applies for vessels to which part 7 does not apply.

Chartered Vessel

If you rent or charter a vessel, it is a commercial vessel if:

- the master is the owner or someone provided by the owner; or
- it is used other than for pleasure.

If you rent or charter a vessel without crew and you either hire a master or operate it yourself, it is a pleasure craft so long as it is used only for your pleasure, hunting or fishing for your own food, or for other needs of your daily living.

If you are the owner, and you rent or charter the vessel without crew to someone else who uses it for pleasure, it is a pleasure craft. If you provide the master, or operate the vessel yourself, it is a commercial vessel.

Fishing Vessels

Owners, operators and crew of vessels up to 150 gross tonnage that are used for commercial fishing should consult the *Small Fishing Vessel Inspection Regulations* (to be replaced by the *Fishing Vessel Safety Regulations*), and the *Marine Personnel Regulations* for the principal requirements for their vessel, bearing in mind that some requirements, like those in the *Collision Regulations*, apply to all vessels. They can get the *Small Fishing Vessel Safety Manual* (TP 10038) online or from a Transport Canada Centre (see Appendix 2). It provides general safety information and can be helpful for training new crew members.

If you use your commercial fishing vessel for some other use, such as carrying passengers, when you are not fishing, the requirements in this guide or some other regulations will apply. Contact your local Transport Canada Centre to learn more.

Other Situations

Contact a Transport Canada Centre for more information on:

- commercial river rafting;
- community-owned search and rescue vessels;
- power or sail boating schools; and
- sail training vessels.

Voyage Classes and Restrictions

Commercial vessels must be designed, built and equipped to operate safely in their area of operation and must be operated in a way that respects their design limitations. This means you must know both your vessel and the area where you operate it.

The requirements for crewing, construction and equipment may change from one voyage class to another. Voyage classes are defined in the Interpretation section of the *Vessel Certificates Regulations* (see Voyage Classes, page 13) and are mainly based on distance from shore and, in some cases, nearest place of refuge.

You must also respect any additional restrictions/requirements noted on the Notice of Inspection, if one has been issued to the vessel. Such restrictions are based on an assessment of the vessel's design, the crew's qualifications and the equipment carried. The Notice of Inspection may also define limits for the area you can operate in or set environmental conditions (e.g., wave height and wind speed) and other voyage restrictions.

It is your duty to:

- be aware of and comply with the safety requirements that apply to your vessel;
- not exceed your vessel's design limitations; and
- respect recommended limits for maximum load and environmental conditions.

Did you know...?

Voyage classes changed in 2007, when the *Canada Shipping Act, 2001* came into force. Where there used to be ten voyage class definitions, there are now just four: Sheltered Waters Voyage; Near Coastal Voyage, Class 1; Near Coastal Voyage, Class 2; and Unlimited Voyage. Consult the *Vessel Certificates Regulations* for the legal definitions.

Voyage Classes

Sheltered Waters Voyage – a voyage that is in Canada on a lake or a river above tidal waters, where a vessel can never be further than 1 nautical mile from the shore, or that is on the waters listed in Schedules 1 and 2 of the *Vessel Certificates Regulations*.

Near Coastal Voyage, Class 2 – a voyage, other than a Sheltered Waters Voyage, during which the vessel is always within 25 nautical miles from shore in coastal waters of Canada, the United States (except Hawaii) or Saint Pierre and Miquelon, and within 100 nautical miles from a place of refuge.

Near Coastal Voyage, Class 1 – a voyage that is not a Sheltered Waters Voyage or a Near Coastal Voyage, Class 2; that is between places in Canada, the United States (except Hawaii), Saint Pierre and Miquelon, the West Indies, Mexico, Central America or the northeast coast of South America; and during which the vessel is always north of latitude 6°N, and within 200 nautical miles from shore or above the continental shelf.

Unlimited Voyage – a voyage that is not a Sheltered Waters Voyage or a Near Coastal Voyage.

More Information

To consult your local Transport Canada Centre, see Appendix 2.

- *Collision Regulations*
www.laws.justice.gc.ca/en/C.R.C.-c.1416/
- *Hull Construction Regulations*
www.laws.justice.gc.ca/en/C.R.C.-c.1431/
- *Marine Machinery Regulations*
www.laws.justice.gc.ca/en/SOR-90-264/
- *Marine Personnel Regulations*
www.laws.justice.gc.ca/en/SOR-2007-115/
- *Small Fishing Vessel Inspection Regulations*
www.laws.justice.gc.ca/en/C.R.C.-c.1486/
- *Small Vessel Regulations*
www.laws.justice.gc.ca/en/SOR-2010-91//
- *Vessel Certificates Regulations*
www.laws.justice.gc.ca/en/SOR-2007-31/
- *Small Fishing Vessel Safety Manual (TP 10038)*
www.tc.gc.ca/MarineSafety/tp/tp10038/menu.htm

Chapter 2

Check your vessel





The first step towards running a safe operation is having a safe vessel. This chapter presents the safety requirements for vessels, because once you own a vessel, you are responsible for making sure it meets all safety requirements **every time it is used**.

The principal construction requirements are explained in this chapter. It also explains the labels that builders, rebuilders, importers and resellers must put on vessels as their declaration that it complies with Canadian construction requirements. If you are buying a new vessel, this chapter will tell you what to look for and what it means. If you are buying a used vessel, consider hiring a marine surveyor to assess its condition and suitability, and to confirm that it meets the requirements for its intended use.

Construction Requirements

The *Small Vessel Regulations* (Part 7) require that vessels meet the construction requirements that were in effect when the vessel was built, when it was imported into Canada, or when it was converted to commercial use — whichever comes later.

These requirements are set out in the *Small Vessel Regulations* and the *Construction Standards for Small Vessels* (TP 1332). The construction requirements are the minimum requirements for safety that must be met by anyone designing or building a vessel for personal use or for sale. Vessel importers must also make sure that the vessels they import meet these same standards.

If your vessel was built, imported, or converted to commercial use:

- on or after April 29, 2010, when the new *Small Vessel Regulations* came into force, it must meet the non-pleasure craft construction requirements of the *Small Vessel Regulations* and the 2010 edition of the *Construction Standards for Small Vessels* (TP 1332).
- before April 29, 2010, it must meet the non-pleasure craft requirements of the 2004 edition of the *Construction Standards for Small Vessels* (TP 1332), or, as applicable, the alternatives set out for vessels built before April 2005 in the *Small Vessel Regulations*.

Consolidated Construction Requirements

Sections of the *Small Vessel Regulations* related to construction have been included in information boxes in the *Construction Standards for Small Vessels* so that you can find all the construction requirements for small commercial vessels and pleasure craft in one place.

Built-In Safety

The construction requirements establish minimum requirements for safety. **Anyone building a vessel that is or can be fitted with a propulsion engine or an auxiliary engine or fitted with a fuel-burning appliance, whether for personal use or for sale, must build it to the construction requirements.** This is true whether you are building the vessel for yourself or for someone else. Likewise, vessel importers must verify that the vessels they import meet the same requirements.

The *Small Vessel Regulations* require the builder or the importer of a vessel for use in Canada to submit a Declaration of Conformity to Transport Canada and attach a compliance notice to the vessel unless:

- it has been built or imported for personal use; or
- it is an open vessel of traditional construction that is not mass-produced and can only be fitted with an outboard engine.

Compliance Notices

From April 29, 2011, a compliance notice must be attached to all new small commercial vessels. The builder, manufacturer, rebuilder or importer of the vessel must also prepare a Declaration of Conformity and give a copy of this declaration to the first owner of the vessel.

Compliance notices are a statement by the builder or importer declaring that the vessel met the construction requirements as they read on the date of construction, manufacture, rebuilding or importation of the vessel. The compliance notice will indicate the vessel model, the builder or importer, the category of construction requirements and the design limitations, such as the ISO (International Organization for Standardization) design category for stability.

There are three vessel categories for compliance notices (see Table 2-1, on the next page):

- not more than 6 metres long;
- more than 6 metres long – pleasure craft; and
- more than 6 metres long – non-pleasure vessels.

For vessels that are not more than 6 metres long, the construction requirements are the same for both pleasure craft and non-pleasure vessels. Compliance notices for vessels not more than 6 metres long will indicate recommended safe limits for maximum capacity in kilograms and number of persons and, if it is designed for an outboard motor, the maximum power.

For vessels more than 6 metres long, the requirements for pleasure craft and non-pleasure vessels are not the same. **Be aware that if you intend to use a vessel that is more than 6 metres long that was built to the pleasure craft requirements, it may have to meet additional construction requirements before you can use it commercially.** Depending on the type and the use of the vessel, these may include such things as a stability assessment, bilge pumping arrangements and additional fire safety equipment. Consider hiring a marine surveyor to see if your boat complies with the non-pleasure vessel requirements and determine any required modifications you must make, if you are not sure. Remember, when you put it in operation, **you**, as the owner, are responsible for making sure your vessel meets **all** regulatory requirements.

Getting Professional Help

Don't know all the safety requirements? Not sure you can properly assess a vessel's condition?

Think about having your vessel surveyed. A good survey carried out by a competent professional will:

- establish, as far as can be determined without taking the vessel apart, any areas that do not meet regulatory requirements;
- indicate the vessel's overall condition; and
- identify problems and potential problems so that you can take appropriate action.

Marine surveyors (and marine consultants) can be found in the Yellow Pages or on the Internet, however the areas and level of expertise can vary from one surveyor to another. Before hiring someone, check the individual's knowledge of small commercial vessel requirements, ask about their experience, and get references. Associations of marine surveyors that accredit their members may be a good place to start looking.

Table 2-1: Compliance Notice Information by Category

		Vessel Type	
		Pleasure Craft	Non-Pleasure Vessels
Length of Vessel	More than 6 m	Compliance Notice for Pleasure Craft	Compliance Notice for Non-Pleasure Vessels
		<ul style="list-style-type: none"> contains a statement of compliance with the construction requirements for pleasure craft at the time of construction 	<ul style="list-style-type: none"> contains a statement of compliance with the construction requirements for non-pleasure vessels at the time of construction and indicates that the vessel may be used for both pleasure and non-pleasure purposes
	Less than or equal to 6 m	<ul style="list-style-type: none"> may contain a statement of design limitations that may apply to the vessel 	<ul style="list-style-type: none"> contains a statement of any design or environmental limitations (e.g. ISO design categories¹) that may apply to the vessel
		Generic Compliance Notice for both Pleasure Craft and Non-Pleasure Vessels <ul style="list-style-type: none"> contains a statement of compliance with the construction requirements for small vessels at the time of construction; contains recommended maximum safe limits² of the vessel for load, number of persons and engine power (if outboard powered) and the circumstances in which any of the recommended safe limits may not apply; and may contain a statement of design limitations that may apply to the vessel <p><i>Note: Construction requirements for pleasure craft and non-pleasure vessels less than or equal to 6 metres are now identical.</i></p>	

1. See ISO Design Categories, page 21, for an explanation of the ISO design categories.
 2. Calculated according to the methods set out in the *Construction Standards for Small Vessels*.

Maintaining Your Vessel

You shouldn't have to be an expert in the construction requirements to run your operation. If you bought your vessel from a reputable source, it has the appropriate compliance notice and it has been well maintained without modifications, you should feel confident that it meets the construction requirements of the *Small Vessel Regulations* and *Construction Standards for Small Vessels* that apply to the type of vessel indicated on the label.

To keep your vessel in good condition:

- check it regularly (see the sample maintenance schedule in Appendix 4, and the compliance checklist in Appendix 5);
- follow the manufacturer's recommendations for maintenance; and
- fix any problems you find according to the requirements.

Know More About Critical Safety Items

You must treat some hazards — loss of stability, explosion, fire and person overboard — with the respect they deserve. If you understand how the construction requirements **reduce** such risks, you will be less likely to do something that may increase them.

Loss of Stability

Stability is the characteristic of a vessel that helps it stay upright. A recent amendment to the *Small Vessel Regulations* requires the owner and operator of a commercial vessel to “ensure that the vessel has adequate stability to safely carry out its intended operations.”

If your vessel is more than 6 metres long and was built to the non-pleasure craft requirements after April 1, 2005, the builder was required to assess its stability using the ISO stability standard for small vessels or another acceptable standard. If the manufacturer cannot give you the information, you should hire a consultant to assess the vessel’s stability. If the vessel was built before April 1, 2005, refer to *Ship Safety Bulletin 07/2006: Guidance for Assessing Intact Stability and Buoyancy of Existing Small Non-pleasure Vessels* for acceptable assessment methods.

Is your vessel stable? That depends on what you use it for.

Only you can be sure of that. Stability assessments by a manufacturer assume a typical operation. For example, if your vessel was assessed to the standard ISO 12217, but you use it to tow or lift heavy objects, or carry loads in a way not taken into account in the assessment, you will need an additional assessment that includes these factors.

The owner and operator are responsible for ensuring that “the vessel has adequate stability to safely carry out its intended operations.”¹

If a vessel not more than 6 metres long can be swamped, it must carry flotation material so that it will not sink. Make sure this material is kept in good condition so that it works when you need it.

1. *Small Vessel Regulations*, Part 6 and Part 7.

How much cargo you carry and where and how you store it all affect your vessel’s stability. So will taking on water. That is why watertight integrity and the pumping and bailing system are also critical safety items.

If you use your vessel for towing or pushing, refer to section 520 of the *Small Vessel Regulations* in addition to the information contained in this guide.

Watertight Integrity

Most people understand that you have to keep water out of the hull, but many accident reports point out where simple steps to prevent this from happening were not taken. The construction requirements call for doors, hatches, windows and port lights of marine construction so that they provide a level of watertightness when secured.

Other ways you can prevent downflooding (water coming into the hull) are to:

- Check and service closure systems and seals regularly to make sure that they keep water out.
- Train your crew to keep hatches, doors and other openings closed when underway.
- Make sure that repairs to windows, port lights and skylights are done with safety glass or equivalent strength material. You can do this easily by demanding that repairs meet the standard ISO 12216 *Small craft – Windows, portlights, hatches, deadlights and doors – Strength and watertightness requirements*. If your vessel is more than 6 metres long and was built on or after April 1, 2005, it must meet this standard. For your protection, use only items certified to meet this standard. You can find, for example, a list of hatches, windows and doors that have been certified to meet the standard at www.imci.org. Click on Boats and Components and select Certified Products, then Hatches, Windows, Doors. If the component you want to install is not on the list, check with the manufacturer to see if it meets the standard.
- Know which openings on your vessel — such as engine room vents — could let water in and take steps to prevent this from happening by being able to close them or by avoiding situations where this could occur.

Holes that go through the hull below the waterline must not decrease the structural strength of the hull and must have a valve or some other way of keeping water out, except for wet exhaust systems that do not require the fitting of such a closure. If it is in a fire-risk area, the closure system must be fire-resistant. You must make sure that fittings and piping of sufficient strength are used and you must also check them regularly and keep them in good condition.

Drainage

Your vessel may be built with a well, a cockpit or a recess that may retain a certain quantity of water. These spaces may be fitted with drains or scuppers to shed water overboard. Be sure the drains or scuppers are always clear of any obstructions.

In cases where the well, cockpit or recess is not designed to shed water overboard, do not rely on your pumping arrangement to keep your vessel dry in adverse conditions. Stay out of conditions where water could come on board and accumulate. Head for the nearest port of refuge or shore that is safe to approach, if possible.

Pumping or Bailing System

Bilge pumping and systems that detect water levels are important safety features, especially for small vessels where water in the bilges can quickly lead to capsizing or sinking. You must have a way to pump or bail each watertight compartment in any operating condition.

To meet the construction requirements, vessels that are more than 6 metres long must have a way of pumping or bailing each watertight compartment unless the vessel cannot take on enough water for it to capsize or the compartment is sealed and not easy to access. Bilge spaces that cannot be seen easily from the vessel operating position must have a high bilge level alarm, and either an automatic bilge pump or a bilge pumping system¹. Pumps must have a capacity of at least 0.91 litres/second (865 US gallons/hr or 3,275 litres/hr). Automatic bilge pumps must have a manual override switch and there must be an indicator at the helm to let you know when the pump is running. If your vessel has sleeping quarters, the high bilge level alarms must be loud enough to wake sleepers (84 decibels).

You must be able to access your bilge pump system and watertight compartments so you can service the system and manually pump or bail watertight compartments, if needed. Check that discharge pipes are arranged so that back-siphonage cannot occur — even in the event of trim or list — and that there are suitable strainers on the suction line from each compartment.

Refer to Chapters 5 and 8 to learn more about pumps and stability.

ISO Design Categories

The International Organization for Standardization (ISO) has established four design categories for small craft: A, B, C and D. Assessment to the standard ISO 12217 determines a vessel's design category. The design category establishes the environmental operating limits for stability and buoyancy, as shown in Table 2-2, below. Find out your vessel's design category from the builder so you can operate with a better understanding of your vessel's stability limitations.

1. A bilge pumping system is required on vessels more than 12 metres in length.

Table 2-2: ISO Design Category Environmental Limits

Design category	Wind force Beaufort scale (knots)	Wave height
A	exceeding 8 (54 knots)	exceeding 4 m significant*
B	up to, and including, 8 (41 knots)	up to 4 m significant*
C	up to, and including, 6 (33 knots)	up to 2 m significant*
D	up to, and including, 4 (25 knots)	0.5 maximum
<p>* The significant wave height is the mean height of the highest one-third of the waves, which approximately corresponds to the wave height estimated by an experienced observer. Some waves will be double this height. (Not applicable to Design Category D, which uses maximum wave height.)</p>		

To learn more about the ISO stability standards or vessel stability in general, visit the *Vessel Stability* web page on the Transport Canada Marine Safety website.

Explosion

Using gasoline or compressed gases on board a vessel creates a risk of explosion. That is why Parts 6, 7 and 10 of the *Small Vessel Regulations* restrict the use and installation of fuel-burning systems and appliances such as stoves, cabin heaters and refrigerators. Read them and check your vessel to see if you comply. Make sure that you use only marine-rated equipment and that you have any work done by a technician qualified in marine installation.

*Note: If you carry passengers on your vessel, installing systems and appliances that use gaseous fuel, liquefied petroleum gas, compressed natural gas or naphtha is **prohibited**.*

The danger is reduced by not allowing fumes to accumulate and by eliminating possible ignition sources. You must have a mechanical blower in any enclosed gasoline engine space, and you must run the blower for at least four minutes — more if that's what the manufacturer recommends — before starting the engine. Ignition-protected electrical parts must be used where there is a risk of explosions, so take care when making repairs. The *Ship Safety Bulletin 03/2006: Automotive Parts Dangerous in a Marine Environment* explains what can happen when repairs are made using non-marine parts.

Additional protection: If you have propane on board, a marine propane fume detector is a good way to be made aware of leaks and risk of explosion.

Fire Safety

An important requirement for fire fighting is that there is a way to put out a fire in enclosed engine spaces without needing to open the engine space access hatch or door.

For vessels that are no more than 6 metres long, a discharge port (hole, with a closure) that you can open to discharge a portable fire extinguisher into the engine space is required, unless the vessel is fitted with a fixed fire extinguishing system. You must make sure the hole is labelled to show that it is for fire fighting and keep a fire extinguisher to be used only for engine room fires nearby. The extinguisher must be large enough for the size of the space (at least 1.2 kg of carbon dioxide (CO₂) for each cubic metre of the space).

Vessels longer than 6 metres with engine spaces small enough to meet the requirement with a portable fire extinguisher weighing less than 23 kg and that can be completely discharged in the time period specified in the *Small Vessel Regulations* may also use the discharge port option. For example, for an engine space of a volume of 8 cubic metres, a typical 10 kg CO₂ extinguisher weighing not more than 23 kg may be used.

All other vessels must have a fixed fire extinguishing system that is certified for marine use and has enough CO₂ or other agent for the size of the engine space.

A detector that activates a remote audible and visible alarm at the operating position when the temperature either reaches a pre-set level or increases rapidly is required in the engine space on all vessels more than 6 metres long. On smaller vessels, a heat detector is required only if the presence of fire in the engine space cannot easily be noticed.

Smoke detectors are required in accommodation and service spaces of small commercial vessels. A fire alarm panel is required on all vessels that are more than 6 metres long. Requirements for the panel vary with the vessel length. On

smaller vessels, independent detectors with a built-in alarm are permitted. On larger vessels, all detectors must be connected to the fire alarm panel. Refer to the *Small Vessel Regulations* and the *Construction Standards for Small Vessels* for detailed requirements.

Fire prevention tips

Most boat fires are the result of electrical problems, fuel leaks or vapours, unwatched portable heaters, improper engine exhaust installation and poor housekeeping. Follow these tips² to reduce the risk of fire on your vessel and to be ready if one does occur:

- Inspect electrical and fuel systems regularly. Have a professional upgrade the wiring to meet the needs of your vessel.
- Have any gaseous fuel system inspected at least once a year by a qualified technician.
- Verify that all compartments are properly vented. Always use the mechanical ventilation for at least four minutes or as indicated by the vessel manufacturer before starting an engine.
- Install a marine gasoline fume detector and a propane fuel detector, if applicable.
- Always watch operating electrical equipment, including heaters. Heaters must be safely fixed in place.
- Do not leave any combustible material in contact with the engine exhaust or any other hot surfaces.
- Put oily rags in a metal container with a tight-fitting lid. Leaving oily rags wrapped up in a grocery bag is not safe. The chemicals will begin to break down the rags, causing heat and possibly a fire.
- Follow proper refuelling procedures.
- Know your escape routes.
- Keep fire extinguishers near exits so that you don't trap yourself when you move to get one.
- Service and replace fire extinguishers according to the manufacturer's recommendations, and know how to use them.

Falls: On and Overboard

Guardrails or some other way to prevent falls on and overboard are required for all vessels. Details are given in the *Construction Standards for Small Vessels*.

2. Based on the Seattle Fire Department website (www.seattle.gov/fire/pubEd/marine/boatOwners.htm), with permission.

Building or Modifying a Vessel

Once a vessel is put into service, the vessel owner is responsible for making sure that it meets the legal requirements. If you are having a vessel built or modified:

- demand that the work comply with the non-pleasure craft requirements of the *Small Vessel Regulations*; and
- make sure the builder has experience in working with the regulations and the construction requirements.

Starting April 29, 2011, the builder of new vessels must provide you with a Declaration of Conformity, in addition to the compliance notice that must be attached to the vessel. The builder must also give Transport Canada a copy of the Declaration of Conformity and keep on file the technical documentation or information used, including the tests or calculations performed, to ensure compliance with the construction requirements.

If you are doing the work yourself, make sure you understand what the requirements are **before** you begin.

When you make a major modification, you must advise Transport Canada, who may ask you to supply plans or other technical information. Transport Canada may also request plans or other documentation to verify that a newly built or imported vessel complies with the construction requirements. These plans will usually be a general arrangement of the vessel; a diagram of the propulsion system; a machinery arrangement and the identification of the machinery, along with a description of the bilge pumping systems, fuel systems and fire fighting systems; and a one-line electrical diagram.

A “major modification” is defined as follows:

A modification or repair or a series of modifications or repairs that substantially changes the capacity or size of a vessel or the nature of a system on board a vessel, that affects its watertight integrity or its stability or, except in the case of the restoration of an antique wooden pleasure craft, that substantially increases its service life.³

Whatever the age of the vessel, any major modifications must meet the construction requirements in place when the work began.

3. *Small Vessel Regulations*, Part 7.

Special-Purpose Vessels and Vessels of Unusual Design

The *Small Vessel Regulations* may not be suitable for some operations due to vessel design or use. The *Special-purpose Vessels Regulations* currently apply only to commercial river rafting, but other operations may be added over time.

In some cases, a vessel's design may be so different that it would be unsafe for it to meet certain construction requirements. Examples include dynamically supported craft; submarines; wing-in-ground-effect vessels; and hydroplanes and other low-volume, high-powered vessels used exclusively for competitive racing. Such vessels can be built using practices and standards recognized by the marine industry as being suitable for that type of vessel — so long as it will produce at least the same level of safety as provided by the regulations.

Before you get a vessel of unusual design, check with a marine surveyor to make sure that its level of safety is acceptable before you approach Transport Canada with your proposal.

More Information

To consult your local Transport Canada Centre, see Appendix 2.

Visit the Small Vessels section of the Transport Canada Marine Safety website at www.tc.gc.ca/marinesafety/debs/small-vessels/CSV-upto15.htm.

- *Small Vessel Regulations*
www.laws.justice.gc.ca/en/SOR-2010-91/
- *Special-purpose Vessels Regulations*
www.laws.justice.gc.ca/eng/SOR-2008-121/
- *Construction Standards for Small Vessels (TP 1332)*
www.tc.gc.ca/MarineSafety/tp/TP1332/menu.htm
- *Ship Safety Bulletin 03/2006: Automotive Parts Dangerous in a Marine Environment*
www.tc.gc.ca/MarineSafety/bulletins/2006/03-eng.htm
- *Ship Safety Bulletin 07/2006: Guidance for Assessing Intact Stability and Buoyancy of Existing Small Non-pleasure Vessels*
www.tc.gc.ca/MarineSafety/bulletins/2006/07-eng.htm
- *Vessel Stability – Using the ISO Small Craft Stability Standard ISO 12217-1; FAQs*
www.tc.gc.ca/marinesafety/debs/vessel-stability/menu.htm

Chapter 3

Do the paperwork





Vessel Registration

In Canada, you must register commercial vessels of all sizes. This includes human-powered craft such as kayaks and white-water rafts used by guides for guided trips, but not lifeboats or other survival craft on board a larger ship, which are inspected as a part of the ship’s equipment. A pleasure craft licence is not acceptable for a commercial vessel.

You should have your registration documents on board at all times. The penalty for operating an unregistered vessel is from \$250 to \$10,000 — per day!

If your vessel is no more than 15 gross tonnage, you may register it in either the Small Vessel Register or the Canadian Register of Vessels. If your vessel is more than 15 gross tonnage, or if you want to register a mortgage, you **must** register it in the Canadian Register of Vessels. Table 3-1 below compares the two registers.

Tonnage is determined by a tonnage measurer, who will charge a fee. For some vessels that are no longer than 15 metres, the tonnage can be calculated without a tonnage measurer by using a simple formula. Check the Tonnage Measurements section of the Small Vessel Register website to see if your vessel is one of these.

Table 3-1: Comparison of Small Vessel Register and Canadian Register of Vessels

	Small Vessel Register	Canadian Register of Vessels
Eligible vessels	Commercial vessel of 15 gross tonnage or less owned by a qualified person* Not registered in another country	Any vessel owned by a qualified person* Not registered in another country
How your vessel will be known	Official number	Official number and unique name
Registration fee	\$50 per five-year term**	\$250 – one-time only
Mortgage registration allowed	No	Yes

* A Canadian citizen or permanent resident (within the meaning of subsection 2(1) of the *Immigration and Refugee Protection Act*) or a corporation incorporated under Canadian federal or provincial laws.

** The *Vessels Registry Fees Tariff* allows for the registration of a “fleet of vessels,” which means two or more vessels of less than 5 gross tonnage that are owned by the same person, other than a federal, provincial, territorial or municipal government, for a flat fee of \$50 if the owner applies for all registrations/renewals **at the same time**.

Licensed Vessels

If you licensed your vessel in the Small Vessel Licensing System (your licence begins with “C”) before July 1, 2007, it will be treated as if it were registered until:

- it is sold to someone else; or, if it is not sold
- the licence expires.

If you licensed your vessel with Canada Customs (your licence number doesn't begin with “C”), it will be treated as if it were registered until:

- it is sold to someone else; or, if it is not sold
- July 1, 2012.

For more information on how to register your vessel, see the More Information section at the end of this chapter.

Vessel Markings

Vessels registered in the Small Vessel Register must display their Official Number in block characters not less than 75 mm high and in a colour that contrasts with their background. The number must be displayed on each side of the bow of the vessel or on a board permanently attached to the vessel as close to the bow as practicable so that the number is clearly visible from each side of the vessel.

If your vessel is registered in the Canadian Register of Vessels, the requirements for vessel markings are shown on the reverse side of the Certificate of Registry.

Notice of Changes

The vessel owner must notify the vessel Registrar within 30 days of any change to the information shown on the Certificate of Registry, including:

- change of address;
- vessel alteration or modification;
- company name change; or
- transfer of ownership.

If you fail to give notification, your registration will be invalid and you may be fined from \$250 to \$10,000.

Insurance

It is a good idea for any business to purchase insurance. Some types of coverage are required by law, and others simply make good sense. It is up to you to make sure you have the right kind and right amount of protection.

Liability insurance covers losses if you cause property damage or bodily injury to a passenger. The *Marine Liability Act* (MLA) sets the liability of marine operators for passengers, cargo, pollution, and property damage. It applies to commercial vessels and sets a maximum liability for operators of approximately \$350,000 per passenger. It also prohibits the use of waivers of liability. The MLA also provides for linking liability to the degree of fault or neglect. Consult Transport Canada Marine Policy or email marinesafety@tc.gc.ca to learn more.

Many cities and provincial governments require proof of appropriate insurance coverage before issuing permits. Contact your local authorities for details.

More Information

To consult your local Transport Canada Centre, see Appendix 2.

To register your vessel, follow the steps on the Vessel Registration Office website.

For the Small Vessel Register:

www.tc.gc.ca/marinesafety/oep/vesselreg/smallcomm/menu.htm

For the Canadian Register of Vessels:

www.tc.gc.ca/marinesafety/oep/vesselreg/registration/procedures.htm

You may also contact the Vessel Registration Office during business hours from anywhere in North America by using a toll-free help line (1-877-242-8770) or by email (oep-epe@tc.gc.ca).

- *Marine Liability Act* (2001, c. 6)
www.tc.gc.ca/acts-regulations/acts/2001c6/menu.htm
- *Marine Liability Regulations*
www.laws.justice.gc.ca/en/SOR-2002-307

Chapter 4

Assure a competent crew





One of the highest priorities for a vessel's safety is having enough properly trained, competent crew members to operate the vessel.

The information in this chapter will help you understand how the size, design and power of your vessel, along with its purpose and area of operation, determine which of the *Marine Personnel Regulations* apply to your operation so that you can comply.

Responsibilities of Owner and Operator

The vessel owner must:

- develop procedures for safe operation of the vessel in normal and emergency conditions;
- ensure that the crew is trained so that it can carry out its duties with skill; and
- maintain a record of training that has been carried out.

Check out the *Transport Canada* website for examples of policies and procedures that you can review and change to suit **your** operation.

These policies and procedures support the operator's duty to make sure the crew is trained and able to carry them out well.

The owner must also make sure the operator has the certification necessary to operate the vessel. Together, the owner and operator must make sure the crew meets the certification and training requirements.

To learn more about certification and training requirements, refer to:

- *Marine Personnel Regulations*
- *The Examination and Certification of Seafarers* (TP 2293)
- *Small Vessel Operator Proficiency Training Course* (TP 14692)
- *Marine Emergency Duties Training Program* (TP 4957)

or contact your local Transport Canada Centre (see Appendix 2).

Crew Size

Every vessel in Canada must have enough crew members to perform the tasks necessary for the safety of the vessel and the people on board during its voyage.

The minimum crew complement for your vessel is the number of crew members required to safely handle the tasks below:

1. Safely launch survival craft (one qualified person for each required liferaft).
2. Handle fire-extinguishing equipment at any one location on the vessel and operate the ship's pumping and emergency power system.
3. Keep a qualified operator on continuous radio watch.
4. Maintain a deck watch in accordance with section 216 of the *Marine Personnel Regulations* while underway (see Deck Watch Requirements below) or under certain circumstances while securely anchored or moored, such as when passengers are on board.
5. Provide first aid on board.

Marine Engineering certification may also be required for vessels that are 5 gross tonnage or more, depending on their propulsive power, unless they are of open construction as defined in the *Marine Personnel Regulations* or are propelled by outboard motors that are not permanently fixed. In general, an extra person to look after machinery is required on passenger vessels if the power is more than 75 kilowatts (kW) and on workboats and tugs if the power is more than 750 kW, although there are some exceptions.

Deck Watch Requirements

On a vessel of at least 5 gross tonnage, at least two people are required to maintain the deck watch, unless the vessel:

- provides an unobstructed all-round view from the steering position **and** is engaged on a voyage of not more than 5 nautical miles within the limits of a harbour, in good visibility between sunrise and sunset; or
- is a tug assisting another vessel while attached to it by a tow line; or
- is engaged in a log sorting or yarding operation that is carried out at a booming ground and that does not use lines or chains.

If the vessel does not return to port at night to allow time for rest, at least two persons who hold the certificate required to operate the vessel must be on board to meet the requirements for the deck watch, in addition to any other personnel required to meet minimum crew requirements.

If you need help in determining the manning requirements for **your** vessel, contact the nearest Transport Canada Centre (see Appendix 2).

Crew Certification

Certification that shows that a crew has at least the minimum level of training required is mandatory for all non-pleasure vessel crews in three areas:

1. **First aid** – At least one crew member must hold a valid certificate in marine basic first aid while a vessel is engaged on a Near Coastal Voyage, Class 2 or Sheltered Waters Voyage. A valid marine advanced first aid course is required for vessels engaged on a Near Coastal Voyage, Class 1. In some cases, a first aid training course (2 days as a minimum) recognized by a province or territory is acceptable. For more information refer to *Ship Safety Bulletin 03/2009: Training Requirements For the Person Designated to Provide First Aid on Board a Vessel and Period of Validity of First Aid Training Courses Recognized By a Province or Territory, Marine First Aid and Marine Medical Care Training Certificates*.
2. **Operator competency** – The operator of the vessel must be certified at the appropriate level, or higher, for the size and type of vessel and the voyage that is being undertaken. See Table 4-1 for the level of certification required and when it will be necessary.
3. **Basic safety training** – The owner and operator must make sure that all crew members receive on board familiarization and safety training before they start to perform any assigned function (see *Section 4-Marine Emergency Duties Training Program - TP4957*). Unless the level of operator competency required is a Pleasure Craft Operator Card (PCOC), each crew member must also obtain a certificate in basic safety training, also known as MED or Marine Emergency Duties, at the level shown in Table 4-1 before completing six months of sea service.

Table 4-1, below, shows, by vessel type, size in gross tonnage (GT) and length in metres (m), and voyage class, the minimum requirements for competency for the vessel operator (shown in blue) as well as the marine emergency duties training requirements (shown in red) for each person required to be on board in order to meet the requirements for the minimum complement set out in the *Marine Personnel Regulations*.

Table 4-1: Operator Competency/Marine Emergency Duties (MED) Training Requirements

Vessel		Near Coastal, Class 1	Near Coastal, Class 2		Sheltered Waters
			More than 2 nautical miles from shore	2 nautical miles or less from shore	
Passenger-Carrying Vessels ⁴	More than 5 GT	Master 150 GT (Domestic) (if endorsed for limited, contiguous waters) MED BST	Limited Master < 60 GT		MED A1, A2 or A3
	Less than or equal 5 GT and either: • more than 8 m; or • more than 6 passengers		SVOP	SVOP	SVOP
	No more than 6 passengers and no more than 8 m		MED A1, A2 or A3	MED A1, A2 or A3	PCOC ⁵
Workboats	More than 5 GT	Master 150 GT (Domestic) (if endorsed for limited, contiguous waters) MED BST	Limited Master < 60 GT		MED A1, A2 or A3
	Less than or equal 5 GT and more than 8 m (except tugs)		SVOP	SVOP	SVOP
	No more than 8 m (except tugs)		MED A1, A2 or A3		PCOC ⁵
	Tugs		Limited Master < 60 GT		MED A1, A2 or A3

This table is for easy reference only. If different from the *Marine Personnel Regulations*, the regulations shall prevail.

Operator Competency Certificates for Small Commercial Vessels:

- PCOC – Pleasure Craft Operator Card
 - SVOP – Small Vessel Operator Proficiency
 - Limited Master < 60 GT
 - Master 150 GT (Domestic)
- Refer to TP 10655, 4957, 14692, 13008

Marine Emergency Duties (MED) Training

- MED Basic Safety Training (BST) – STCW (Standard for Training, Certification and Watchkeeping) Basic Safety
- MED A1 – Basic Safety
- MED A2 – Small Passenger Vessel Safety
- MED A3 – Small Non-Pleasure Vessel Basic Safety
- PCOC – Pleasure Craft Operator Card

4. A training certificate in marine emergency duties with respect to small seasonal passenger vessel safety (non-certificated personnel) is acceptable for crew members that are not required to hold a certificate if the vessel is a passenger-carrying vessel that operates only between March 31 and December 1 on a sheltered waters voyage, provided it does not have berthed accommodations and it is not a ferry.

5. Where a Pleasure Craft Operator Card (PCOC) meets the requirements for operatory competency, it also meets the training requirements for marine emergency duties.

Small Vessel Machinery Operator (SVMO)

The Small Vessel Machinery Operator (SVMO) or Small Vessel Machinery Operator – Restricted⁶ (SVMO-R) is the minimum Marine Engineer Certificate required for passenger vessels that have propulsive power from 75 to 749 kW and do not go beyond a Limited Near Coastal Voyage, Class 2⁷. To learn what a Small Vessel Machinery Operator must know, refer to the *Small Vessel Machinery Operator Examination Study Guide* (TP 14814).

The SVMO is also acceptable for:

- passenger vessels with propulsive power from 750 to 1499 kW; and
- workboats with propulsive power from 750 to 1999 kW

on voyages that last less than 6 hours and are either a Limited Near Coastal Voyage, Class 2 or a Sheltered Waters Voyage, if all the following conditions are met:

- (a) the vessel drives with at least two engines that allow for continued thrust and steering if one engine fails;
- (b) the engine and all required gauges, alarms, and emergency features are controlled from the bridge;
- (c) radio contact is maintained with the home base at all times;
- (d) the Small Vessel Machinery Operator carries out set checks and tests before each departure;
- (e) maintenance is carried out:
 - i. according to a schedule that meets the main engine manufacturer's recommendations, and
 - ii. by a marine engineer who holds at least a Fourth-Class Marine Engineer Certificate or by a service firm that is accredited by the main engine manufacturer and with which the owner has entered into a maintenance contract schedule; and
- (f) records of the pre-departure procedures are kept on board or at home port if the vessel travels less than 5 nautical miles from its home port.

If the voyage goes beyond these limits or the vessel has greater propulsive power, refer to sections 218-226 of the *Marine Personnel Regulations*.

Converting to kilowatts

If you know your propulsive power in horsepower, multiply total horsepower by 0.746 to convert to kilowatts.

Examples: 100 hp \approx 75 kW, 1006 hp \approx 750 kW

6. Valid only on the vessel(s) listed on the certificate.

7. The limits are determined when the certificate is issued.

Dual Capacity Operator and Marine Engineer

No person may act as both operator and engineer on a vessel that exceeds 20 metres in registered length. If your vessel is not more than 20 metres long, a person holding a Master's Certificate and a Marine Engineer's Certificate appropriate to the power rating of the main engines can act in both roles if:

- the engine can be controlled from the helm;
- engine problems can be easily detected and fixed from the steering station while keeping a navigational lookout; and
- there is another crew member on board, who is at least 18 years of age, that can help if there is an emergency.

Proving Proficiency

The safety of your vessel, crew, and passengers depends on knowing safety procedures and using safety equipment quickly and properly when needed.

Transport Canada inspectors or its enforcement partners may check that your crew's certification meets requirements at any time. Inspectors may also test your crew's ability to respond efficiently in distress situations by asking questions related to safety, emergency, and survival procedures **or** by requiring a test voyage to show how well they:

- know navigation rules, local conditions and hazards;
- operate the vessel;
- use safety equipment;
- follow specific operating and emergency procedures; and
- fill other safety-related roles and responsibilities.

Obtaining Certificates and Qualifications

To get a Pleasure Craft Operator Card you must pass a test, and Transport Canada recommends that you take a boating safety course before you take it. The course covers a full range of basic boating topics such as:

- the safety equipment required on board your boat;
- the Canadian Buoyage system;
- the Rules of the Road (how to share the waterways);
- the regulations that apply to you; and
- how to respond in emergency situations.

Tests can be taken from accredited course providers, who are listed on the Transport Canada Marine Safety website at www.tc.gc.ca/marinesafety/debs/obs/courses/pcoc/menu.htm.

Courses in Small Vessel Operator Proficiency (SVOP) and Marine Emergency Duties (MED) are also available and training certificates are issued to people who pass these courses. You can consult the list of *Approved Training Courses* (TP 10655) online.

If you want a Master or Marine Engineer Certificate, you must pass a written and oral exam that covers subjects related to the type of vessel and where you will operate it. Please consult the nearest Transport Canada Centre to determine the requirements that apply in your case (see Appendix 2).

Requirements - Master, Limited, Vessel less than 60 gross tonnage

To apply for a certificate of competency as Master, Limited, for a vessel of less than 60 gross tonnage, you must have:

1. At least two months of sea service on board one or more vessels of a gross tonnage at least equivalent to that of the vessel for which the certificate is sought, on voyages that correspond to those permitted by the certificate being applied for.
2. Valid Marine Medical Certificate (if a passenger-carrying vessel) prescribed by the *Marine Personnel Regulations*, Part II, Division 8.
3. (a) Passenger-carrying vessels:
 - Marine Emergency Duties (MED) with respect to Small Passenger Vessel Safety; or
 - MED with respect to basic safety and MED with respect to small seasonal passenger vessel safety (certificated personnel); or
 - MED with respect to small seasonal passenger vessel safety (certificated personnel) and MED with respect to small seasonal passenger vessel safety (non-certificated personnel).
- (b) Non-passenger vessels: Marine Emergency Duties with respect to Basic Safety or pass a practical examination on MED using the vessel's emergency equipment.
4. Marine Basic First Aid training certificate.
5. An appropriate radio operator certificate issued under the *Radiocommunication Act* if the vessel is equipped with a VHF radiotelephone installation.
6. A written examination on subject matter appropriate to the area of operation and the type and gross tonnage of the vessel to which the certificate relates as set out in *The Examination and Certification of Seafarers* (TP 2293).
7. A practical examination on board the vessel.

A Master, Limited, certificate is valid for five years beginning on its issue date and only within the voyage area and on the vessels named on it.

Requirements - Small Vessel Machinery Operator

An applicant for a Small Vessel Machinery Operator certificate must meet the following requirements:

1. have acquired at least two months of qualifying service as follows⁸:
 - (a) at least 1 month of sea service as an engineer or a rating performing engine-room duties on one or more motor vessels; and
 - (b) any remaining time in any combination of the types of service set out in item 2 of the table to subsection 147(1) of the *Marine Personnel Regulations*;
2. hold an MED training certificate with respect to small passenger vessel safety;
3. hold a certificate for marine basic first aid;
4. pass a written examination on general engineering knowledge of small vessels;
5. pass an oral examination on general engineering knowledge of small vessels, if applying for an unrestricted certificate;
6. pass a practical examination on board the vessel for which the certificate is sought, if applying for the restricted certificate.

A Small Vessel Machinery Operator certificate is valid for five years from its issue date.

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8. If applying for a Small Vessel Machinery Operator - Restricted certificate for use on board a passenger carrying vessel that has a propulsive power of less than 750 kW that carries out only Limited Near Coastal Voyages, Class 2 or Sheltered Waters Voyages, the requirements for qualifying sea service may be replaced with

- (a) successful completion of training related to the propulsion system and safety systems fitted on the vessel; or
- (b) accumulation of at least 10 days of sea service performing engine-room duties on the vessel or a vessel of the same class.

Radio Certification Requirements

The *Marine Personnel Regulations* require that persons in charge of a radio watch on vessels that are required to be fitted with a very high frequency (VHF) radio (see Communication Equipment in Chapter 5) hold one of the following:

- Restricted Operator Certificate with Maritime Qualification;
- General Operator Certificate; or
- Restricted Operator's Certificate (ROC-MC).

For vessels that must have a VHF radio with Digital Selective Calling (VHF-DSC) that are on a voyage other than a Sheltered Waters Voyage, the person in charge of the radio watch must have a Restricted Operator's Certificate (ROC-MC) except where the vessel is on a Near Coastal Voyage, Class 2 and the VHF-DSC radio is the vessel's only radio. In this case, the person must hold a Restricted Operator Certificate with Marine Qualification that was issued after January 1, 2005.

Occupational Health and Safety Training

Every vessel owner and operator must provide all information, instruction, training, and supervision needed to protect the health and safety of crew members. This includes training related to the vessel's safety policy and procedures. Employees must be made aware of foreseeable hazards and the steps they should take to avoid accidents and injury.

Most vessels that operate only within the limits of a province will have employees that are covered by that province's health and safety legislation. Vessels with employees that are covered by federal health and safety legislation will fall under Part 2 of the *Canada Labour Code* and the *Marine Occupational Health and Safety Regulations*.

Under the *Canada Shipping Act, 2001*, the *Safe Working Practices Regulations* apply to all vessels (see Chapter 13 for more details).

More Information

To consult your local Transport Canada Centre, see Appendix 2.

- *Marine Personnel Regulations*
www.laws.justice.gc.ca/en/SOR-2007-115
- *Safe Working Practices Regulations*
www.laws.justice.gc.ca/en/C.R.C.-c.1467/
- *Approved Training Courses (TP 10655)*
www.tc.gc.ca/MarineSafety/tp/TP10655/menu.htm
- *The Examination and Certification of Seafarers (TP 2293)*
www.tc.gc.ca/MarineSafety/tp/TP2293/menu.htm
- *Marine Emergency Duties Training Program (TP 4957)*
www.tc.gc.ca/marinesafety/tp/TP4957/menu.htm
- *Small Vessel Machinery Operator Examination Study Guide (TP 14184)*
www.tc.gc.ca/MarineSafety/tp/TP14814/menu.htm
- *Small Vessel Operator Proficiency Training Program (TP 14692)*
www.tc.gc.ca/MarineSafety/tp/TP14692/menu.htm
- *Training Standards for Marine First Aid and Marine Medical Care (TP 13008)*
www.tc.gc.ca/MarineSafety/TP/TP13008/menu.htm
- *Ship Safety Bulletin 03/2009: Training Requirements For the Person Designated to Provide First Aid on Board a Vessel and Period of Validity of First Aid Training Courses Recognized By a Province or Territory, Marine First Aid and Marine Medical Care Training Certificates*
www.tc.gc.ca/marinesafety/bulletins/2009/03-eng.htm

Chapter 5

Be ready for emergencies





Accidents can happen — to even the best equipped vessels and crews. To help you manage an emergency, Canada's *Small Vessel Regulations* require five types of safety equipment:

1. Life-saving appliances (such as lifejackets and liferafts).
2. Vessel safety equipment (such as bailers, paddles and anchors).
3. Distress alerting equipment (such as a flashlight, flares and a radio).
4. A first aid kit.
5. Fire safety equipment (such as portable extinguishers and fire detectors).

Additional equipment and ways to let others know you are in trouble are also discussed in this guide, as are procedures that are required if you operate in water less than 15°C without a liferaft.

Making sure that the vessel has the required safety equipment on board and that it is readily accessible, in good working order and serviced according to the manufacturer's recommendations can save lives, and protect your vessel and business. It is also the law. As the owner or operator of a vessel, you must comply with safety regulations. You must make sure that **all** required safety equipment is on board and that your crew members know how and when to use it.

The vessel operator and the owner must make sure that all crew members receive the on board familiarization and safety training set out in the *Marine Emergency Duties Training Program* (TP 4957) before they start to perform any duty on board the vessel.

Carry out regular drills with the crew to ensure they stay familiar with the safety equipment on board and its use. Keep a record of drill dates and the names of those who took part. This will help you plan your next drill and will show that you use due diligence, if the vessel is ever involved in an incident. Keeping records of crew training is also a requirement of the *Marine Personnel Regulations* (section 205).

All safety equipment must be stowed where it is **readily** accessible. This means it can be reached easily and safely under emergency conditions without the use of tools. If items are not stored where they can be easily seen, the storage location should be clearly marked so that people know what is inside.

If this guide doesn't give enough information for you to know what you need to carry, check the regulations, consult a marine surveyor or ask your local Transport Canada Centre for guidance (see Appendix 2).

Life-Saving Appliances

Life-saving appliances provide support if you fall overboard or in case you have to abandon ship.

Lifejackets

All too often, drowning victims were not wearing a lifejacket or not wearing it properly. Lifejackets are designed to keep a person's head above water and to help them remain in a proper breathing position. Lifejackets come in different sizes. **You must have a Transport Canada approved lifejacket of the right size to fit each person you have on board.** For children less than 9 kg (20 lb) and persons with chests more than 140 cm (56 in), use the lifejacket that fits best.

Three types of inherently buoyant⁹ lifejackets — SOLAS¹⁰, Standard and Small Vessel — have been approved for many years; however, more types of lifejackets have been approved (see below).

New Lifejacket Standard Offers More Alternatives

In June 2007, a new lifejacket standard was adopted. The new standard adds three new types of lifejackets to the familiar inherently buoyant jacket. These inflatable, hybrid (a combination of inherently buoyant and inflatable) and thermal protection jackets provide more options. As these products become available, you will be able to choose the lifejacket that best suits your needs.

It is your responsibility to make sure that your lifejackets provide the required protection for your passengers. When buying lifejackets, check the stamp or label to make sure it is a lifejacket, not a personal flotation device (PFD), and that it is approved by Transport Canada.

Note: If your vessel is enclosed or fitted with a canopy, warn passengers before leaving shore about the danger of being trapped if they put lifejackets on while inside.

Lifejacket Maintenance and Testing

For lifejackets to work, you must keep them in good condition. You should inspect them often for outer skin and stitching damage, mildew, leaks, insecure straps or hardened stuffing. Clean them only with a mild soapy solution. Since using oil-based solvents such as gasoline or strong detergents to remove stains can cause lifejackets to deteriorate and lose buoyancy, you should always keep them away from gasoline, oil and grease.

9. Made of buoyant material; does not need to be inflated to float.

10. Meets the requirements of the *Convention for the Safety of Life at Sea (SOLAS)*

Inflatable and hybrid jackets need special care to make sure that their cartridges remain effective. Read and follow the manufacturer's instructions and replace cartridges before their expiry dates.

Lifejacket Handling and Storage

Air-drying lifejackets before putting them away prevents mildew. Never dry them on a heater or any other direct heat source, or stow them away when they are damp. When they are not in use, stow dry lifejackets out of the sunlight in a place that is dry, well ventilated and easy to reach when needed. Do not step on lifejackets or use them as kneeling or seating pads, as placing heavy weight on a lifejacket can damage its internal buoyancy material.

Lifejacket Tips

Mark each lifejacket so you can keep a record of the date you bought it. This will help you know when to replace it. Marking should be done so that it will not damage the jacket. Use a tag or write on the label, taking care to be able to still read the information on the tag.

Lifejackets and PFDs — What's the Difference?

To comply with the law, as well as make an informed decision about safety, it helps to know the differences between lifejackets and personal flotation devices (PFDs).

Only lifejackets satisfy the requirements for life-saving equipment on commercial vessels (except for human-powered vessels). This is because lifejackets, which are intended to be put on when you evacuate the vessel or there is a clear risk of going in the water, have two big advantages over most PFDs: they are usually more buoyant and do a better job of keeping your mouth out of the water. To do this, lifejackets can be bulky, making them less likely to be worn at all times, although newer models do provide increased wearability.

PFDs, on the other hand, are generally more comfortable and can often be worn at all times — even while working, which provides added protection in case a person falls overboard accidentally. This is particularly important if you operate alone or in cold water as the effects of cold water immersion will reduce the time you are able to keep your head above water without a flotation device.

For first-hand accounts of people in cold water and the difficulties they had staying afloat without a lifejacket, go to www.coldwaterbootcamp.com/pages/bootcampers.html.

For an extra level of safety, consider carrying **both** lifejackets and PFDs and making it a habit to wear your PFD at all times for extra protection. Be aware, however, that inherently buoyant PFDs are designed for the average person and may not be enough to keep a fully dressed worker afloat, especially if carrying a tool belt or other equipment. You may want to consider using an inflatable PFD instead, as they often have buoyancy equivalent to a Small Vessel Lifejacket (100 newtons).

Liferafts

No operator wants to abandon ship, but it is best to be prepared. Because a liferaft can be launched in almost all weather and is designed to keep you out of the water when you abandon ship and while you wait for rescue, it is the preferred rescue system for any small vessel that operates in water with a temperature below 15°C if it can carry a raft safely.

If your vessel is more than 8.5 metres long and carries passengers on voyages that are not Sheltered Waters Voyages or more than 2 nautical miles from the shore of rivers or lakes, you must have one or more liferafts. Workboats more than 12 metres long must carry one or more liferafts. On workboats, a buoyant apparatus may be used instead of a liferaft if the water temperature is more than 15°C. The combined capacity of the rafts or buoyant apparatus must be enough to carry everyone on board. Inflatable liferafts must be marked with the maximum capacity of the raft and the date it was last serviced.

Coastal liferafts are designed for near shore waters. A vessel operating beyond a Near Coastal Voyage, Class 2 must carry a SOLAS liferaft.

Crews must be trained and ready to launch liferafts and other life-saving equipment on a moment's notice. Carry out regular drills with the crew up to the point where the liferaft would be inflated. If your liferaft is due for servicing, consider carrying out a drill that includes inflating the raft so that you and your crew know what it's like. This may increase the cost of servicing, so check with your service depot and then decide. Conduct regular inspections to make sure that each survival craft holds all required equipment, is in place and is properly stowed.

Inflatable liferafts must be serviced at a service station accredited by the raft's manufacturer at the frequency set out in the *Life Saving Equipment Regulations*.¹¹ Servicing helps to identify problems caused by your vessel's pitching-and-rolling movements and from exposure to humidity and water spray, which can find their way into the liferaft container.

Any hydrostatic release (float-free device) that requires yearly or other regular service should be serviced at the same time as the liferaft. A disposable release should be replaced before its expiry date. Failure to service liferafts and release devices may result in an operating failure when it is needed, and could cost lives. Make sure that your equipment works and your crew is prepared.

How a Hydrostatic Release Works

A hydrostatic release is made up of a pressure activated release mechanism, a loop to which the liferaft lashing is attached and a weak link to which the liferaft painter (the rope attached to the liferaft) is attached. Follow the manufacturer's instructions carefully when installing the release.

When the device is submerged to a depth of about 4 metres, the water pressure causes the mechanism to release the loop holding the lashing. This allows the raft to float to the surface if there are no obstacles to stop it (see Liferaft Stowage, page 50). As the vessel sinks, the painter is stretched, causing the liferaft to inflate. As the vessel sinks further, the weak link will break, freeing the liferaft from the vessel.



One of several hydrostatic release units approved for use in Canada

11. Servicing requirements are currently in section 2 of Schedule IV of the *Life Saving Equipment Regulations*; however, this may change when the regulations are updated.

Liferaft Stowage

Every liferaft or buoyant apparatus must be stowed so it can float free if the vessel sinks or capsizes. You can either place the liferaft in deep chocks without lashings, so it can float free if the vessel sinks, or secure it with lashings fitted with a hydrostatic release. The liferaft must be stowed well away from any fittings, rigging or any other thing that may prevent it from floating free and inflating. The liferaft must also be easy to access for manual release (consult *Ship Safety Bulletin 07/2007: Inflatable Liferafts and Rescue Platforms: Stowage and Proper Access* for more information).

To prevent a liferaft from being damaged or lost because of weather, it must be properly secured (if not in deep chocks). Be careful to secure the liferaft in a way that allows the hydrostatic release to work properly when needed. You must also make sure that the painter is properly secured to the vessel.

Lifebuoy and Buoyant Heaving Lines

Lifebuoy

When buying a lifebuoy, check to make sure it is approved by Transport Canada. It should bear an “Approved by the Department of Transport” marking and an approval number like this: “T.C.xxx.xxx.xxx.”

Lifebuoy approved for use on small commercial vessels must be at least 600 millimetres in diameter and be made of inherently buoyant material. If it doesn't already have one, you must attach the lifebuoy to a buoyant line of good quality that will not kink and is at least 9.5 millimetres in diameter and 15 metres long.

Approved lifebuoy have colours that are easy to see. Don't paint them or do anything else that may make them less visible. The name of your vessel should be marked on your lifebuoy.

Horseshoe lifebuoy are not approved for use on commercial vessels.

Buoyant Heaving Line

A fancy name for a floating rope, a buoyant heaving line has a soft buoyant mass on one end. You throw the line toward a person in the water for them to hold on to while you pull them alongside. It can be packed into a rescue throw bag to keep it from getting knotted and make it easy to throw.

Vessel Safety Equipment

Life-saving appliances are for personal safety; vessel safety equipment helps to preserve the vessel in the hope that you will not have to use the life-saving equipment.

Oars and Anchor

Your vessel must have a way to control drifting in case you lose your engine. This can be an anchor with a length of rope, chain or cable, or any combination of these, that suits the size of the vessel. If your vessel is not more than 9 metres long, you may carry a paddle or two oars and rowlocks or any other device that can be used to propel the vessel manually instead of the anchor.

Bailers and Manual Bilge Pumps

To be able to remove water from the hull, you must carry a manual bilge pump. If your vessel is not more than 9 metres long, you may carry a bailer instead of a pump. The bailer should be made of plastic or metal, have an opening of at least 65 square centimetres, and should be able to hold 750 millilitres or more.

Bilge Pumps

In addition to carrying a manual bilge pump, every vessel over 6 metres long must have bilge pumping arrangements that meet the construction requirements (see Pumping or Bailing System in Chapter 2).

Distress Alerting Equipment

If you run into trouble, this equipment allows you to let others know you need help. Please note that it is against the law to use flares and other distress signals, or make other signals that could be mistaken as distress signals, if you do not need help.

Visual Signals

All small commercial vessels must carry a watertight flashlight and flares. The number and type of flares required vary according to the size of the vessel. See Table 5-1 for details.

To be sure that the flashlight can be used as a signalling device, make sure the batteries are charged. It is a good idea to check the flashlight regularly and to keep spare batteries on hand.

Signalling with a flashlight will be more effective when there is little or no sunlight. During the day, you may wish to try other visual signals first.

To signal with a flashlight, aim it where you expect that it will be seen and flash it so as to attract attention. Using Morse code for SOS may help others understand that you need help. The pattern for SOS is: short, short, short; long, long, long; short, short, short. Pause and repeat.

Pyrotechnic Distress Signals (Flares)

In an emergency, flares can be very effective in letting others know that you need immediate help.

All flares must be clearly marked as being Transport Canada approved and must not have expired. Flares expire four years from the manufacture date stamped on them.

Flares are hazardous! Do not just throw them away. Dispose of old flares as directed by the manufacturer.

Hint: While you must have enough valid flares on board to meet regulatory requirements, you can keep expired flares on the vessel and use them first if you need to attract attention. If they work, you've saved your newer flares. Dispose of them properly when they start to show signs of deterioration.

Safety Measures and Use

- Store flares in a watertight container to keep them dry.
- Store flares in a place that is cool, dry, and easy to reach — away from any heat source.
- Check flares regularly and replace them before they reach their expiry date.
- Always shoot flares into the wind and away from the vessel at a 45-degree angle so it will drift back over your position.
- Never use or store a flare close to flammable liquids or gas (e.g., propane, gas, oil).
- If a flare does not work, dispose of it safely as soon as possible.
- Train your crew to use flares.
- Never point a flare at another person.
- Always treat flares as explosive devices.

Types of Flares

1. Rocket Parachute Flares (Type A)

- Ignition and the rocket are contained in a waterproof casing.
- Launching rocket ignites flare and projects parachute with flare.
- Reaches maximum height of 300 metres.
- Flare burns bright red for at least 40 seconds.
- Parachute deploys between 200 and 300 metres.
- Visibility up to 20 nautical miles.
- Used to alert rescuers who may be a long distance away — possibly over the horizon.

2. Multi-Star Flares (Type B)

- Produces two or more bright red stars in rapid succession (maximum 15 seconds).
- Reaches maximum height of 100 metres.
- Each star burns for at least 4 seconds.
- Automatic or cartridge firing device.
- If cartridge, the package may instruct users to fire two signals within 15 seconds of each other.
- Firing device and the cartridges, if any, should be waterproof and packed in a waterproof container.
- Visibility up to 12 nautical miles.
- Used to alert rescuers who may be a long distance away.

3. Hand Flares (Type C)

- Hand-held red flare.
- Burns for at least 1 minute.
- Sheathed to prevent drips of burning material.
- Limited surface visibility — used to alert rescuers who are within a few nautical miles.
- Contained in a waterproof case.

4. Smoke Signal (Type D)

- Can be either hand-held or buoyant.
- Buoyant signal gives off a dense orange-coloured smoke for at least 3 minutes when floating in calm water.
- Hand-held gives off a dense orange-coloured smoke for a period of at least 1 minute.
- Mechanically ignited.
- The buoyant type is effective when afloat in moderate seas.
- Used as a day signal only.
- Contained in a waterproof case.

Table 5-1: Required Safety Equipment

Vessel length	6 metres or less	More than 6 but not more than 9 metres	More than 9 but not more than 12 metres	More than 12 metres
Transport Canada approved lifejacket, sized for each person on board	√	√	√	√
Marine emergency first aid kit (see Appendix 3 for required contents)	√	√	√	√
Reboarding device if vertical height to be climbed is more than 0.5 metre	√	√	√	√
Buoyant heaving line at least 15 metres long	√	√ ¹	√	√
Lifebuoy attached to buoyant line at least 15 metres long		√ ¹	√	√ ²
Watertight flashlight	√	√	√	√
Flares	3 (other than smoke signals)	6 (other than smoke signals)	12 (no more than 6 of which may be smoke signals)	12 (no more than 6 of which may be smoke signals)
Liferaft		√ ³	√ ³	√ ³
Manual propelling device (e.g. oars)	√ ⁴	√ ⁴		
Anchor with at least the number of metres indicated of chain, rope or cable	√ ⁴ (15m)	√ ⁴ (15m)	√ (30m)	√ (50m)
Manual bilge pump	√ ⁵	√ ⁵	√	√
Sound signalling device or appliance ⁶	√	√	√ ⁶	Appliance only
Navigation lights	√ ⁷	√ ⁷	√	√
Magnetic compass	√ ⁸	√ ⁸	√	√

1. May carry either heaving line or lifebuoy.
2. Buoyant line not required if lifebuoy is equipped with a self-igniting light.
3. Liferafts are required on:
 - passenger-carrying vessels more than 8.5 metres long that operate:
 - outside sheltered waters on the Atlantic, Pacific or Arctic coast;
 - more than 2 nautical miles from the shore of lakes and rivers; or
 - on the St. Lawrence River east of 70° 53' W;
 - workboats more than 12 metres long (a buoyant apparatus may be used instead of a liferaft if the water temperature is more than 15°C); and
 - tugs more than 8.5 metres long that carry more than one person.
4. May carry either a manual propelling device or an anchor.
5. May carry a bailer instead.
6. A sound signalling device is a pealless whistle or a compressed gas or electric horn. A sound signalling appliance is a whistle that meets the requirements of the *Collision Regulations*. An appliance is required on vessels less than 12 metres long that are ordinarily used for pushing or pulling floating objects outside warding or yarding operations.
7. If operated after sunset or before sunrise or in periods of restricted visibility.
8. A compass is not required on vessels 8 metres or less if they are always within sight of navigation marks.

Communication Equipment

VHF Radio — Making a Distress Call (MAYDAY) or Early Notification (PAN PAN)

Radio as distress alerting equipment is by far the best in terms of range and the ability to provide detailed information about the kind of problem you are facing. If you are not required to carry a radio, you might want to consider installing one simply for this reason. Remember, however, that **any** equipment that you carry must be in good working order, even if it is not required by regulation.

Two types of emergency radio signals are used: MAYDAY, for distress, and PAN PAN, for urgent messages. MAYDAY indicates a person or vessel is threatened by grave and imminent danger and requests immediate help. PAN PAN indicates a safety problem that does not require immediate assistance.

The recommended call format includes the word MAYDAY (or PAN PAN) spoken three times, followed by the vessel's name (or other unique identifier), also spoken three times, then MAYDAY (or PAN PAN) and the name or identifier again. Vital information, including the position, nature of the emergency, assistance required and the number of people on board, should follow. A typical message might be:

“MAYDAY, MAYDAY, MAYDAY, this is NONSUCH, NONSUCH, NONSUCH. MAYDAY, NONSUCH. Position 54 25 North 016 33 West. My boat is on fire and sinking. I require immediate assistance. Four people on board, are taking a lifeboat. OVER.”

It is strongly recommended you report any situation that may present a danger to life, without delay. Early notification can be crucial to a positive outcome. You can use the PAN PAN radio signal for this purpose.

Take it with you: you can order free, water-resistant quick reference cards that you can keep near your radio to guide you in making a call for help. Search <http://shop.tc.gc.ca> for *Distress and Safety Radiotelephone Procedures* (TP 9878).

Locating Devices

If you are in trouble, the time it takes for Search and Rescue to reach you depends on where you are and how hard they have to look. A locator device such as an Emergency Position Indicating Radio Beacon (EPIRB) (see Chapter 10) or a Digital Selective Calling (DSC) radio connected to a Global Positioning System (GPS) will let authorities know your exact position.

Personal locator beacons can also be of use but they have limitations. They should be used **with**, not instead of, an EPIRB.

Fire Safety Equipment

Fire Extinguishers

The size and number of fire extinguishers required for commercial vessels depends on the size of the boat and its equipment. Portable fire extinguishers carry labels that indicate the size and type of fire that they can be expected to handle. Refer to the *Small Vessel Regulations*, section 11, for a table of equivalents for fire extinguishers.

Every fire extinguisher carries one or more letters, which tell you the kinds of fires it can be used on (see Fire Extinguisher Classification System) and a number that indicates the size of the fire it can put out. The higher the number, the larger the fire it can handle. To meet regulation requirements, your extinguisher must have

all the letters and the same number or higher for the extinguisher set out in Table 5-2. Always remember that the requirements are the minimum — installing a 2:A 10:BC instead of a 1:A 10:BC will increase your ability to fight a Class A fire.

Marine Type Fire Extinguishers

A marine type fire extinguisher will be marked “marine listed” or “USCG approved” but to be compliant it must also be installed with an approved (strap-type) quick-release mounting bracket.

Many extinguishers come with the bracket as an option. Make sure you have the approved bracket to hold your extinguisher securely.

Inspect extinguishers each month to make certain seals and tamper indicators are not broken or missing. Check the pressure gauge to make sure that tank pressure is fine as well. Mount fire extinguishers with

an appropriate bracket from the extinguisher manufacturer that keeps them from being damaged or misplaced but allows them to be put into action quickly. Turn over and shake dry chemical extinguishers from time to time so that their contents do not become compacted by the motion of the vessel. Replace cracked or broken hoses and look for damage such as corrosion, leaks or clogging.

Marine type fire extinguishers are required. Do not keep extinguishers that use CO₂ or other gas harmful to humans in or near spaces normally occupied by passengers or crew. Do use extinguishers with CO₂ or other gas with similar fire smothering capability for enclosed engine spaces that will not have people in them. Some dry chemical extinguishers may be corrosive for metal such as aluminum. Consider all these factors before selecting the proper fire extinguisher.

The *Small Vessel Regulations* and the *Construction Standards for Small Vessels* (TP 1332) also address fixed extinguishing systems. Even if your vessel has one, you must also carry the required portable extinguishers.

Fire Extinguisher Classification System

The class of fire extinguisher is based on the type of fire it puts out.

Class A Fire

A fire involving wood, cloth, paper, rubber and some plastics.

Class B Fire

A fire involving flammable liquids, gases, greases and paint.

Class C Fire

A fire involving live electrical wires or equipment.

Class D Fire

A fire involving combustible metals such as magnesium, sodium or potassium.

Class K Fire

A fire involving combustible cooking products such as vegetable or animal oil. A Class K may be substituted for a Class B in a cooking area.

Controlling a Fire

Read the instructions on your fire extinguishers and make sure you understand how they work.

If a fire starts, grab the fire extinguisher, activate it and direct it at the base of the flames using short bursts and sweeping the hose from side to side.

If a fire starts while underway:

- Use extinguishers and/or fire buckets to control the fire (or the fixed extinguishing system if installed in the space).
- Send out a distress signal.
- Position your boat so the fire is downwind.
- Order passengers and crew that are not fighting the fire to put on lifejackets.
- If the fire is located in the engine space, stop the engine, shut off the fuel source and close the engine space ventilation.
- Consider evacuation if the fire is spreading quickly or cannot be brought under control.

Fibreglass boat owners should remember that fibreglass burns, and take extra care, as for a wooden vessel.

Table 5-2: Required Fire Fighting and Detection Equipment

Vessel length	6 metres or less	More than 6 but not more than 9 metres	More than 9 but not more than 12 metres	More than 12 metres
General use fire extinguisher ¹	One 1A:5B:C	One 2A:10B:C	One 2A:10B:C	One 2A:20B:C
Additional extinguishers <ul style="list-style-type: none"> if vessel equipped with fuel burning cooking, heating or refrigerating appliance 	One 1A:5B:C	One 2A:10B:C	One 2A:10B:C	One 2A:20B:C at each access to any space equipped with fuel burning cooking, heating or refrigerating appliance
<ul style="list-style-type: none"> at entrance to the engine space 		One 10B:C	One 10B:C	One 20B:C
<ul style="list-style-type: none"> at entrance to each accommodation space 				One 2A:20B:C
Engine space port and dedicated CO ₂ or equivalent fire extinguisher	√ ²			
Fixed fire extinguishing system		√ ³	√ ³	√
Fire axe			One	One
Fire bucket(s)			One	Two
Fire pump, hose and nozzle ⁴				√
Temperature detector – Engine space	√ ⁵			
Temperature and rate of heat rise detector – Engine space		√ ⁶	√ ⁶	√ ⁶
Smoke detectors - Accommodation and service spaces	√ ⁷	√ ⁷	√ ⁷	√ ⁸

- Not required if the vessel is not power-driven and does not have an electrical system.
- Must have a clearly labelled port or other way of discharging a properly sized fire extinguisher directly into any enclosed engine space without opening the primary access to the space. This extinguisher is in addition to all other extinguishers required in the table. (See Fire Safety in Chapter 2 for further details on construction requirements.) A fixed fire fighting system may be installed instead of the engine space port.
- May use the engine space port described above if the engine space is less than 8m³ (based on a CO₂ extinguisher containing 10 kg of gas), depending on the extinguisher type and size.
- Power-driven pump located outside the engine space with enough hose to be able to direct the water jet into any part of the vessel.
- Connected to a remote alarm at the operating position as per the *Small Vessel Regulations*. Not required on a vessel in which the engine is enclosed by boxing in such a manner that a fire would be immediately apparent to a person at the operating position.
- Connected to a fire alarm panel as per the *Construction Standards for Small Vessels*.
- Stand-alone installation (alarm and power).
- Connected to the fire alarm panel on all passenger-carrying vessels and on workboats with overnight accommodations.

More Information

To consult your local Transport Canada Centre, see Appendix 2.

- *Small Vessel Regulations*
www.laws.justice.gc.ca/en/SOR-2010-91/
- *Collision Regulations*
www.laws.justice.gc.ca/en/C.R.C.-c.1416/
- *Life Saving Equipment Regulations*
www.laws.justice.gc.ca/en/C.R.C.-c.1436/
- *Marine Personnel Regulations*
www.laws.justice.gc.ca/en/SOR-2007-115/
- *Construction Standards for Small Vessels (TP 1332)*
www.tc.gc.ca/MarineSafety/TP/TP1332/menu.htm
- *Marine Emergency Duties Training Program (TP 4957)*
www.tc.gc.ca/marinesafety/tp/tp4957/menu.htm
- *Ship Safety Bulletin 07/2007: Inflatable Liferafts and Rescue Platforms, Stowage and Proper Access*
www.tc.gc.ca/MarineSafety/bulletins/2007/07-eng.htm

Chapter 6

Avoid problems and prepare for emergencies





Voyage Planning

The best way to avoid hazards and dangerous situations is to make sure you do a good job of planning your voyage before you set sail.

This is why Regulation 34 of Chapter V of the *Convention for the Safety of Life at Sea (SOLAS)* and the *Charts and Nautical Publications Regulations, 1995* require masters to ensure the intended voyage has been planned.

The degree of voyage planning for small vessels will depend upon the size of the vessel, its crew and the length of the voyage.

Take the following into account when planning a voyage:

- **Weather** – check the weather forecast before you leave shore, and get regular updates if you are planning to be out for any length of time.
- **Tides** – check the tidal predictions for your trip and ensure that they fit with what you are planning to do.
- **Limitations of the vessel** – consider whether your boat is up to the proposed trip, especially if the weather gets bad (even if good weather is forecasted).
- **Supplies** – make sure you have everything you will need, as well as some extra in case you run into trouble.
- **Navigational dangers** – make sure that you are familiar with any navigational dangers you may encounter during your voyage. This generally means checking an up-to-date chart and a current pilot book.
- **Contingency plan** – always have a contingency plan should anything go wrong. Before you go, think about where you can take refuge if conditions deteriorate or if you suffer an accident or injury. If you use a GPS for navigation, be aware that it could fail at any time. It is sensible and good practice to be able to navigate yourself to safety without it, should it fail.
- **Sail plan** – make sure that someone responsible ashore knows your plans and knows what to do if they become concerned for your safety.

Voyage Planning Stages

Voyage planning, as set out in the International Maritime Organization's (IMO's) *Guidelines for Voyage Planning*, involves four distinct stages:

1. **Appraisal** – gathering the information relevant to the coming trip.
2. **Planning** – preparing a detailed plan of the expected trip and alternate plans; this includes establishing waypoints, identifying hazards, setting the times for passing certain landmarks and decision points where you must decide to proceed or engage alternate plans.
3. **Execution** – implementing the plan and making the necessary decisions and, if necessary, implementing alternate plans.
4. **Monitoring** – keeping an eye on your progress and the effectiveness of the plan's execution.

For a more detailed explanation of the steps involved at each stage, refer to the *IMO Guidelines for Voyage Planning*.

Putting the Plan into Action

Your plan is more likely to succeed if you carry out the following.

Before You Set Out

Check the Vessel

Running through a safety checklist before leaving shore can help you avoid a real emergency. It is better to invest a few minutes at the dock making sure your vessel, engine and equipment are in working order than to spend hours stranded offshore and/or in danger.

Sample Pre-Departure Safety Checklist

1. What is the weather forecast?
2. Do conditions match the forecast?
3. Are there any local hazards (such as tides, currents, sand bars, rocks) on your intended route?
4. Are there any vessel operation restrictions¹² on the route that will affect where you can go or the speed at which you can travel?
5. Do you have updated charts of the operating area?
6. Do you have the required crew for the number of passengers and intended voyage?
7. Is the navigational equipment working?
8. Have you given a sail plan that includes how many persons will be on board to a responsible person?
9. Are there enough lifejackets of appropriate size for everyone on board, including children?

12. The *Vessel Operation Restriction Regulations* set out waters in which some vessels may be prohibited, where speed limits may apply or where water-skiing may be prohibited at certain times.

10. Is all safety equipment in good working order?
11. Is your VHF radio or other communication equipment working properly?
12. Are navigation lights working properly?
13. Are the first aid kit, basic tools and spare parts on board?
14. Are drain holes / scuppers free of obstructions? Is your drainage plug in place?
15. Is your bilge pump free of debris and working?
16. Did you check the battery's charge and its fluid levels?
17. Did you check for oil and water leaks?
18. Did you check fuel, lube oil and coolant levels, hoses, and belts?

File a Sail Plan

A sail plan includes your travel route and basic details about your vessel. For long voyages you should file a daily position report, especially if your planned route or schedule changes.

File a sail plan with a responsible person on shore, such as someone at home, from your corporate office or at the local marina, before heading out. If this is not possible, you may file a sail plan with any Canadian Coast Guard Marine Communications and Traffic Services (MCTS) Centre by telephone, radio or in person. Include the number of persons carried on each voyage¹³ with the same person or in a visible place where it can be found easily, so it can be passed on to Search and Rescue authorities if needed. (Consult *Ship Safety Bulletin 06/2007 – Information on Persons on Board, Counting, Recording, and Special Needs* for more information.)

Be sure to report that you have returned or completed your trip to avoid a needless search for your vessel.

Tell the person holding your sail plan to contact the nearest Rescue Coordination Centre if you are overdue. The telephone number can be found at the front of or in the government blue pages of most telephone books.

While Underway

Plan for Contingencies

A master must plan for what might happen as the day progresses. Try to anticipate everything that can change or go wrong and make alternate plans ahead of time. During the day, as you pass different locations, hazards, etc., and see the reality of the area, you may decide to alter your plans. Keep alternate plans in your mind and know when changes in conditions mean you should put these plans into action.

13. *Small Vessel Regulations*, Section 402.

Track Your Course

Instruments can fail. Take steps to protect yourself from navigational equipment problems from the time you set off.

To protect yourself, regularly record your position on the chart with the time noted beside it.

Be sure to regularly check the accuracy of your compass. The *Navigation Safety Regulations* require you to have a properly adjusted magnetic compass¹⁴ and that you have a way of correcting headings and bearings to true, such as a table of deviation, on board at all times. Get your compass swung by a professional if necessary. Check it again whenever you reposition any large metal items on the vessel or when you add new electrical or electronic equipment.

Monitor Your Progress Along the Course Line

- On open water passages, regularly check your position against the course line you have drawn on the chart.
- In restricted waters, compare your position against the distance you expected to have covered. Regularly check your position against the chart to make sure you are in safe water.
- Always maintain a dead reckoning position. If you lose your electronics, you may have to navigate using dead reckoning until you can get your equipment repaired.
- Use all your navigational aids.
- Develop your ability to navigate using the resources that are on board. Practice using alternate means to navigate.

Maintain Situational Awareness

Situational awareness is:

- knowing what is going on around you;
- understanding your vessel's position in relation to its environment and other vessels; and
- being aware of how your vessel is behaving.

Enhance your situational awareness by paying attention to all the cues coming from your environment, and staying alert.

14. Not required if the vessel is eight metres or less in length and is navigated within sight of navigation marks.

A United States Coast Guard analysis of navigational mishaps for cutters and boats revealed that 40 per cent were due to a loss of situational awareness.

Since situational awareness is so important, you should:

- know where you are at all times;
- form a mental picture of your environment and know how and where your vessel fits into the picture;
- be familiar with your radar and its operation (use it day and night to increase your comfort level with the instrument — don't just turn it on when you need it the most);
- pay attention to other cues and other systems of navigation, such as your GPS, compass, sounder, etc.;
- continually assess and re-assess your situation and the relative position of other vessels, lights, buoys and navigational hazards; and
- keep track of the tides and currents, and continually re-assess their effect in relation to prevailing weather conditions, shoals, etc.

Maintaining situational awareness gets harder when night falls or the weather is closing in. As weather conditions become poorer, you may lose so many clues that you lose your situational awareness. When you begin to doubt your own understanding of the navigational situation, you have lost your situational awareness, and must make every effort to regain it.

Clues that you are losing situational awareness include:

- being confused or having a “gut feeling” that “this can't be right”;
- realizing that you are not watching or looking for hazards;
- noticing discrepancies in information from two or more sources;
- getting ambiguous or unclear information (if this happens, you must resolve the ambiguity before proceeding); and
- being fixated or preoccupied (if you are fixated on one aspect of the situation, you cannot hope to understand all of the forces affecting your vessel).

Staying Safe

Here are some more requirements and tips for staying out of trouble and what to do if you do find yourself in difficulty.

Safe Speed

You must stay alert and maintain a safe speed at all times to avoid collision.¹⁵ Make certain you have a clear view in all directions.

15. *Collision Regulations*, Rules 5 and 6.

Loads and Stability

Never overload your vessel with people or cargo. This will make your vessel unstable and it may capsize. Distribute loads so that the vessel is level, store them as low as possible and secure them to keep them from shifting (see Chapter 8 for details on vessel stability).

Severe Weather

In severe weather:

- Turn on your navigation lights.
- Reduce speed to match sea condition.
- Maintain enough power to allow steering.
- Have crew and passengers put on lifejackets. On small boats, seat passengers as low as possible and near the centre line.
- Close and secure all doors, hatches and other openings.
- Make sure that cargo and other objects are secure.
- Make sure that all overboard drains that are designed to be open at sea and freeing ports are open and clear.
- Head for the nearest port of refuge or shore that is safe to approach, if possible.
- Direct the bow into the waves at about a 45-degree angle, if possible.
- Keep bilges free of water.
- Run out a sea anchor on a line from the bow to keep the boat headed into the waves if your engine fails.
- If you have concerns about the safety of your vessel or crew, make early radio contact with the Canadian Coast Guard Marine Communications and Traffic Services (CCG MCTS) radio station to advise them of your concerns. Do not wait until it is too late (see VHF Radio — Making a Distress Call and Early Notification in Chapter 5).

Cold Shock and Hypothermia

If, in water that is less than 15°C, you operate a passenger-carrying vessel or are responsible for a guided excursion, the *Small Vessel Regulations*¹⁶ require you to carry equipment or have procedures for protecting people from the effects of cold shock or hypothermia unless you carry a liferaft. Workboat operators should also address the risk of cold shock and hypothermia by equipment or operating procedures, which may include requiring that workers wear flotation suits or other flotation devices.

16. *Small Vessel Regulations*, sections 302 and 417.

People who fall into cold water drown more often from their body's initial reaction to the change in temperature (cold shock and swimming failure) than from low body temperature (hypothermia). Understanding the four phases of cold water immersion will help you react in case you or someone on board your vessel falls overboard.

Phase 1. Cold shock (occurring in the first two to three minutes after immersion) starts with a big gasp, followed by shallow, rapid breathing and a sharp increase in heart rate. It may cause small muscle spasms. Death due to drowning is not uncommon during this phase because victims are unable to focus attention on keeping their airway above water. Making your crew and passengers aware of the symptoms so that they can try to control breathing while their bodies adjust is the best preparation you can give other than having them wear lifejackets. Don't panic. Don't try to swim during this phase. It will pass and you can then attempt to self-rescue.

Phase 2. Swimming failure (which occurs after three to thirty minutes in the water) is when the victim's muscles stop working normally; for example, the fingers curl up and won't open. As time passes, the victim, often healthy and a good swimmer, is no longer able to make swimming movements. Wearing a lifejacket is still the best defence, but it may help people to know, before they start swimming for shore, that swimming has a massive impact on body heat loss and that the colder the water, the greater the likelihood of swimming failure. Do anything that needs finger movement, like putting on lifejackets and opening flare packages, as soon as you can. If possible, climb partly out of the water on the vessel or any floating debris. Getting your body out of the water will reduce the speed at which it loses heat.

Phase 3. Hypothermia (occurring after more than thirty minutes in the water) is the lowering of the body temperature until the victim loses consciousness and drowns or the heart stops. While waiting for rescue, curl up like a baby in the H.E.L.P. (heat evacuation loss prevention) position and, if there is more than one of you, huddle together to reduce heat loss. Don't move unless you have to.

Phase 4. Post-rescue collapse Sadly, 20 per cent of immersion deaths occur during or within hours of rescue. Knowing this, you should keep a close eye on rescued victims and keep them as still as possible.

Check out the website www.coldwaterbootcamp.com or read *The Chilling Truth about Cold Water*, and Transport Canada's *Survival in Cold Waters (2007) (TP 13822)* to learn more about surviving in cold water. Information on treating people suffering from hypothermia can be found on the Transport Canada website as well as in the State of Alaska's *Cold Injuries Guidelines*.

Guidelines for Operating in Cold Water

If you operate a passenger vessel or are responsible for guided excursions in water that is less than 15°C, you must carry equipment and/or establish procedures to protect persons from hypothermia and cold shock.

Inform people on board of the symptoms of cold shock and swimming failure so that they are prepared for it and know what they have to do to get over the initial stages.

Equipment may include a Jason's cradle to help lift a person from the water without having to lean over or get in the water. The horizontal recovery position provided by the cradle helps reduce post-rescue collapse. Other means of reducing the amount of time a person is in the water can also help meet this requirement.

Once the person is safely out of the water, focus on helping to make them dry and warm. You may consider removing wet clothing and starting to warm the person through body contact and/or drinking warm fluids. Having blankets available and a way of preparing warm liquids are additional ways of meeting the requirement.

What to do in the event of capsizing is a bigger problem since everyone on board and all equipment will be in the water. You may want to consider wrapping blankets so that they are water-resistant, or travelling with another vessel that can come to your aid should you capsize.

Carbon Monoxide Poisoning

Carbon monoxide (CO) is an invisible, silent and deadly danger. It is a colourless, odourless gas produced during the incomplete combustion of fossil fuels. It cuts off the oxygen supply to the body, causing death in minutes. Symptoms of CO poisoning such as headaches, nausea and fatigue can be mistaken for seasickness or the flu because you can't tell the deadly gas is in the air without a CO detector.

The risk of poisoning by carbon monoxide is also increased in the case of divers because any CO present in the blood will have its effect magnified by the pressure divers are exposed to at depth.

Be aware of the warning signs and get anyone who complains of these symptoms to fresh air immediately. Install a marine grade CO detector according to the manufacturer's instructions so that you'll be alerted if CO is present.

Become familiar with and avoid situations that cause CO to build up:

- Do not heat cabins or cook unless the cabins are well-ventilated.
- Be especially careful in areas such as the stern, cabin extensions and areas fitted with canvas tops.

- Be aware that engines left idling in poorly ventilated areas can create dangerous concentrations of CO; a tail wind can easily carry CO back on board.
- Be aware of other vessels. Exhaust from a nearby vessel may cause a build-up of carbon monoxide even when your engine is not running.

More Information

Contact your local Transport Canada Centre to find out about the laws and regulations that apply to **your** vessel and situation (see Appendix 2).

- *Fire and Boat Drills Regulations*
www.laws.justice.gc.ca/eng/SOR-2010-83
- *Charts and Nautical Publications Regulations, 1995* www.laws.justice.gc.ca/en/SOR-95-149
- *Navigation Safety Regulations*
www.laws.justice.gc.ca/en/SOR-2005-134
- *Small Vessel Regulations*
www.laws.justice.gc.ca/en/SOR-2010-91//
- *Vessel Operation Restriction Regulations*
www.laws.justice.gc.ca/en/SOR-2008-120
- *Ship Safety Bulletin 09/2002: Bilge Pumping Systems: Early Detection Saves Lives*
www.tc.gc.ca/MarineSafety/bulletins/2002/09-eng.htm
- *Ship Safety Bulletin 04/2007: Carbon Monoxide, Preventive Measures and Recognition of Danger*
www.tc.gc.ca/MarineSafety/bulletins/2007/04-eng.htm
- *Ship Safety Bulletin 06/2007: Information on Persons on Board, Counting, Recording, and Special Needs*
www.tc.gc.ca/MarineSafety/bulletins/2007/06-eng.htm
- "The Chilling Truth About Cold Water"
www.shipwrite.bc.ca/Chilling_truth.htm
- *Cold Injuries Guidelines, State of Alaska*
www.chems.alaska.gov/ems/documents/AKColdInj2005.pdf
- *Convention for the Safety of Life at Sea (SOLAS), Chapter 5, Regulation 34*
- *Educational Information About Carbon Monoxide, American Boat and Yacht Council* www.abycinc.org/standards/purpose.cfm - TH22
- *IMO Guidelines for Voyage Planning*,
www.tc.gc.ca/media/documents/marinesafety/a2res893.pdf
- *Survival in Cold Waters (2007) (TP 13822)*
www.tc.gc.ca/MarineSafety/TP/TP13822/menu.htm

Chapter 7

Keep passengers informed





Pre-Departure Briefings

Holding safety briefings before the voyage begins — similar to those given on an aircraft — is a legal requirement. Show and tell your passengers how to react in an emergency. Give the briefing in English, French or both, as needed.

You must tell passengers:

- where to find lifejackets closest to their position on the boat, including children's lifejackets;
- how to properly put on, secure, and, if you have inflatable and hybrid lifejackets, how to operate, each type of lifejacket on board;
- not to put lifejackets on until they are outside the cabins and out from under canopies;
- where the liferafts are, if you have any, and where they are to gather to get on board the liferaft (muster stations); and
- how to reduce the effect of their movement on vessel stability and how to avoid potential hazards, such as ropes and docking lines.

Whether you talk, distribute handouts with pictograms, use a recording or show a video to give the briefing, you must show your passengers how to put on each type of lifejacket on board.

Keep your passengers safe by keeping them informed.

More Information

To consult your local Transport Canada Centre, see Appendix 2.

- *Small Vessel Regulations*, section 401
www.laws.justice.gc.ca/en/SOR-2010-91/
- *Ship Safety Bulletin 06/2002: Passenger Safety Briefings*
www.tc.gc.ca/marinesafety/bulletins/2002/06-eng.htm

Chapter 8

Keep your vessel stable





Stability refers to a vessel's ability to resist capsizing by returning to an upright position after being heeled over (tilted to one side due to wind or sea conditions). Many forces affect vessel stability and each type of vessel reacts differently to heeling forces. The owner is responsible for ensuring that the vessel has adequate stability to safely carry out its intended operations. As a result, you need to know how your vessel with its load interacts with outside forces of nature and what affects its stability. For example, open boats and vessels with large well decks may tend to ship water and/or downflood (when water enters the hull from above deck or over the gunwale), making them less stable.

Vessels built or converted to non-pleasure use on or after April 1, 2005, must comply with the stability requirements of section 717 of the *Small Vessel Regulations*. For information on how to assess the stability of a vessel built or converted to non-pleasure use before April 1, 2005, refer to *Ship Safety Bulletin 07/2006: Guidance for Assessing Intact Stability and Buoyancy of Existing Small Non-pleasure Vessels*.

A properly designed and loaded vessel should resist heeling forces when operated within its design limitations (see Figures 8-1 and 8-2).

Adding weight above a boat's centre of gravity will raise the centre of gravity and decrease stability. As the centre of gravity is raised, less heel is required to capsize the vessel (see Figures 8-3 and 8-4). Removing weight from below the centre of gravity may also make the vessel less stable.

The best way to prevent a boat from capsizing is to operate a well designed, maintained and loaded vessel with an experienced crew. Preventing unstable vessel conditions and being able to recognize the warning signs when such conditions do occur can save lives. Be on constant watch for loss of stability (see Warning Signs of Instability). Consult a marine professional to determine the impact on stability of modifications you are thinking of doing **before** you go ahead.

Precautions

Of all accident types, founders and capsizes caused by a loss of stability are the most likely to lead to death on the water. Many of these accidents can be avoided.

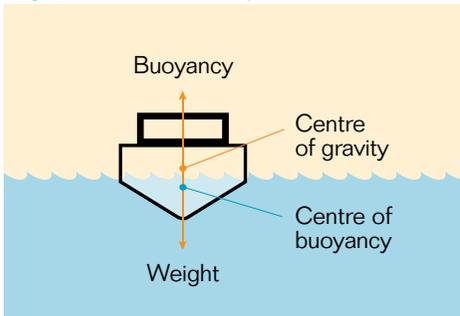
A well-designed vessel will resist capsizing or foundering in severe conditions if it is operated properly. Keep these rules in mind:

- Be aware of outside forces: wind, waves and water depth. Always check the weather forecast before setting out and avoid rough weather conditions.
- Don't overload your vessel. Be aware of the amount of weight added to your vessel and available freeboard. Place people and cargo evenly.
- Make sure that all cargo, tools and equipment are well secured during the entire voyage. It is a lot safer and simpler to remove well-prepared lashings after a successful voyage, than to try to add lashings in poor weather while a vessel is rolling and pitching. Store cargo below deck if you can.
- Reduce both the amount of liquids/cargo that are able to move and the area in which they can slosh back and forth by using smaller tanks and by subdividing cargo holds, because partly-filled water and fuel tanks and cargo holds can make your vessel unstable.
- Prevent water from getting into your vessel by keeping hatches, doors and windows closed, as much as you can, when underway. Regular maintenance of seals and fastening devices will help to ensure watertightness.
- Remove water as quickly as possible. Scuppers and drains must meet design standards and be kept in good working order.
- Do not perform operations such as lifting or towing unless the stability of your vessel has been assessed under these conditions.
- Adjust course, speed, or both if you can, to reduce the vessel's rolling motion.
- Avoid sharp turns or turns at high speed.
- Consult a marine professional before making changes, because modifications to your vessel may affect its stability. Have the stability information revised to reflect any changes you make to the vessel.

Warning Signs of Instability

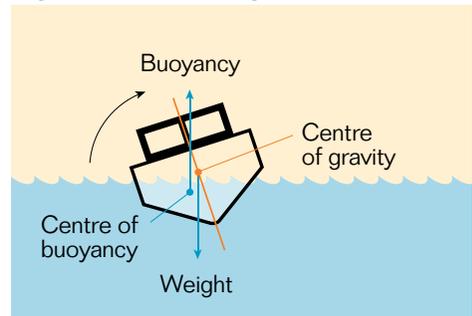
- Your vessel's handling changes. For example, it seems sluggish, rolls more or rolls more slowly.
- Your vessel is listing to port or starboard or is trimmed more than usual by the bow or stern.
- There is less freeboard than you would expect normally. If so, check tanks and holds for flooding or cargo shift.
- The bilge pumps are working more frequently than usual. If this happens, check the bilges for water and that bilge pumps and alarms are working properly.
- The bilge alarm is sounding.

Figure 8-1 Stability



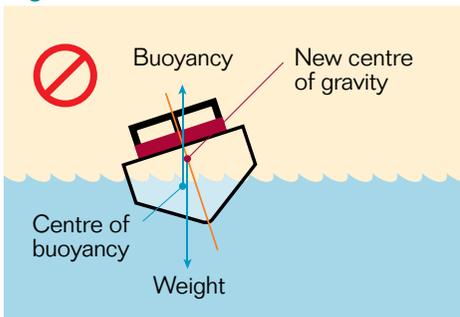
With no heel the downward force of gravity is equal and opposite the upward force of buoyancy.

Figure 8-2 Heeling



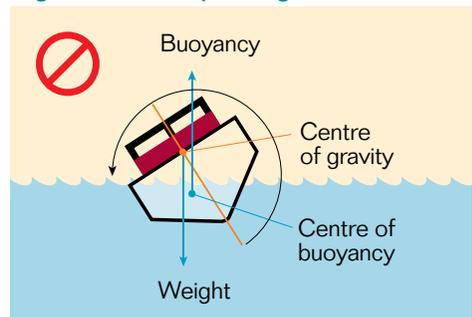
Buoyancy and gravity bring the boat upright.

Figure 8-3 Added Load



Weight added above the centre of gravity reduces the righting ability of the vessel.

Figure 8-4 Capsizing



Centre of gravity located too high will cause the boat to capsize.

Freeboard

Freeboard is the distance between the water and the watertight deck of your vessel, or the gunwale (upper edge of the hull) if it's an open boat without scuppers (see Figure 8-5). If the deck edge goes under water when the vessel heels, its stability will decrease rapidly and the danger of capsizing will increase. If the gunwale of an open boat is going under water, there is an imminent risk of capsizing. An overloaded vessel's freeboard will be smaller and the deck edge or gunwale may go under water with even a slight heel.

You need a safe freeboard height, so take care not to overload your vessel.

Free Surface Effect

When a vessel with a full tank heels over, the tank's centre of gravity does not change, so the vessel's stability is not affected. Water on deck, liquids in holds and partly filled tanks and bilge water, however, will shift with the movement of the boat. When this happens, the centre of gravity will also shift, making the vessel less stable. This "free surface effect" reduces stability and increases the danger of capsizing (see Figure 8-6).

If you want to test the "free surface effect" in your own home, fill a glass of water and walk across the kitchen. You should have no trouble doing so without spilling any water. Next, pour the same amount of water into a cookie sheet and carry it across the kitchen. It's harder to keep the water in or on the cookie sheet. That's because the large free surface allows the water to slosh over a greater surface.

It is good practice to reduce free surface effect by dividing tanks with baffles and fluid cargo holds with bulkheads, and by having as few partly filled tanks and holds as you can.

Figure 8-5 Freeboard

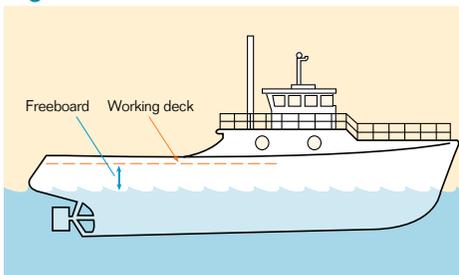
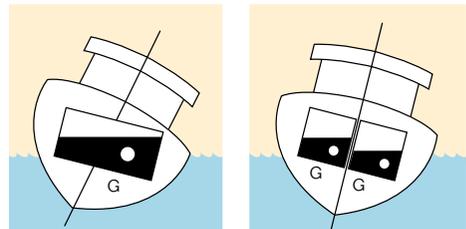


Figure 8-6 Free Surface Effect Cross-Section

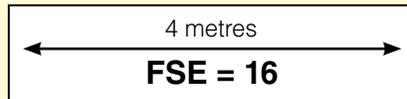


Free Surface Math

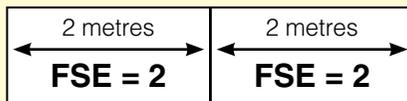
Free surface effect (FSE) increases with the cube of the breadth of the free surface. If you divide the breadth of a tank by half (for instance, by installing a watertight internal baffle), each half has a free surface that is about eight times less. The total free surface effect (the sum of the two sides) is therefore diminished by a factor of four.

$$\text{Free Surface Effect} = \frac{\text{breadth} \times \text{breadth} \times \text{breadth} \times \text{length}}{12}$$

For a tank that is 4 metres wide and 3 metres long, the FSE is 16 ($4 \times 4 \times 4 \times 3 / 12$).



If you add a baffle at the tank's mid-point, you turn it into two tanks, each 2 metres wide. The free surface effect for each tank is 2 ($2 \times 2 \times 2 \times 3 / 12$), making a total FSE of 4 for the two tanks together – one-quarter of the FSE for the tank with no baffle.



More Information

Contact your local Transport Canada Centre to find out the laws and regulations that apply to **your** vessel and situation (see Appendix 2).

- *Cargo, Fumigation and Tackle Regulations*
www.laws.justice.gc.ca/en/SOR-2007-128/
- *Small Vessel Regulations*
www.laws.justice.gc.ca/en/SOR-2010-91//
- *Construction Standards for Small Vessels (TP 1332)*
www.tc.gc.ca/MarineSafety/TP/TP1332/menu.htm
- *Ship Safety Bulletin 07/2006: Guidance for Assessing Intact Stability and Buoyancy of Existing Small Non-pleasure Vessels*
www.tc.gc.ca/MarineSafety/bulletins/2006/07-eng.htm
- Transport Canada Marine Safety Vessel Stability web page
www.tc.gc.ca/marinesafety/debs/vessel-stability/menu.htm

Chapter 9

Avoid collisions





IMPORTANT: Throughout this guide, including in this chapter, the information provided is general and not all situations are included. If you operate a vessel, you need to know how different vessel types, such as fishing vessels and seaplanes, will act or react in all situations. As a result, you must be aware of all Collision Regulations requirements, not just those applicable to your vessel.

Navigation Lights

Navigation lights help prevent collisions by making your vessel and its direction of travel more visible to others. Vessels near you will make decisions based on the information your lights provide. The navigation lights on other vessels can help you tell the direction they are moving or whether they are at anchor or engaged in some other activity.

Navigation lights must meet *Collision Regulations* requirements. For example, you must:

- show navigation lights from sunset to sunrise and during periods of reduced visibility;
- make sure your vessel is equipped with the proper lights for its size and purpose; and
- verify that the lights are correctly mounted.

Power-Driven Vessels

Power-driven vessels up to 50 metres long must exhibit a masthead light forward, sidelights and a sternlight when underway. A second masthead light may also be exhibited abaft of (behind) and higher than the forward one. Power-driven vessels less than 20 metres long may have the sidelights placed in front of the forward masthead light (see Figure 9-1).

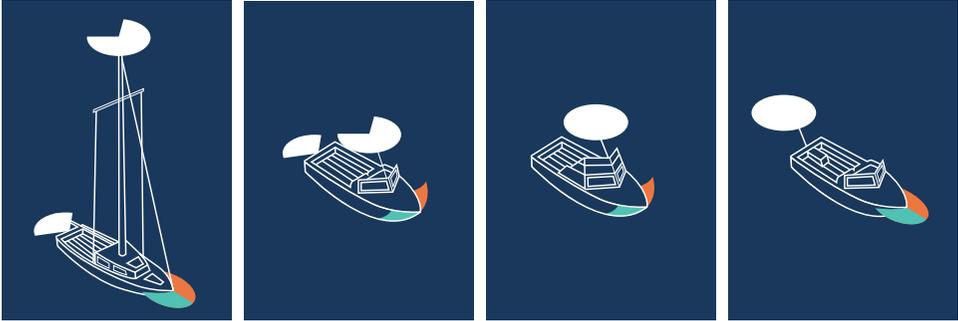
Power-driven vessels less than 12 metres long may, in addition to sidelights, exhibit an all-round white light instead of the masthead light and the sternlight (see Figure 9-2).

Power-driven vessels less than 7 metres long that can travel no faster than 7 knots may exhibit an all-round white light, and sidelights if practicable, instead of the lights required for power-driven vessels.

Figure 9-1 Power driven vessels – Examples



Figure 9-2 Power driven vessels – Vessels less than 12 m



Sailing Vessels

A sailing vessel is any vessel under sail provided that if propelling machinery is fitted, it is not being used.

A sailing vessel under way must exhibit sidelights and a sternlight (see Figure 9-3) or, if less than 20 metres long, a combined lantern carried at or near the top of the mast (see Figure 9-4).

A sailing vessel may exhibit at or near the top of the mast, two all-round lights in a vertical line: the upper one red and the lower one green. These lights are shown along with the sidelights and sternlight, but not with the combined lantern (see Figure 9-5).

Sailing Vessels Propelled by Motor

A vessel under sail is considered to be a power-driven vessel if it is also being propelled by a motor, and must display the lights required by the *Collision Regulations* for power-driven vessels, and must also display a day shape that is cone-shaped with its point downwards¹⁷ (see Figure 9-6).

17. Vessels less than 12 metres in length are not required to exhibit the day shape in Canadian waters of a roadstead (a partly sheltered anchorage), harbour, river, lake or inland waterway.

Figure 9-3 Sidelights and sternlight



Figure 9-4 Combined sidelight and sternlight

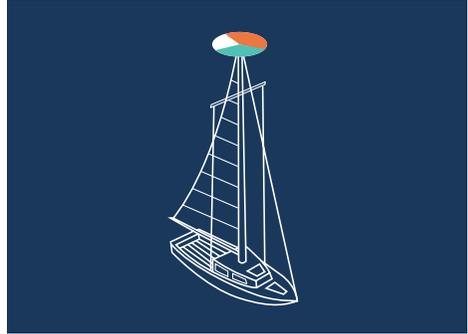
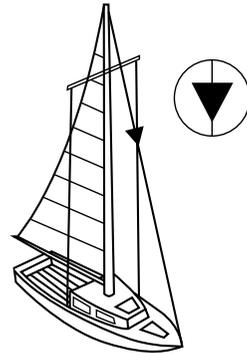


Figure 9-5 Vertical mounted all-round lights



Figure 9-6 Conical shape point downwards

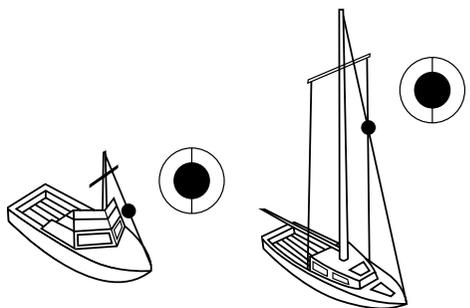


Anchored Vessels

Vessels that are at anchor and are less than 50 metres long must exhibit, depending on the time of day and visibility, an all-round white light or one ball where it can best be seen (see Figure 9-7).

Vessels less than 7 metres long are not required to exhibit anchor lights or shapes when anchored — **unless** in or near a narrow channel, fairway or anchorage, or where other vessels normally pass.

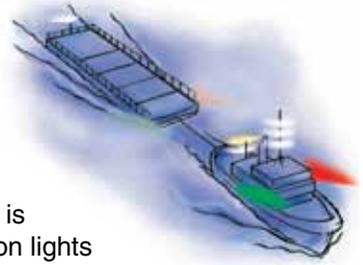
Figure 9-7 Anchor ball



Vessels Towing and Under Tow

Tugs may be towing barges or other vessels on a long towline astern. Often, the length of the tow is so great the towline hangs below the surface of the water and is nearly invisible. If a small craft were to strike the submerged towline, it could capsize and be run down by the barge.

Never pass between a tug and its tow. To avoid this and to keep from getting caught on the towline (or worse), you must be alert for the special shapes and lights displayed by vessels towing barges, other vessels or objects. The towing vessel is usually more visible than its tow. The tow's navigation lights do not include masthead lights and are often much dimmer than those of the towing vessel.



In the case of a power-driven vessel towing another vessel from its stern, the towing vessel must exhibit the following:

- Sidelights and sternlight.
- Towing light (yellow light with the same characteristics as the sternlight).
- Two masthead lights in a vertical line — three of these lights if the tow (length of tow cable plus object being towed) exceeds 200 metres.
- A diamond shape where it can best be seen, if the tow exceeds 200 metres — day signal.

In the case of the vessel being towed, it must exhibit the following:

- Sidelights and sternlight.
- A diamond shape where it can best be seen, if the tow exceeds 200 metres.
- If it is impractical for the vessel being towed to exhibit the lights stated above, it must have one all-around white light at each of the fore and aft ends.

Navigation Lights Maintenance

Navigation lights must be kept in good condition. Always check that they are working before leaving the dock. Be sure to carry spare bulbs and fuses of the proper size and power.

It is a good idea to include navigation lights as part of your regular maintenance program. Most lights use a rubber or foam gasket to seal against moisture. If you see condensation inside the lens, it means the gasket leaks. Inspect the gasket for proper placement, splits or cracks, and replace as needed. Spray gaskets with silicone and electrical connections with a corrosion protector to extend your fixtures' life. Be sure to clean thoroughly the light, reflector and lens when needed.

Sound Signalling Equipment

The *Small Vessel Regulations* require that you carry a sound signalling device or appliance to alert other vessels to your presence or your intentions. Sound signals are necessary in certain meeting, crossing, overtaking and emergency situations. All vessels must sound the appropriate signal (described in the *Collision Regulations*) during periods of fog, heavy rain or other conditions of reduced visibility.

A vessel 12 metres long or more must carry a sound signalling appliance meeting the requirements of the *Collision Regulations*, such as a horn or whistle that has an audible range of at least 0.5 nautical miles (1 nautical mile if the vessel is more than 20 metres long) and that can give a “prolonged blast” 4 to 6 seconds long.

Vessels less than 12 metres long can use any efficient sound signalling device — such as a pealess whistle or a compressed gas or electric horn — that can make a sound for 4 to 6 seconds and that can be heard within a range of 0.5 nautical miles.

Radar Reflectors

A passive radar reflector can help a radar-equipped vessel detect your vessel. Vessels less than 20 metres long or built mostly from non-metal materials must have a radar reflector mounted above the superstructure, when possible not less than 4 metres above the water. The reflector must be able to perform under the range of foreseeable environmental conditions.

The radar reflector requirement does not apply if your vessel is very small or if it operates only:

- in limited traffic during daylight hours when the visibility is good; or
- where no vessels use radar.

Refer to *Ship Safety Bulletin 07/2008: The Importance of Properly Fitting an Effective Radar Reflector on Small or Non-Metallic Vessels* for more information on the need to carefully select and install radar reflectors.

Remember: Having a radar reflector simply helps you be seen. You still have to keep a proper lookout for other vessels.

More Information

To consult your local Transport Canada Centre, see Appendix 2.

- *Collision Regulations*
www.laws.justice.gc.ca/en/C.R.C.-c.1416/
- *Small Vessel Regulations*
www.laws.justice.gc.ca/en/SOR-2010-91//
- *Standards for Navigation Lights, Shapes, Sound Signal Appliances and Radar Reflectors (1991) (TP 1861)*
www.tc.gc.ca/marinesafety/TP/TP1861/menu.htm
- *Ship Safety Bulletin 07/2008: The Importance of Properly Fitting an Effective Radar Reflector on Small or Non-Metallic Vessels*
www.tc.gc.ca/MarineSafety/bulletins/2008/07-eng.htm

Chapter 10

Stay in contact





Communication Equipment

Two-Way Communication

Two-way communications are invaluable in emergency situations. You must equip your vessel with a non-portable¹⁸ VHF radiotelephone if it:

- is more than 8 metres long and of closed construction¹⁹; or
- carries passengers more than 5 nautical miles from shore or on a voyage that is even partly in a Canadian Coast Guard VHF coverage area; or
- is a towboat.

If your passenger vessel operates outside a VHF coverage area, you must have a reliable means of communication with a responsible person on shore.²⁰ To know if you are in a VHF coverage area, check the map showing VHF coverage in *Radio Aids to Marine Navigation*.

In the Great Lakes Basin, a vessel with more than six passengers must be equipped with two VHF radiotelephones, one of which may be portable.

Digital Selective Calling (DSC)

Digital Selective Calling (DSC) radios are based on digital technology and encoded with a unique nine-digit identification number that allows for private calling. This unique number, called your Maritime Mobile Service Identity (MMSI), is much like a cellular telephone number. For more information on the MMSI, refer to the *Maritime Information section* of the Industry Canada Spectrum Direct website.

DSC lets you make MAYDAY calls by simply pressing its “DISTRESS” button. The MAYDAY message includes your position (when connected to a GPS receiver) and who you are (from the MMSI). The message repeats until acknowledged by another DSC radio. The recipient’s DSC radio sounds an alert tone and displays the distressed vessel’s coordinates and MMSI on the radio display.

18. If a vessel is not of closed construction and never carries more than 6 passengers, a portable VHF radiotelephone that meets the requirements of the regulations is acceptable.

19. “Closed construction ship” means a vessel that has a fixed structural deck covering the entire hull above the deepest operating waterline and that is not in danger when the open wells or cockpits fitted in the deck are flooded.

20. Not required if carrying no more than 6 passengers and operating on a Sheltered Waters Voyage within 2 miles of shore.

Who Needs VHF-DSC Radio?

Vessels of closed construction that are more than 8 metres long or vessels carrying more than six passengers must be equipped with a VHF-DSC radio when making Near Coastal or Unlimited Voyages off the coasts of Canada.

Radio Station Licence and Call Sign

Vessels making or planning voyages to other countries, including the United States, should apply for a Radio Station Licence and radio call sign. This licence must be renewed every year for a fee. Foreign vessels operating within Canadian waters are exempt from Industry Canada Spectrum Management (ICSM) licensing requirements. For more information, contact *Industry Canada*.

Radio equipment on board Canadian vessels must be type-approved by ICSM. Look for the type approval number on a label on the back of your radio. When buying radio equipment, make sure it has ICSM approval. Equipment bought outside of Canada may not be approved.

Radio Station Requirements

Radio Installation

A VHF-DSC radio must be able to transmit and receive communications using DSC on frequency 156.525 megahertz (MHz) (channel 70), as well as voice communications on frequency 156.3 MHz (channel 6), 156.65 MHz (channel 13), 156.8 MHz (channel 16), and any other frequencies assigned for transmitting maritime safety information in the area you are navigating.

Radio Watch

Vessels that **must** carry VHF equipment must begin radio watch on 156.8 MHz (channel 16) at least 15 minutes before getting under way, and continue until at anchor or moored. If you **choose** to carry MF (medium frequency) and VHF equipment, you should try to keep watch on both 2182 kHz (MF) and 156.8 MHz (VHF) (channel 16) when at sea, to ensure that distress, urgency or safety communications will be heard and answered by as many stations as possible.

Documents and Log Keeping

If you are required to have a VHF radio installation on board, you must also have a certified radio operator (see Radio Certification Requirements in Chapter 4), instructions for operating and maintaining the radio, and other documents as set out in the *Ship Station (Radio) Regulations, 1999*. A card setting out radio distress procedures (available from Transport Canada) must be displayed near the vessel's main controls.²¹

Vessels required to carry VHF equipment must also maintain a radio log of distress, urgency and safety communications specific to the vessel, and a record of radio servicing and testing. While this is not required if you carry VHF equipment by choice, keeping a log, especially of all emergency communications, is a good idea.

Mobile Phones

If your vessel is not required to carry marine radio equipment, it is a good idea to carry a cellular phone in areas where coverage is available, or a satellite phone. In some areas, you can get emergency response by dialling a Rescue Coordination Centre or by dialling *16, which routes your call through the nearest Canadian Coast Guard Marine Communications and Traffic Services (CCG MCTS) Centre.

Remember that cellular and satellite phones cannot replace a marine radio. See *Ship Safety Bulletin 04/1995: Recommended Safety Communication Measures for Small Craft* for more information.

Note: Making a cellular or satellite call does not alert other boaters close to you. In most cases, rescuers cannot follow the cellular phone signal back to your location.

21. Transport Canada's *Safety and Distress Radiotelephone Procedures* (TP 9878) are available free of charge and should be carried for easy reference.

Emergency Position Indicating Radio Beacon (EPIRB)

Your vessel must be equipped with an Emergency Position Indicating Radio Beacon (EPIRB) if:

- it makes voyages more than 20 nautical miles from shore with a maximum distance between suitable ports of refuge on the route of no more than 100 nautical miles, and
- it carries passengers, or
- it is 8 metres long or more or:
 - it is a tug
 - of more than 5 gross tonnage on a voyage other than a Sheltered Waters Voyage; or
 - less than 20 metres in length on a voyage other than a voyage of not more than 50 nautical miles during which the tug remains within either 2 nautical miles of shore or 20 nautical miles of the nearest place of refuge.

Keep your EPIRB within reach so you can activate the alert while you navigate the vessel. It must be installed so that it is easy to pick up and take with you into a survival craft. Tugs, and vessels more than 15 gross tonnage, must install the EPIRB so that it will float free.

Choosing an EPIRB

When buying an EPIRB, choose one that operates on 406 MHz. Alerts on this frequency will be detected more quickly and include information from the Canadian Beacon Registry, allowing alert information to be confirmed and searches to start sooner. To help rescue teams find you if you need help, consider buying a unit with a built-in GPS or one you can connect to an external GPS so that your location is included in the alert.

Note: As of February 9, 2009, signals from 121.5/243.0 MHz EPIRBs are no longer monitored by satellite. EPIRBs that operate only on 121.5/243.0 MHz are not approved for use in Canada.

Register Your EPIRB for Quicker Response

Under the *Ship Station (Radio) Technical Regulations, 1999*, if you have a 406 MHz EPIRB, you must register your emergency contact details in the Canadian Beacon Registry database and keep them current. You can register or update your emergency contact details online at www.canadianbeaconregistry.forces.gc.ca or by phone (1-877-406-SOS1 (7671)). There is no charge. Emergency contacts are the people who will be called to get more information on your vessel and its likely location if an alert is received. EPIRB registration is not the same as getting an MMSI from Industry Canada and must be done separately.

More Information

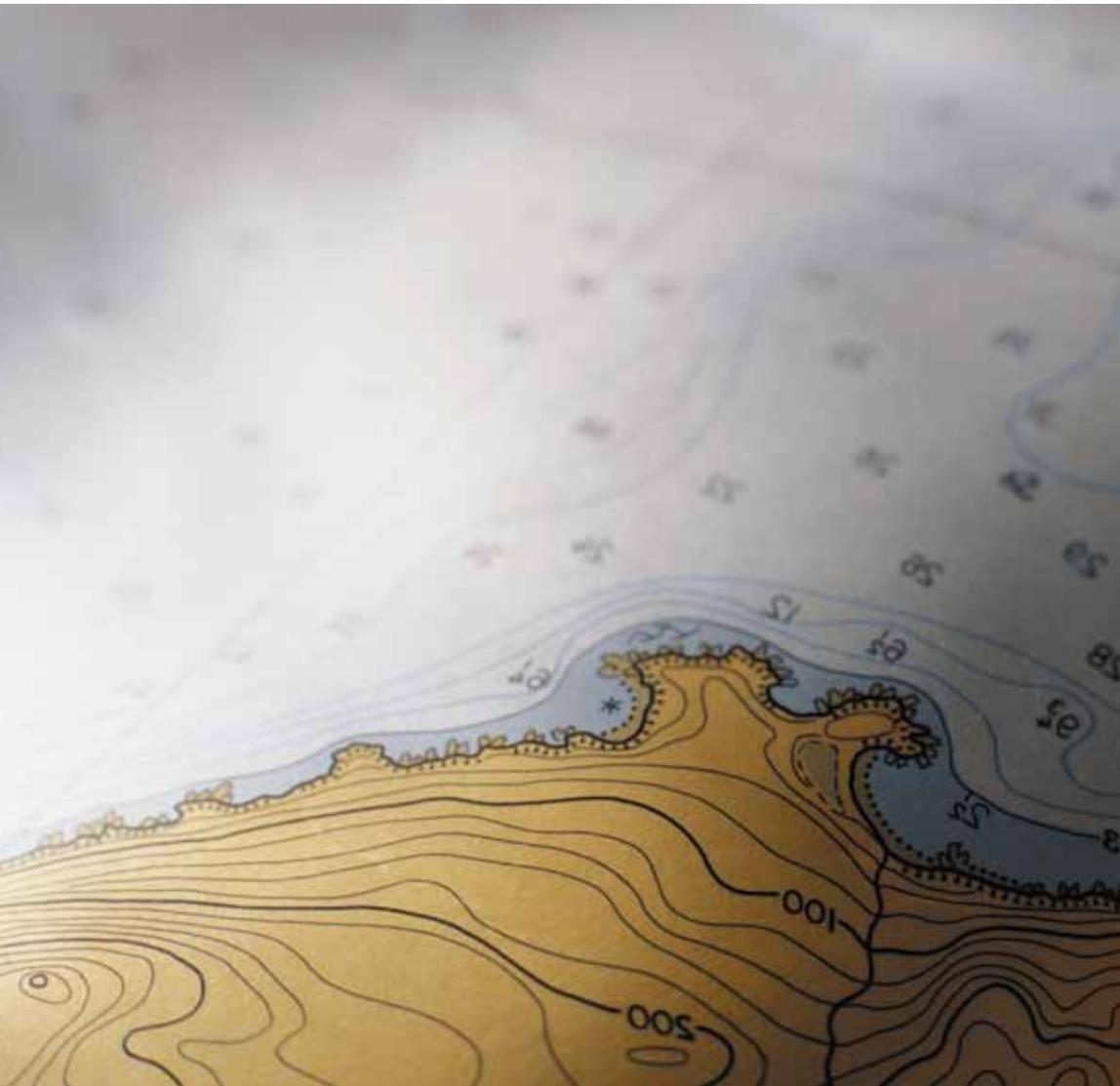
Contact your local Transport Canada Centre to find out the laws and regulations that apply to **your** vessel and situation (see Appendix 2).

A map showing VHF coverage is contained within the publication entitled *Radio Aids to Marine Navigation*, which can be viewed at www.ccg-gcc.gc.ca/eng/CCG/MCTS_Radio_Aids.

- *Marine Personnel Regulations*
www.laws.justice.gc.ca/en/SOR-2007-115/
- *Ship Radio Inspection Fees Regulations*
www.laws.justice.gc.ca/en/C.R.C.-c.1472/
- *Ship Station (Radio) Regulations, 1999*
www.laws.justice.gc.ca/en/SOR-2000-260/
- *Ship Station (Radio) Technical Regulations, 1999*
www.laws.justice.gc.ca/en/SOR-2000-265/
- *VHF Radiotelephone Practices and Procedures Regulations*
www.laws.justice.gc.ca/en/SOR-81-364/
- *Safety and Distress Radiotelephone Procedures (TP 9878)*
www.tc.gc.ca/MarineSafety/TP/TP9878/menu.htm
- *Ship Safety Bulletin 04/1995: Recommended Safety Communication Measures for Small Craft*
www.tc.gc.ca/MarineSafety/bulletins/1995/04-eng.htm
- Industry Canada Spectrum Direct website
www.ic.gc.ca/eic/site/sd-sd.nsf/eng/Home

Chapter 11

Know where you are





Navigation Equipment

Vessels must carry the navigation equipment required by the *Canada Shipping Act, 2001* and its regulations. See Table 5-1, Required Safety Equipment, in Chapter 5. All devices and equipment on board — required or not — must be in good working order, and properly installed and situated.

Your equipment must be able to keep working under all environmental conditions likely to exist (such as vibration, humidity and change of temperature). You must also carry the manufacturer's operating and maintenance manuals, as well as spare parts, fuses and lamps for any navigating equipment you are required to have on board.

Charts and Other Publications

The *Charts and Nautical Publications Regulations, 1995*, require you to carry the most recent editions of charts, publications and documents published for your area of operation unless the person in charge of navigation has enough knowledge of shipping routes, lights, buoys and marks, navigational hazards as well as normal navigational conditions and weather patterns to ensure safe navigation.

If you are required to carry charts, you must also carry the tools you need to accurately determine the vessel's position and at least one pair of binoculars. Keep your charts up to date by subscribing to the Notices to Mariners (www.notmar.gc.ca/). For tips on both reading and updating nautical charts, go to www.chs-shc.gc.ca/pub/en/educational/default.asp.

You can get Canadian nautical charts and publications from over 700 authorized Canadian Hydrographic Service (CHS) Chart Dealers across the country and around the world. For a list of authorized CHS chart dealers, visit www.charts.gc.ca, or email chsinfo@dfo-mpo.gc.ca.

Buoys

Buoys are indispensable guides to safe navigation. Below are descriptions and explanations of some of the most common buoys.

Lateral Buoys

Lateral buoys indicate the edge of a channel as well as direction.

Figure 11-1 Lateral Buoys



PORT (green can)

Keep this buoy on your port (left) side when moving upstream.

BIFURCATION (red and green bands)

You may pass this buoy on either side when moving upstream, but the colour of the top band will indicate the main or preferred channel.

PORT (green pillar)

Keep this buoy on your port (left) side when moving upstream.

PORT (green spar)

Keep this buoy on your port (left) side when moving upstream.

STARBOARD (red spar)

Keep this buoy on your starboard (right) side when moving upstream.

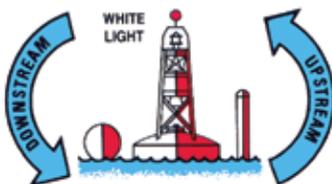
STARBOARD (red conical)

Keep this buoy on your starboard (right) side when moving upstream.

STARBOARD (red pillar)

Keep this buoy on your starboard (right) side when moving upstream.

Figure 11-2 Fairway Buoys



Fairway Buoys

A fairway buoy marks safe water at landfalls, channel entrances or channel centres. When it is marking the middle of a channel, it should be kept to the port (left) side; otherwise, it may be passed on either side.

Figure 11-3 Isolated Danger Buoys



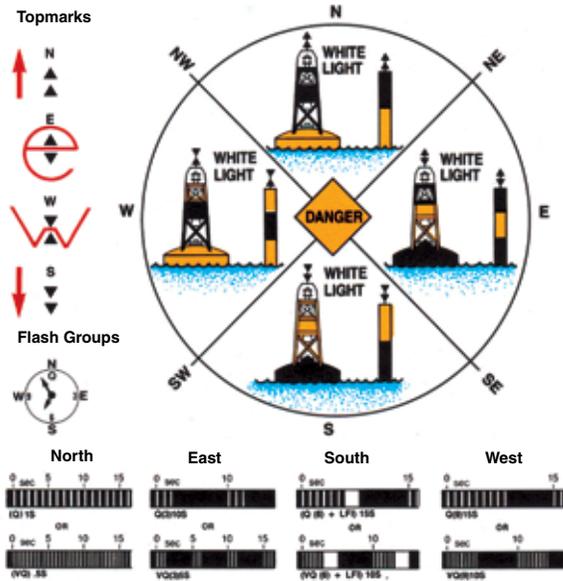
Isolated Danger Buoys

An isolated danger buoy is moored on or above an isolated danger that has navigable water all around it. It may be used to mark natural dangers such as small shoals or obstructions such as wrecks. Consult the appropriate chart for more details, such as dimensions and depth of the danger.

Cardinal Buoys

A cardinal buoy indicates the direction to safe water (for example, a north cardinal buoy indicates that the safest water exists to the north).

Figure 11-4 Cardinal Buoys



DESCRIPTION

Yellow and black

White light – flashes characters indicated below (if equipped)

Two conical topmarks indicate direction

Black topmark cones point to the black portion(s) of the buoy

Lettered – no numbers

White retroreflective material

Take it with you: you can order free, waterproof quick reference cards that explain lateral buoys, standard day beacons, cardinal buoys and special buoys from the Transport Canada website. Search <http://shop.tc.gc.ca> for *Lateral Buoys and Standard Daybeacons* (TP 14541) and *Cardinal Buoys and Special Buoys* (TP 14542).

More Information

To consult your local Transport Canada Centre, see Appendix 2.

- *Charts and Nautical Publications Regulations, 1995*
www.laws.justice.gc.ca/en/SOR-95-149/
- *Navigation Safety Regulations*
www.laws.justice.gc.ca/en/SOR-2005-134/
- *Small Vessel Regulations*
www.laws.justice.gc.ca/en/SOR-2010-91/
- *Cardinal Buoys and Special Buoys (TP 14542)*
www.tc.gc.ca/marinesafety/tp/tp14542/menu.htm
- *Lateral Buoys and Standard Daybeacons (TP 14541)*
www.tc.gc.ca/marinesafety/tp/tp14541/menu.htm



Chapter 12

Obey the “Rules of the Road”





The *Collision Regulations* govern marine traffic behaviour and patterns to reduce the risk of collisions at sea. These regulations are the “rules of road.” They set out the rules between vessels underway and for vessels meeting head-on, crossing and overtaking when in sight of one another and when visibility is restricted.

The *Collision Regulations* apply to all vessels, from small boats up to large freighters, on all navigable waters in Canada and, with some modifications, are the same as international requirements.

This guide covers general rules of navigation for common situations in good visibility that all small vessel operators must know and remember²². To learn what to do in other situations, such as when you cannot see other vessels because of rain or fog, refer directly to the *Collision Regulations*, Schedule 1, Part B.

Constant Lookout

Operators must maintain a constant all-around lookout by sight and hearing. You must use every available means, including radar and radio (if equipped), to determine whether there is any risk of collision with another vessel.

Navigation

Safe Speed

You must always operate your vessel at a safe speed so that you can take proper and effective action to avoid collision and stop within a proper distance for the circumstances and conditions.

In the Canadian waters of a roadstead (a partly sheltered anchorage), harbour, river, lake or inland waterway, every vessel passing another vessel or work that includes a dredge, tow, grounded vessel or wreck must proceed with caution at a speed that will not adversely affect the vessel or work being passed and comply with relevant content of any *Notice to Mariners* or *Notice to Shipping*.

22. IMPORTANT: The information provided here highlights only some of the rules of the road. It is the duty of the vessel owner and operator to be aware of the complete *Collision Regulations* requirements relating to their vessel.

A general speed limit of 10 km/h within 30 metres of shore is in force²³ for all power-driven vessels on:

- the waters of Ontario, Manitoba, Saskatchewan and Alberta;
- the lakes and rivers of Nova Scotia and British Columbia;
- Bras d'Or Lake in Nova Scotia, inland of a line drawn from Coffin Head and Red Head in Great Bras d'Or Channel and the inland end of St. Peters Canal; and
- Nitinat Lake and Nitinat River, upstream of Nitinat Bar, in British Columbia

unless the river is less than 100 metres wide, or the vessel is travelling in canals or buoyed channels, or another speed limit is in effect.

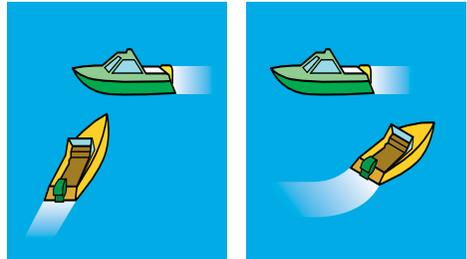
Power-Driven Vessels

A power-driven vessel is any vessel propelled by machinery.

Crossing Situation in Sight of One Another

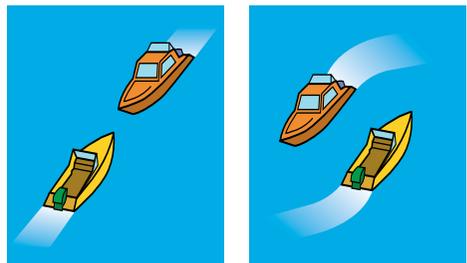
If a power-driven vessel approaches your power-driven vessel from your port side and poses a risk of collision, you are the “stand-on” vessel. Maintain your course and speed unless you see that the “give-way” vessel is not taking appropriate action. The other vessel is the “give-way” vessel and is required to keep out of your way (see Figure 12-1).

Figure 12-1 Crossing Situation



If a power-driven vessel approaches your power-driven vessel from your starboard side and poses a risk of collision, you are the “give-way” vessel. You must keep out of the way and avoid crossing ahead of the other vessel. The other vessel is the “stand-on” vessel and will maintain its course and speed.

Figure 12-2 Head-on Approach



Meeting or Head-On Situation in Sight of One Another

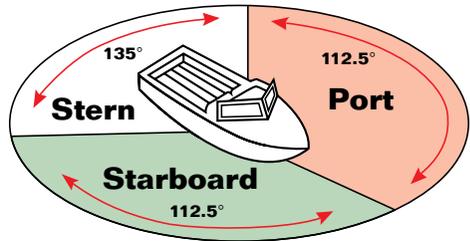
If a power-driven vessel approaches your power-driven vessel head-on or nearly head-on, where there is a possible risk of collision, you should alter your course to starboard so that the other vessel will pass on your port side. The other vessel must take the same action, so that you will pass on its port side (see Figure 12-2).

23. Vessel Operation Restriction Regulations.

Passing or Overtaking

If you are approaching another vessel to pass, you must keep out of its way. A vessel is considered to be overtaking another vessel if it approaches from a direction within the stern sector (see Figure 12-3).

Figure 12-3 Sectors of a Vessel



Keeping out of the Way

Power-driven vessels must keep out of the way of sailing vessels, vessels engaged in fishing, vessels that are not able to manoeuvre, as well as rowing boats and other craft with restricted handling. You must take early action to keep clear of these vessels unless being overtaken by one of them.

Vessels less than 20 metres long and fishing vessels must not get in the way of larger vessels within a narrow channel.

When changing course or speed to keep out of the way of another vessel, make it clearly visible to the stand-on vessel that you have taken appropriate action.

If you are not sure what another vessel is going to do, give 5 short blasts on your whistle. If the vessel doesn't make a clear change in course, change your course to get out of its way.

Take it with you: You can order a free, waterproof quick reference card that explains the basic rules of the road from the Transport Canada website. Search shop.tc.gc.ca for Rules of the Road (TP 14352).

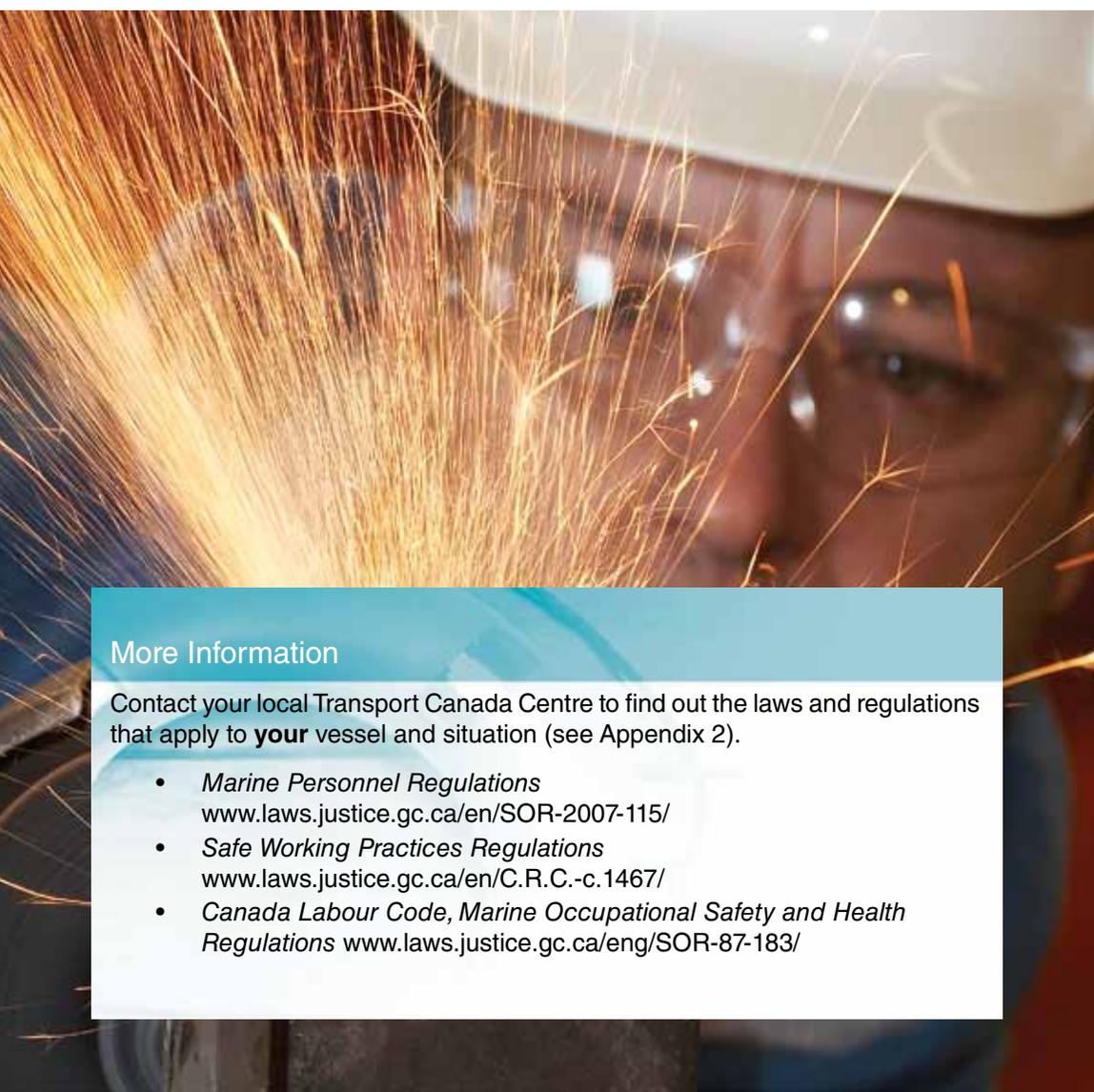
More Information

To consult your local Transport Canada Centre, see Appendix 2.

- *Collision Regulations*
www.laws.justice.gc.ca/en/C.R.C.-c.1416/
- *Vessel Operation Restriction Regulations*
www.laws.justice.gc.ca/en/SOR-2008-120/
- *Rules of the Road (TP 14352)*
www.tc.gc.ca/marinesafety/tp/tp14352/menu.htm

Chapter 13

Promote safe work practices



More Information

Contact your local Transport Canada Centre to find out the laws and regulations that apply to **your** vessel and situation (see Appendix 2).

- *Marine Personnel Regulations*
www.laws.justice.gc.ca/en/SOR-2007-115/
- *Safe Working Practices Regulations*
www.laws.justice.gc.ca/en/C.R.C.-c.1467/
- *Canada Labour Code, Marine Occupational Safety and Health Regulations* www.laws.justice.gc.ca/eng/SOR-87-183/



It is the owner's duty to make sure that work on board and around the vessel is not dangerous to the health or safety of crew members.

The *Safe Working Practices Regulations* set out common sense requirements for preventing injuries and illness that apply to all small commercial vessels. These include making sure crew members:

- receive proper training in the dangers of their job;
- are aware of common hazards as well as ways to avoid accidents and injury;
- wear protective clothing and use equipment where there is a risk of injury;
- have competent supervision;
- are not allowed to work if they are not in a fit state;
- use tools and other items only for their intended purpose; and
- follow established procedures for potentially hazardous activities, such as refuelling.

You must also make sure that:

- only competent and qualified people carry out installation and repairs;
- equipment and machinery is safe to operate;
- guards are placed on moving parts and protection is in place on hot objects where people could come into contact with them; and
- any unsafe conditions are made safe once again.

Training for workplace safety is also covered in the *Marine Personnel Regulations*. Among other things, you must make sure that new crew members are trained and aware of dangers on board **before** their first voyage.

For vessels operating under federal jurisdiction, the *Canada Labour Code* and the *Marine Occupational Safety and Health Regulations* are also applicable. Vessels under federal jurisdiction include vessels owned by a corporation established to perform any duty on behalf of the Government of Canada, vessels doing inter-provincial business, and vessels operated by a federal corporation other than a corporation doing local or private business in Yukon, the Northwest Territories or Nunavut.

Provincial and territorial workplace safety legislation may also apply to your operation. In some provinces the Workers' Compensation Board is active in the marine field.

Chapter 14

Avoid surprises





A breakdown at sea is an unwelcome surprise. If you are not prepared, you may feel the same about a visit from an inspector to check that **your** vessel meets regulatory requirements.

You can prevent dangerous situations as well as avoid costly breakdowns and penalties by:

- keeping your vessel in top running order; and
- making sure that it continues to comply with the law.

Be Organized

Create an Operations and Training Manual

We suggest that you create a reference tool that prevents maintenance from being overlooked and helps you prove that you are fulfilling your legal responsibilities.

How? Simply download the templates available on the Transport Canada website or call 1-800-O-Canada to request a copy. In it you will find examples of policies, procedures, personnel records, compliance checklists and maintenance schedules that you can change to suit your operation. For example, change the sample maintenance schedule by including the servicing recommendations by the manufacturers of the different vessel components to make a maintenance plan for **your** vessel.

Your complete operations and training manual should include:

- your maintenance plan;
- the written policies and procedures that you are required to have by law; and
- records of all training activities and drills.

Compliance Verification

The owner and the operator are responsible for meeting their responsibilities under the *Canada Shipping Act, 2001* and its associated regulations. The primary responsibilities under the Act are summarized in Appendix 1.

To help you and to protect the public, Transport Canada has developed a program to promote small commercial vessel safety. In addition to its education and awareness activities, such as producing this guide, the program reviews and amends safety requirements and monitors vessels to see that owners and operators are meeting their responsibilities for complying with safety requirements.

Transport Canada inspectors and its enforcement partners may come by at any time to check:

- the condition of the vessel and that it meets the construction requirements;
- that all required equipment is on board, in good shape and accessible; and
- that crew members are properly certified and trained.

The amount of time that this will take depends on the risks involved in your operation and what they find. You may be able to reduce the time the enforcement officers are on board if you provide them with records from your operations and training manual that are up to date and show that you are meeting all of your responsibilities.

If you do not comply, you may be fined or charged with an offence and have to appear in court. If your vessel is found to be unsafe, it will be detained until it no longer poses a hazard. The offences that carry penalties and the amount of the penalties are found in the *Administrative Monetary Penalties Regulations*. The *Canada Shipping Act, 2001* also states offences and punishment applicable in case of a summary conviction in court.

Tools for Checking Compliance

Contact your local Transport Canada Centre to obtain a compliance check package. It will help you become more familiar with the laws governing your operation and guide you on carrying out regular examinations of your vessel, equipment and other safety requirements using a checklist like the one in Appendix 5. Keep completed checklists in your operations and training manual to demonstrate that you take your responsibilities seriously.

Let others know that safety is a priority for you. Complete and send the declaration from the compliance check package to your local Transport Canada Centre. You will receive a decal showing that you participate in the Transport Canada small commercial vessel safety program the first time you do so, and a sticker showing the year of the compliance check each time thereafter.

Planned Maintenance

Servicing your vessel according to a schedule will keep your vessel at peak performance, economy, and safety. It will also safeguard the environment, extend the life of your vessel and increase its resale value.

A routine maintenance schedule and frequent checks of fluid levels, high-wear items, the engine, hull, electrical system and accessories will help your vessel function at top level. Emergency maintenance may still be required, but not as often. Take care of faulty gear or equipment right away: repair it, replace it or take it out of service. Quick action can save the cost of a large repair later and it will help keep your vessel safe for passengers and crew.

It is a good idea to keep a log of repairs and parts replacements. Include the part numbers for filters, belts and other frequently replaced items. This will help you keep track of equipment that needs regular servicing and parts that must be replaced often. For example, by noting the time between zinc anode replacements, you will get an idea of how quickly they are used (which is mostly related to time and not engine hours) so you can schedule future replacements.

Set maintenance intervals by the number of hours of service or number of months, whichever comes first. Follow the manufacturer's recommended maintenance schedule. All engines require service and inspection at specified intervals. Take time to read your engine maintenance manuals and prepare your own maintenance plan using the sample maintenance schedule in Appendix 4 as a guide.

More information

To consult your local Transport Canada Centre, see Appendix 2.

Operations and training manual templates are available at www.tc.gc.ca/marinesafety/debs/small-vessels/procedures.htm.

- *Administrative Monetary Penalties Regulations*
www.laws.justice.gc.ca/en/SOR-2008-97/
- Small vessel compliance program
www.tc.gc.ca/marinesafety/debs/small-vessels/svmip-upto15.htm

Chapter 15

Report accidents and pollution





Report All Accidents

Reportable marine accidents and incidents must be reported as soon as possible.

A reportable marine **accident** is where:

- (a) a person suffers a serious injury or is killed as a result of:
 - i. being on board the vessel or falling overboard from the vessel; or
 - ii. coming into contact with any part of the vessel or its contents; or
- (b) the vessel:
 - i. sinks, founders or capsizes;
 - ii. is involved in a collision;
 - iii. sustains a fire or an explosion;
 - iv. goes aground;
 - v. sustains damage that affects its seaworthiness or renders it unfit for its purpose; or
 - vi. is missing or abandoned.

A reportable marine **incident** is where:

- (a) a person falls overboard from the vessel;
- (b) the vessel, of 100 gross tonnage or more, unintentionally makes contact with the bottom without going aground;
- (c) the vessel fouls a utility cable or pipe, or an underwater commodity pipeline;
- (d) the vessel is involved in a **risk** of collision (close call);
- (e) the vessel sustains a total failure of any machinery;
- (f) the vessel sustains a shifting of cargo or a loss of cargo overboard;
- (g) the vessel is intentionally grounded or beached to avoid an accident;
- (h) any crew member whose duties are directly related to safely operating the vessel is unable to perform his/her duties as a result of a physical illness or injury, posing a threat to the safety of any person, property or the environment; or
- (i) any dangerous goods are released on board or from the vessel.

When a reportable marine accident or incident takes place, the owner, operator, charterer, pilot or any crew member of a commercial vessel must report, without delay, as much of the information listed below as possible, by radio or by telephone to a Canadian radio ship reporting station. You must also make a written report to the Transportation Safety Board (TSB) by the quickest available means.

Your report should include:

- (a) the name or identification number, nationality and type of the vessel;
- (b) the names of the owner, operator, charterer and agents of the vessel;
- (c) the names and qualifications of the master of the vessel;
- (d) the date and time of the accident or incident;
- (e) the weather and sea conditions at the time of the accident or incident;
- (f) a description of the navigational aids on board the vessel;
- (g) the last point of departure and intended destination of the vessel, including the date and time of the departure;
- (h) where the vessel is not missing,
 - i. the location of the accident or incident by reference to an easily defined geographical point, or by latitude and longitude,
 - ii. the number of crew members, passengers and other persons that were killed or sustained a serious injury,
 - iii. a description of the accident or incident and the extent of any resulting damage to the vessel, the environment and other property, and
 - iv. a description of any dangerous goods aboard, or released from, the vessel;
- (i) where the vessel is missing,
 - i. the last known position of the vessel by reference to an easily defined geographical point, or by latitude and longitude, including the date and time of that position,
 - ii. the number of crew members and passengers aboard the vessel,
 - iii. a description of any dangerous goods aboard the vessel, and
 - iv. the action being taken to locate the vessel;
- (j) the technical specifications of the vessel such as the tonnage, length and type of propulsion;
- (k) a description of the cargo aboard the vessel; and
- (l) the name and address of the person making the report and, where applicable, the name or identification number of the vessel from which the report is being made.

You must also submit a *Report of a Marine Occurrence/Hazardous Occurrence Report* (TSB Form 1808) on the accident or incident directly to the Transportation Safety Board (TSB) at the address below within 30 days of the occurrence. The report must include a statement as to the probable cause.

The report to TSB may also be made to a Marine Communications and Traffic Services (MCTS) Centre.

Transportation Safety Board of Canada
200 Promenade du Portage, 4th Floor, Place du Centre
Gatineau QC K1A 1K8
Tel.: (613) 720-5540 (24 hours/day)
Fax: (819) 953-1583
Email: Marine.investigations@bst-tsb.gc.ca

Note to vessel owners and operators: Penalties may result if you fail to report a marine occurrence. The penalty for not giving notice or falsifying a report is a fine of up to \$2,000, a prison term of up to two years — or both.

Accident Investigation

The Transportation Safety Board is an independent agency. It investigates selected marine accidents and incidents and communicates risks in the transportation system. The TSB does not assign fault or determine civil or criminal liability, but identifies causes and contributing factors and publicly reports its findings to improve transportation safety.

Transport Canada may also investigate marine occurrences for breach of regulations that may identify unsafe operating procedures, poor vessel standards or insufficient crew training. Transport Canada may also investigate where a vessel is involved in an accident resulting in its loss, destruction or damage and that put people in danger to find out if an operator or crew's actions were unsafe or illegal.

Protect Canada's Waterways

A cleaner marine environment begins with you. Operating a well designed and maintained vessel and using safe, environmentally sound practices when handling pollutants are ways you can help ensure the health of Canada's waterways for future generations.

Canada has laws to protect our waterways and shorelines that apply to small commercial vessels. The *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals* make it illegal to accidentally or wilfully discharge oil, garbage, sewage or other pollutants into Canadian waters — actions that carry penalties of up to \$1 million. It is your responsibility to make sure you know and obey the laws in force wherever you go boating.

Holding and Treating Sewage

Sewage contains, among other things, human or animal body waste, drainage and other waste from toilets. Division 4 of the *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals* sets out where and how you can discharge sewage, with additional restrictions for the Great Lakes basin and waters that are "designated sewage areas." The regulations prohibit the use of freestanding portable toilets. They also require that vessels fitted with toilets be equipped with either a holding tank or a marine sanitation device if they were built after May 16, 2007, or they operate on the Great Lakes basin or in designated sewage areas. Vessels built before May 16, 2007, have until May 2012 to install this equipment.

Choose a holding tank or a marine sanitation device that works for you. A holding tank is only used to collect and store sewage or sewage sludge, and must be emptied at approved pump-out facilities on dry land only. Be sure to follow pumping instructions and avoid using disinfectants, as they may harm the environment.

A marine sanitation device (MSD) is designed to receive and treat sewage on board. Only sewage treated with an MSD that meets the standards set out in the regulations may be discharged in rivers, lakes and other navigable fresh waters within Canada. To find an approved MSD, check the Approved Products Catalogue Index online at wwwapps2.tc.gc.ca/saf-sec-sur/4/apci-icpa/.

Report Pollution

The law requires polluters to report any oil spill to the Canadian Coast Guard right away. Polluters must pay for clean up, and a rapid response can often lower overall costs. Failing to report a spill from your vessel may lead to heavy fines and penalties.

Help hold polluters accountable. If you see pollution being discharged from any vessel or notice oil or chemical pollution in Canadian waters, contact the Canadian Coast Guard using VHF channel 16 (156.8 MHz).

You will be asked to provide the following information:

1. Your name and contact details.
2. When and where the pollution occurred.
3. The type of discharge or a description of the product.
4. The extent of pollution or area covered.
5. The name of the vessel or other source.

The Canadian Coast Guard will contact the owner and take steps to remove the pollution.

Listed below are phone numbers for pollution reporting.

Pollution Reporting Telephone Numbers

NEWFOUNDLAND AND LABRADOR

1-800-563-9089

P.E.I., NOVA SCOTIA, NEW BRUNSWICK

1-800-565-1633

QUEBEC

1-800-363-4735

ONTARIO, MANITOBA,

SASKATCHEWAN, ALBERTA,

NORTHWEST TERRITORIES, NUNAVUT

1-800-265-0237

BRITISH COLUMBIA, YUKON

1-800-889-8852

Thinking Green

“As mariners, we only contribute a small portion of the overall pollution entering our coastal waters, but it often concentrates near sensitive foreshore areas and in confined bays. There’s a lot we can do to ensure the future health of our coastal waters.”

Message from the Commercial Green Boating Guide published by the T. Buck Suzuki Environmental Foundation and available on the foundation web site www.bucksuzuki.org.

The *Commercial Green Boating Guide* outlines steps that you can take to reduce your environmental impact, such as the following.

Stop the Spread of Invasive Species

Many have seen invasive species, such as zebra mussels and green crab, take over local waters. You can do your part by keeping your hull clean. Rinsing or cleaning your hull after use or before entering new waters helps to remove spores and other invasive organisms. Some communities require this as part of local bylaws.

Use Environmentally Friendly Cleaners

All-purpose cleanser	Mix 30 millilitres (ml) of baking soda or borax, 30 ml of tea tree essential oil, 125 ml of vinegar, 15 ml of biodegradable dish soap and 2 litres of hot water. Spray on the surfaces to be cleaned.
Chromium	Rub with baking soda. Rinse and polish with vinegar in hot water.
Deck and floor	Pour 250 ml of vinegar in 2 litres of water.
Drain	Pour 60 ml of baking soda in the drain, followed by 60 ml of vinegar. Let it rest for 15 minutes, then pour in a full kettle of boiling water.
Mould	Add 60 ml of borax and 30 ml of vinegar to 500 ml of hot water. Spray the mixture to eliminate germs.
Toilet	Pour 125 ml of baking soda and 125 ml of vinegar into the toilet bowl. The foaming reaction cleans and deodorizes. Brush and flush.
Window and mirror	Mix 2 ml of liquid soap, 45 ml of vinegar and 500 ml of water in a spray bottle. Use a cotton rag to clean and shine.
Wood (polish)	Mix 30 ml of edible linseed oil, 30 ml of vinegar and 60 ml of lemon juice in a glass pitcher. Rub the solution into the wood with a soft rag until it is clean. To store the solution, add a few drops of vitamin E from a capsule and cover.

Remember These Green Boating Tips

- Make sure your engine is well maintained to reduce air pollution.
- Follow the manufacturer's instructions to properly tune your motor and limit air emissions.
- Limit engine idling.
- Use only paints approved for marine use.
- When fuelling, do not top off tanks, and clean up any spilled fuel.
- Obey all sewage regulations.
- Put garbage in its place. Do not litter.
- Try not to use detergents — even biodegradable cleaners may be hard on water-dwelling plants and animals.
- Avoid shoreline erosion — watch your wake and propeller wash.
- Obey all speed limits for better fuel economy.
- Report pollution when you see it.

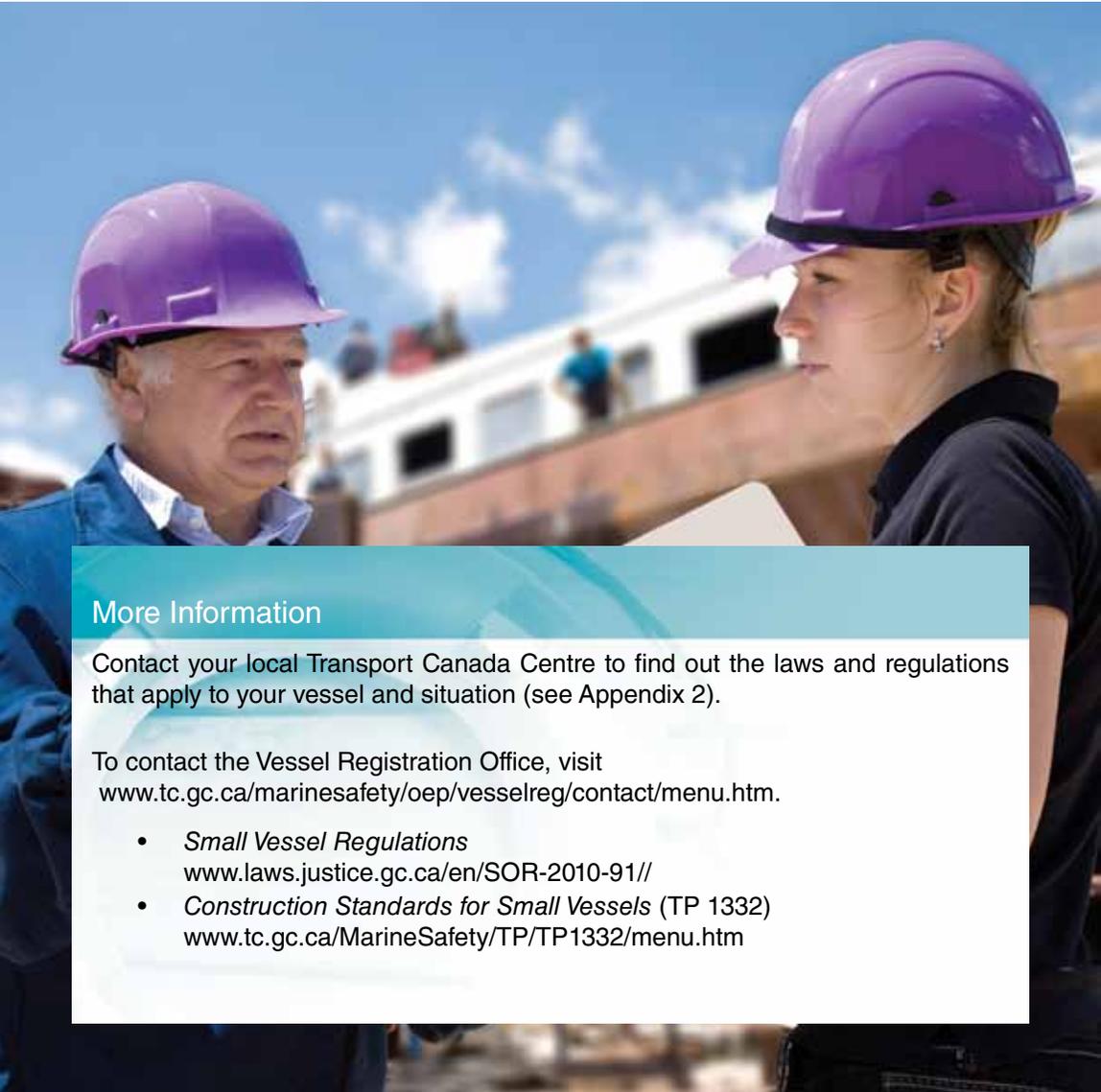
More Information

To consult your local Transport Canada Centre or the nearest Transportation Safety Board Regional Office, see Appendix 2, or visit the Transportation Safety Board website at www.tsb.gc.ca.

- *Pollutant Discharge Reporting Regulations, 1995*
www.laws.justice.gc.ca/en/SOR-95-351
- *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals*
www.laws.justice.gc.ca/en/SOR-2007-86
- *Shipping Casualties Reporting Regulations*
www.laws.justice.gc.ca/en/SOR-85-514
- *Arctic Waters Pollution Prevention Act and Regulations*
www.laws.justice.gc.ca/en/A-12
- *Canadian Transportation Accident Investigation and Safety Board Act*
www.laws.justice.gc.ca/en/C-23.4
- *Commercial Green Boating Guide*
www.bucksuzuki.org/publications
- *Fisheries Act, section 36*
www.laws.justice.gc.ca/en/F-14/
- *Transportation Safety Board Regulations*
www.laws.justice.gc.ca/en/SOR-92-446

Chapter 16

Make changes with care



More Information

Contact your local Transport Canada Centre to find out the laws and regulations that apply to your vessel and situation (see Appendix 2).

To contact the Vessel Registration Office, visit www.tc.gc.ca/marinesafety/oep/vesselreg/contact/menu.htm.

- *Small Vessel Regulations*
www.laws.justice.gc.ca/en/SOR-2010-91//
- *Construction Standards for Small Vessels (TP 1332)*
www.tc.gc.ca/MarineSafety/TP/TP1332/menu.htm



Vessel and Equipment Changes

Be aware that changes to your vessel's equipment and structure may lower its freeboard and stability or make it less suited to its use and the environmental conditions it may meet. Changes may also affect the watertight integrity of your vessel or its ability to quickly shed water overboard. Any changes must comply with the construction requirements and provide for adequate stability for the vessel's intended use.

Changes to your vessel or its system may also increase other risks such as fire, explosion and electrocution if not done properly.

When making changes that may impact vessel safety, you should consult a qualified marine professional to help you decide if the changes you want to make follow good marine practices and meet the construction, equipment and safety regulations for your vessel's intended area of service. If you are making a major modification, you must advise your local Transport Canada Centre and the appropriate Vessel Registration office (see Building or Modifying a Vessel in Chapter 2 and Vessel Registration in Chapter 3).

Changing the Area and Type of Operation

Changes to where and how you operate your vessel deserve careful thought. For example:

- Does the new area include a higher voyage classification?
- Will your vessel be carrying more passengers than before?
- Will your vessel's status change from non-passenger-carrying to passenger-carrying?
- Does the new area of operation feature different prevailing conditions (wind, waves, current) or take the vessel further from shelter?

Changes like these may mean that extra safety requirements will apply. If the change in area or type of operation is significant, then you may need to re-evaluate your vessel's stability and strength in its new operating environment, add additional safety equipment or increase the level of qualification of the crew. Changes in normal environmental conditions may also mean that you must access weather updates more often or adjust the amount of time you need to head for shelter.

Take the time to think through any proposed changes and do your homework to keep your operation safe.

Chapter 17

Help steer the future





Regulatory Reform

The *Canada Shipping Act, 2001* came into force in July 2007. It takes into account safety, global standards, changes in marine operational practices and new technologies.

Transport Canada is still working to update regulations to help the economic performance of the marine industry, maintain safety and protect the marine environment.

Consultation

Changes to *Canada Shipping Act, 2001* regulations will affect commercial shipping, so make your opinion and interests heard. Good laws require active public input.

Canadian Marine Advisory Council (CMAC)

The Canadian Marine Advisory Council (CMAC) is Transport Canada's forum for consulting with the marine community on safety, navigation and marine pollution. Members include commercial shippers, owners, operators, fishers, recreational boaters, unions and government. Anyone interested in marine safety is welcome to attend regional or national meetings.

Contact Information

Find out more about CMAC and current proposals for changing regulations at www.cmac-ccmc.gc.ca.

Submit Safety Concerns and Comments

Transport Canada Marine Safety staff can help owners and operators by providing tools, such as this guide, and locating marine professionals for advice when needed, so that their vessel will comply with Transport Canada commercial shipping regulations. Direct any safety-related concerns and comments to the Transport Canada Centre nearest you (see Appendix 2) or use one of the means below.

Contact Information

You can contact us through our website:
www.tc.gc.ca/marinesafety/contact-us/menu.htm

or email us directly: *MarineSafety-securitemaritime@tc.gc.ca*

You can also contact us by mail, telephone or fax:

Transport Canada
Marine Safety
330 Sparks Street
Ottawa ON K1A 0N8
Tel.: 613-991-3135
Fax: 613-991-1879



Appendices

Appendix 1: Your Primary Responsibilities — *Canada Shipping Act, 2001*

A summary of the primary responsibilities for safe operation and protecting the environment follows. This appendix indicates the relevant sections of the *Canada Shipping Act, 2001*, which is available on the Transport Canada website.

The Authorized Representative is responsible for all matters related to the vessel that are not assigned to someone else by the Act. (Section 14)

In particular, the authorized representative of a Canadian vessel is responsible for:

- ensuring that the vessel and its machinery and equipment meet the regulatory requirements;
- developing procedures for the safe operation of the vessel and for dealing with emergencies; and
- ensuring that the crew and passengers receive safety training. (Section 106)

The master, and where applicable, the Authorized Representative, is responsible for:

- using all reasonable means to make sure the vessel is seaworthy before and during each voyage;
- protecting the vessel and the people on board from hazards; and
- operating within legal limits, including maximum number of passengers. (Sections 85, 109, 110)

The master is also responsible for:

- ensuring everyone employed on the vessel has the necessary certification (Section 82(1));
- ensuring the crew is sufficient and competent for safe operation (Section 82(2));
- assisting persons in distress (Sections 130-133); and
- helping and providing information to the other vessel if involved in a collision. (Section 148)

Crew members are responsible for:

- carrying out their duties in a safe manner;
- letting the master know if they become aware of any hazard or anything else that might affect safe operations; and
- following the master's lawful orders except where the master is putting the vessel or people on board at risk. (Sections 113, 82(3))

Everyone on board has a responsibility to make sure that pollutants do not enter the water. (Section 187)

Appendix 2: Transport Canada's Regional Centres

Contact details for district offices, as well as the following regional offices, can be found online at: www.tc.gc.ca/marinesafety/debs/contact/menu.htm

Pacific Region

Transport Canada
Marine Safety
Pacific Region
620 – 800 Burrard Street
Vancouver BC V6Z 2J8
Tel.: 604-666-5300
Fax: 604-666-5444

Quebec Region

Transport Canada
Marine Safety
Quebec Region
901 Cap Diamant, 4th Floor
Quebec QC G1K 4K1
Tel.: 418-648-4166
Fax: 418-648-3790

Prairie and Northern Region

Transport Canada
Marine Safety
Prairie and Northern Region
344 Edmonton Street
Winnipeg MB R3C 0P6
Tel.: 204-983-7498
Fax: 204-984-8417

Atlantic Region

Transport Canada
Marine Safety
Atlantic Region
45 Alderney Drive, 11th Floor
Queen Square, P.O. Box 1013
Dartmouth NS B2Y 4K2
Tel.: 902-426-7729
Fax: 902-426-7585

Ontario Region

Transport Canada
Marine Safety
Ontario Region
100 Front Street, South
Sarnia ON N7T 2M4
Tel.: 519-383-1826
Fax: 519-383-1997

Appendix 3: First Aid Kits

Every small commercial vessel must have on board:

- a waterproof container holding all the items listed in this appendix; or
- a first aid kit that meets the requirements set out in the *Marine Occupational Safety and Health Regulations* or provincial regulations governing workers' compensation, with the addition of a resuscitation face shield and two pairs of examination gloves (if not included in the kit); or
- for a period of three years from the coming into force of the amended *Small Vessel Regulations* on April 29, 2010, a first aid kit that met the requirements of the *Small Vessel Regulations* as they read immediately before that day on which the amended regulations came into force.

Required Contents

- an up-to-date first aid manual or up-to-date first aid instructions, in English and French
- 48 doses of analgesic medication of a non-narcotic type
- six safety pins or one roll of adhesive first-aid tape
- one pair of bandage scissors or safety scissors
- one resuscitation face shield
- two pairs of examination gloves
- 10 applications of antiseptic preparations
- 12 applications of burn preparations
- 20 adhesive plasters in assorted sizes
- 10 sterile compression bandages in assorted sizes
- 4 metres of elastic bandage
- two sterile gauze compresses
- two triangular bandages
- a waterproof list of the contents, in English and French

Appendix 4: Sample Maintenance Schedule

*Note: This is a sample maintenance schedule only. Use it as a guide, and change the items and suggested timeframes to customize a maintenance plan for **your** vessel. Be sure to refer to the servicing recommendations by the manufacturers of the different vessel components.*

Hull	
Inspect and renew as needed. (anti-fouling bottom paint / topside cleaning / waxing)	End of season
Inspect all through-hull fittings and attachments for leaks.	Weekly
Check all through-hull fittings can be moved to closed position.	Week 1
Check all above-deck watertight and through-deck fittings, including cleats, stanchion mounts, hatches, ports, doors, antenna mounts, and the hull to deck seal.	Week 2
Check the cabin interior for water and stains, which could signal a leak and weak materials.	Week 3
Machinery	
Change main engine and auxiliary generator oil and filter at the hours of operation interval recommended by the manufacturer or once a year, whichever comes first.	Insert manufacturers recommended intervals, e.g. "Every 300 hours"
Check fluid levels. (oil, water, engine coolant)	Daily
Check the engine(s) for oil or fuel leaks.	Daily
(For gasoline powered vessels) Check the blower works properly and verify that the associated ductwork is free from leaks.	
Check that the bilge pump is operating properly and that the strainer inlet to the bilge pump suction is free from debris. When checking the pump, take care to not discharge a pollutant overboard.	
Tune up gasoline engines every year and replace electrical parts, such as spark plugs, as needed.	Yearly
Inspect and tighten all hoses and drive belts often. Replace them when they are worn or cracked.	
Inspect the starter motor and alternator.	
Maintain painted surfaces and apply a light coating of oil every year to reduce corrosion.	Yearly
Inspect and service transmissions and outdrive units according to manufacturer's recommendations.	Insert manufacturers recommended intervals
Pressure check outdrive units.	
Check transmission fluids and gear oil for water.	
Change transmission fluids and gear oil from time to time.	
Grease universal joint, gimbal bearing, propeller spline, and unit fittings.	
Check bellows and water seals and replace, if needed.	

Check and replace the sacrificial zinc anodes on shafts, props, tabs, and other underwater gear, as well as engine-mounted zincs on the underside of exhaust elbows or risers and on the end caps of heat exchangers to guard against corrosion.	
Clean and service outdrive unit.	
Electrical System	
Test all circuits for proper operation.	
Inspect all exposed wiring, fuse/ breaker panels and electrical equipment. Wire insulation should be intact and contacts and connectors should be secure and clean.	
Replace defective parts.	
Secure loose wiring.	
Inspect and test batteries. Batteries should be in approved boxes or trays, well ventilated and securely fastened.	
Other Systems	
Inspect and service the fuel tank, filter, fitting, and lines on a regular basis. Keep tanks free of scale, dirt, and water.	
Flush and chlorinate the fresh water system, taking care not to pollute.	
Check all fresh water lines and connections for tightness. Repair and/ or replace as needed.	
Check, clean and lubricate mechanical parts of all systems as needed for proper operation. These systems include hydraulic trim systems, air systems, anchoring systems, and bilge pumping and sanitation systems.	
Check safety equipment: lifejackets, flares, fire extinguishers, liferafts, life buoys, bilge pumps, oars, anchors, etc.	
Check radio equipment, EPIRB, antennas, batteries, and backup systems.	
Inspect and clean covers and upholstery.	
Replace any outdated or damaged equipment.	
Sailing vessels	
Inspect all standing and running rigging and sails.	
Clean and repair sails as needed.	
Lubricate winches, blocks, turnbuckles and other mechanical equipment.	

Appendix 5: Sample Compliance Checklist

Note: Since the checklist and related guidance notes are updated frequently, the example in this guide may be out of date. Please consult the Transport Canada website (www.tc.gc.ca/marinesafety/debs/small-vessels/procedures.htm) or your nearest Transport Canada Centre (see Appendix 2) for the most up-to-date copy.

Compliance Checklist for Non-pleasure Vessels not more than 15 gross tons and carrying no more than 12 passengers

Who should use this checklist:

The authorized representative is responsible for ensuring that the vessel meets regulatory requirements. Use this checklist to verify that your vessel and its equipment continue to comply with basic safety requirements.

Refer to the *Small Commercial Vessel Safety Guide* or the Compliance Checklist Guide for more information if you are not sure of the requirements or whether you comply.

Record of Compliance Check Vessel Name (if any): _____ Official Number: _____	
Vessel, Ownership and Operation Information Complete this section in full the first time you send the checklist in. If there are any changes since your last submission, please note them.	
Builder _____	Year Built _____ Build Type <input type="checkbox"/> Custom <input type="checkbox"/> Series <input type="checkbox"/> Home Built
Hull Identification Number _____	
Length (m) _____	Breadth (m) _____ Depth (m) _____ Gross Tonnage _____
Vessel Purpose: Originally built to: _____ <i>Leave blank if this is a general purpose production vessel</i>	
Now used to: _____ <i>e.g carry passengers</i>	
Construction Material and colour Hull <input type="checkbox"/> Aluminum <input type="checkbox"/> GRP <input type="checkbox"/> Steel <input type="checkbox"/> Wood <input type="checkbox"/> Other Colour: _____ Superstructure <input type="checkbox"/> Aluminum <input type="checkbox"/> GRP <input type="checkbox"/> Steel <input type="checkbox"/> Wood <input type="checkbox"/> Other Colour: _____	
Hull Type: <input type="checkbox"/> Mono Hull <input type="checkbox"/> Inflatable/RIB <input type="checkbox"/> Multi Hull <input type="checkbox"/> Pontoon	
Does the vessel have a deck? <input type="checkbox"/> Yes <input type="checkbox"/> No Is it watertight above the waterline? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Engine # 1 <input type="checkbox"/> Inboard <input type="checkbox"/> Outboard <input type="checkbox"/> Inboard-Outboard <input type="checkbox"/> Water Jet Fuel: <input type="checkbox"/> Gasoline <input type="checkbox"/> Diesel Power: _____ kW/HP Make _____ Serial # _____	
Engine # 2 <input type="checkbox"/> Inboard <input type="checkbox"/> Outboard <input type="checkbox"/> Inboard-Outboard <input type="checkbox"/> Water Jet Fuel: <input type="checkbox"/> Gasoline <input type="checkbox"/> Diesel Power: _____ kW/HP Make _____ Serial # _____	
Aux. Machinery Type _____ Aux. Machinery Serial # _____	
Owner (Contact Person if owned by a company or more than one person)	
Name _____	Address _____
City _____	Province _____ Postal Code _____ Country _____
Tel. # _____	Fax. # _____ Cell. # _____ Email _____

Operation – how do you use the vessel?

- Passenger-vessel (indicate the maximum number of passengers carried) _____
- Workboat– i.e. no passengers

Crew size (number) _____ (if this varies, please explain)

- Master's certificate - Master, Limited less than 60 GT SVOP PCOC
 Other (describe)_____

Where and when do you operate? Describe what you do and typical voyage(s), including maximum distance from shore, hours of operation, and approximate season start and end dates. If you have a website describing your operation, please provide the link (URL). If you use the vessel for lifting or towing, please provide more details.

How many years have you operated this vessel?

What are the maximum wave heights and wind speed that you operate in?

Wave height _____ m Wind speed _____ km/h

Has the type or area of operation changed over the years? Yes / No If yes, please explain below.

Have you or the vessel been involved in an accident or incident in the past five years? If yes, please provide details.

Compliance Check Results for Year 20 ____ (to be completed in full every year)

Note: For more information on the requirement, refer to the section of the regulation indicated. Where no regulation is indicated, the number refers to the relevant section of the Small Vessel Regulations.

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	6 ≤	6 ≤ 9 ^	9 ≤ 12 ^	> 12			
REGISTRATION							
Is the vessel registered?	•	•	•	•	CSA S.46	CSA S.46	
Is the vessel properly marked in accordance with the certificate of registry?	•	•	•	•	CSA S.57	CSA S.57	
Have there been structural or mechanical changes made to the vessel since it was registered?	•	•	•	•	CSA S.58	CSA S.58	
Is a copy of the certificate of registry on board?	•	•	•	•	CSA S.63	CSA S.63	
GENERAL REQUIREMENTS							
SAFETY PROCEDURES							
Are there procedures in place for the safe operation of the vessel and for dealing with emergencies?	•	•	•	•	CSA 106	CSA 106	
Are passengers given a complete pre-departure safety briefing?	•	•	•	•	401	—	
Are records detailing the number of persons on board given to a person on shore or left in a known location so they are available to search and rescue services in the event of an emergency?	•	•	•	•	402	—	
Do you have established procedures or equipment to protect all persons on board from hypothermia and cold water shock resulting from swamping, capsizing or falling overboard?	•	•	•	•	403	CSA 106	
EMERGENCY PROCEDURES							
Are procedures established for the use of the vessel's life-saving appliances and fire extinguishing equipment in case of emergency?	•	•	•	•	420	520	
Are you and/or your crew proficient in the procedures and practiced in the use of the vessel's lifesaving appliances and fire extinguishing equipment?	•	•	•	•	420	520	
ENGINE START-UP							
Do you have established procedures and are signs posted to prevent any person starting an enclosed gasoline engine powered vessel unless the engine space blower has been operated for a period of not less than four (4) minutes immediately before the engine is started?	•	•	•	•	1001	1001	
FUEL							
Are procedures in place for safe refuelling and to prevent the leakage of fuel into or overboard from the vessel?	•	•	•	•	1002	1002	
If liquefied petroleum gas is carried (but not installed or used) is the total amount of liquefied petroleum gas not more than 30 kg, and is it secured as required?	•	•	•	•	1002	—	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	6 < 9	9 ≤ 12	> 12			
SAFETY EQUIPMENT							
Is all safety equipment in good working order?	•	•	•	•	5	5	
Is all safety equipment maintained and replaced in accordance with the manufacturer's instructions or recommendations?	•	•	•	•	5	5	
Is all safety equipment readily accessible and available for immediate use?	•	•	•	•	5	5	
FIRST AID KIT							
Is there a first aid kit on board, packed in a waterproof case that contains all the items required by the Regulations (SVR section 8)?	•	•	•	•	407	504	
LIFE SAVING APPLIANCES							
Personal Life-Saving Appliances							
Is there a lifejacket of an appropriate size on board for each person that is on the vessel?	•	•	•	•	409	506	
Is there a re-boarding device available for the vessel if the re-boarding height from the water is greater than 0.5m (20 inches)?	•	•	•	•	409	506	
Is there a buoyant heaving line (throw bag) of not less than 15m in length on board?	•				409	506	
Is there a buoyant heaving line (throw bag) of not less than 15m in length OR a lifebuoy attached to a buoyant line of not less than 15m in length on board?		•			409	506	
Is there a buoyant heaving line (throw bag) of not less than 15m in length AND a lifebuoy attached to a buoyant line of not less than 15m in length on board?			•		409	506	
Is there on board a buoyant heaving line (throw bag) of not less than 15m in length AND a lifebuoy that is equipped with a self-igniting light or attached to a buoyant line of not less than 15m in length?				•	409	506	
Visual Signals							
Is there a watertight flashlight on board?	•	•	•	•	410	507	
Are there three rocket parachute flares (Type A), multi-star flares (Type B) or hand flares (Type C) on board?	•				410	507	
Are there six rocket parachute flares (Type A), multi-star flares (Type B) or hand flares (Type C) on board?		•			410	507	
Are there twelve visual signals on board - rocket parachute flares (Type A), multi-star flares (Type B), hand flares (Type C) or smoke signals (Type D), with no more than 6 smoke signals (Type D)?			•	•	410	507	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
Life Rafts							
On a Passenger Carrying Vessel of more than 8.5 metres is there on board one or more liferafts with a total capacity sufficient to carry all persons on board?	•	•	•		411	—	
On a Workboat of more than 12 metres is there on board one or more liferafts with a total capacity sufficient to carry all persons on board?			•		—	508	
On a Workboat of more than 12 metres if the water temperature is more than 15°C is there on board one or more buoyant apparatus with a total capacity sufficient to carry all persons on board if a liferaft is not carried?			•		—	508	
On a Tug of more than 8.5 metres is there on board one or more liferafts with a total capacity sufficient to carry all persons on board?	•	•	•		—	509	
Has the liferaft been serviced at the intervals set out in section 2 of Schedule IV to the <i>Life Saving Equipment Regulations</i> at a service station that is accredited by the manufacturer of the liferaft?	•	•	•		21	21	
Is the liferaft marked with the date and place of last service?	•	•	•		21	21	
Is the liferaft or buoyant apparatus (except for a liferaft packed in a valise-type container) stored in a manner that allows it to automatically float free if the vessel sinks?	•	•	•		21	21	
Vessel Safety Equipment							
Is there on board a manual propelling device OR an anchor and not less than 15m of cable, rope or chain?	•	•			412	510	
Is there on board a bailer OR a manual bilge pump?	•	•			412	510	
Is there on board an anchor and not less than 30m of cable, rope or chain?			•		412	510	
Is there on board an anchor and not less than 50m of cable, rope or chain?				•	412	510	
Is there a manual bilge pump on board?			•	•	412	510	
Navigation Equipment							
Is there a sound-signalling device on board OR is there installed on board a sound-signalling appliance that meets the requirements of the <i>Collision Regulations?</i> (CR R.33)?	•	•	•		413	511	
Is there installed on board a sound-signalling appliance that meets the requirements of the <i>Collision Regulations?</i> (CR R.33)?				•	413	511	
For vessels engaged in towing operations (pushing or pulling a floating object) is there installed on board a sound-signalling appliance that meets the requirements of the <i>Collision Regulations?</i> (CR R.33)?	•	•	•	•	—	511	
Is there on board a magnetic compass that meets the requirements of the <i>Navigation Safety Regulations?</i> (NSR S.40)	•	•	•	•	413	511	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
If the vessel is operated after sunset and before sunrise are there navigation lights installed on board that meet the requirements of the <i>Collision Regulations</i> ?	•	•			413	511	
Is there installed on board navigation lights that meet the requirements of the <i>Collision Regulations</i> ?			•	•	413	511	
Is the vessel fitted with a radar reflector in accordance with the <i>Collision Regulations</i> ? (CR R.40)	•	•	•	•	CR	CR	
Communication Equipment							
Is your vessel equipped with two-way communication equipment?	•	•	•	•	—	—	
Is a non-portable VHF radiotelephone installed, if the vessel: <ul style="list-style-type: none"> is more than 8 metres long and of closed construction; or carries passengers more than 5 nautical miles from shore or on a voyage that is even partly in a Canadian Coast Guard VHF coverage area; or is a towboat? 	•	•	•	•	SSRR	SSRR	
If your vessel operates outside a VHF coverage area, do you have a reliable means of communication with a responsible person on shore?	•	•	•	•	SSRR	SSRR	
If the vessel is of closed construction and more than 8 metres long or carrying more than six passengers, is it equipped with a VHF-DSC radio when making Near Coastal or Unlimited Voyages?	•	•	•	•	SSRR	SSRR	
When operating in the Great Lakes Basin and carrying more than six passengers, is the vessel equipped with two VHF radiotelephones, one of which may be portable?	•	•	•	•	SSRR	SSRR	
Firefighting Equipment – General							
Is there one fire axe on board?			•	•	414	512	
Is there one fire bucket on board?			•		414	512	
Are there two fire buckets on board?				•	414	512	
Is there a 1A:5B:C (or larger) portable fire extinguisher on board?	•				414	512	
If the vessel is equipped with a fuel-burning cooking, heating or refrigerating appliance, is there on board an additional 1A:5B:C (or larger) portable fire extinguisher?	•				414	512	
Is there on board a 2A:10B:C (or larger) portable fire extinguisher?		•	•		414	512	
If the vessel is equipped with a fuel-burning cooking, heating or refrigerating appliance, is there an additional 2A:10B:C (or larger) portable fire extinguisher on board?		•	•		414	512	
Is there a 2A:20B:C (or larger) portable fire extinguisher on board?				•	414	512	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
Is there on board an additional 2A:20B:C (or larger) portable fire extinguisher at the entrance to each accommodation space?				•	414	512	
If the vessel is equipped with a fuel-burning cooking, heating or refrigerating appliance, is there on board an additional 2A:20B:C (or larger) portable fire extinguisher?				•	414	512	
Are all portable extinguishers mounted with a clamp or bracket that provides a quick and positive release?	•	•	•	•	414	512	
Are all portable extinguishers that are intended for use in an accommodation space, or stored in an accommodation space, not of a gas extinguishing agent type?	•	•	•	•	414	512	
Are all portable fire extinguishers and fixed fire extinguishing system fully charged?	•	•	•	•	5	5	
Are all portable fire extinguishers not more than 23kg (51lbs) in weight?	•	•	•	•	16	16	
Is there a power-driven or manual fire pump that meets the requirements of the <i>Construction Standards for Small Vessels</i> (TP 1332) located outside the engine space?				•	414	512	
Is there on board a fire hose and nozzle from which a jet of water can be directed into any part of the vessel?				•	414	512	
Firefighting Equipment – Engine Space							
Is there on board a 10B:C (or larger) portable fire extinguisher at the entrance of the engine space?		•	•		414	512	
Is there on board a 20B:C (or larger) portable fire extinguisher at the entrance of the engine space?				•	414	512	
If the vessel has an enclosed engine space, is there a provision for the proper discharge of portable fire extinguisher(s) directly into the engine space without the need to open the primary access to that space and is this provision clearly marked?	•				415	513	
Is there a portable fire extinguisher of the appropriate size that is intended to be discharged directly into an enclosed engine space <i>in addition</i> to all the other extinguishers required by the Regulations?	•				416	514	
If the vessel has an enclosed engine space, is it fitted with a marine certified fixed fire suppression system having a sufficient quantity of fire extinguishing agent?		•	•	•	741	741	
Fire Detection and Alarm							
Is the engine space fitted with a heat detector powered by the vessel electrical system and that is hard wired to indicators and audible alarm which are located at the operating position?	•				418	516	
Does each accommodation, service and cooking space, other than low risk spaces such as washrooms and void spaces, have a marine certified fire detector with a built in audible alarm?	•				418	516	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
EQUIPMENT STOWAGE							
Is all fire and safety equipment protected from damage and securely stowed?	•	•	•	•	419	519	
If some or all fire and safety equipment is stowed in a locker/container, is the outside of the locker/container clearly marked to indicate its contents?	•	•	•	•	419	519	
CONSTRUCTION REQUIREMENTS							
Does the vessel meet all the applicable construction requirements of the <i>Small Vessel Regulations</i> , Part 7, including the requirements of the Construction Standards?	•	•	•	•	701	701	
If the vessel is a Personal Watercraft is it constructed in accordance with the standard ISO 13590 <i>Small Craft – Personal Watercraft – Construction and System Installation Requirements</i> and display a builder's plate that meets the requirements of that standard?	•	•	•	•	705	705	
Note: A Personal Watercraft that meets the standard ISO 13590 does not have to meet the other construction requirements of the <i>Small Vessel Regulations</i> .							
SAFETY NOTICES							
Are the required safety notices placed in a visible location near any hazard?	•	•	•	•	704	704	
Do safety notices meet the requirements of American Boat and Yacht Council (ABYC) Standard T-5, <i>Safety Signs and Labels</i> ?	•	•	•	•	704	704	
If the vessel is a personal watercraft, does it display a safety notice that indicates the precautions that must be taken to minimize the risk of fire and explosion, including the information set out in the Construction Standards?	•	•	•	•	705	705	
PARTICULAR DESIGN – VESSEL							
If the vessel is of a particular design, such as a dynamically supported craft, a submarine, a wing-in-ground-effect vessel, or a hydroplane, is it constructed according to recommended practices and standards that provide a level of safety at least equivalent to that provided by the construction requirements and that are applicable to the construction, manufacture or rebuilding of a vessel of that design?	•	•	•	•	709	709	
If a vessel of a particular design is constructed using alternative recommended practices and standards indicate which practices or standards were used.	•	•	•	•	709	709	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
MAJOR MODIFICATIONS							
Has the vessel undergone any major modification since originally built?	•	•	•	•	710	710	
Are these modifications in accordance with the <i>Small Vessel Regulations</i> and the <i>Construction Standards for Small Vessels</i> , TP 1332?	•	•	•	•	710	710	
Was the buoyancy, flotation and/or stability reassessed after the modifications, if any?	•	•	•	•	710	710	
PLANS							
<i>Note: Plans are not always mandatory but may be requested by Transport Canada to verify compliance.</i>							
Is a plan available showing the general arrangement of the vessel?	•	•	•	•	711	711	
Is a plan available showing a diagram of the propulsion system?	•	•	•	•	711	711	
Is a plan available showing the general arrangement and identification of the machinery including a description of the bilge pumping systems, fuel systems and firefighting systems?	•	•	•	•	711	711	
Is a plan available showing a one-line electrical diagram?	•	•	•	•	711	711	
PROTECTION FROM FALLS							
If the vessel is not more than 6m in length, is it equipped with guardrails or handholds to protect persons from falls or from falling overboard in accordance with section 41.5 and 41.6 of the American Boat and Yacht Council Standard H41, <i>Reboarding Means, Ladders, Handholds, Rails, and Lifelines</i> ?	•				712	712	
If the vessel is over 6m in length, is there means to protect persons from falls or from falling overboard in accordance with the <i>Construction Standards for Small Vessels</i> , TP 1332?		•	•	•	712	712	
STRUCTURAL STRENGTH AND SEAWORTHINESS							
Is the vessel constructed, manufactured or rebuilt in accordance with the recommended practices and standards for the type of vessel? or	•	•	•	•	713	713	
Is the vessel's design of the same type that was operated for at least five years without a marine occurrence related to a deficiency in its construction or maintenance in the vessel's intended area of operation? or	•	•	•	•	713	713	
Is the vessel's design supported by calculations or test documents proving that the design achieves the required structural strength? or	•	•	•	•	713	713	
In the case of an open vessel, are the structural strength and watertight integrity of the vessel achieved by following traditional construction methods that have proven to be effective and reliable over time?	•	•	•	•	713	713	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
Are the materials and equipment used in the construction, manufacture or rebuilding of the vessel suitable to the operating and environmental conditions that the vessel may encounter?	•	•	•	•	713	713	
Is the condition of the hull and equipment maintained in a manner to ensure that the structural strength and watertight integrity of the vessel continue to be adequate for its intended use?	•	•	•	•	713	713	
If the vessel is intended for operation in waters where the presence of ice requires the vessel to make extraordinary manoeuvres in order to avoid the ice, is the hull strengthened in order to avoid hull damage?	•	•	•	•	713	713	
WATERTIGHT INTEGRITY							
Does the design of a vessel's superstructure, hull and fittings provide, in accordance with the Construction Standards, for the maintenance of watertight integrity and the prevention of downflooding?	•	•	•	•	714	714	
Are means available to positively shut off all underwater penetrations?	•	•	•	•	714	714	
Are the shut offs of underwater penetrations fire resistant where located in a fire risk area (e.g. engine space, tank space, etc.)?	•	•	•	•	714	714	
Is the strength of the through-hull penetration equivalent to the strength of the unpierced hull?	•	•	•	•	714	714	
Are closing appliances, such as exterior doors, hatches, windows and portlights, of marine construction and fitted with means of securing them adequately in all operating conditions while underway and constructed using good boat building practices?	•	•	•	•	714	714	
On a vessel of more than 6 metres built, imported or changed to commercial use after April 1, 2005, do closing appliances such as exterior doors, hatches, windows and portlights comply with the standard ISO 12216?		•	•	•	714	714	
HULL DESIGN							
Is the stability of the vessel adequate to safely carry out its intended operations, including any operation such as lifting, towing, trawling when applicable?	•	•	•	•	716	716	
For a vessel of not more than 6 metres is the flotation, buoyancy and stability in accordance with the requirements of the Construction Standards?	•				717	717	
For a vessel of more than 6 metres can you provide documentation to show that the stability has been assessed as per the requirements set out or listed in the Construction Standards?		•	•	•	717	717	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
For a vessel of more than 6 metres , indicate which requirements or standards were used to assess the vessel stability: _____		•	•	•	717	717	
If the stability has been assessed according to ISO standard 12217-1 indicate which Design Category (A, B, C or D) has been assigned:		•	•	•	717	717	
VENTILATION							
If the vessel has an enclosed space that contains a source of gasoline vapour, is there a natural ventilation system designed to remove any accumulation of these combustible vapours?	•	•	•	•	718	718	
If the vessel has an enclosed space that contains a gasoline engine is there a powered ventilation system designed to remove any accumulation of combustible vapours?	•	•	•	•	719	719	
Is any space that contains a combustion engine ventilated to ensure a sufficient supply of air for combustion and cooling?	•	•	•	•	720	720	
FUEL SYSTEM							
If there is a fuel-burning (e.g. propane) appliance or system on board, do the appliance or system and its installation conform to recommended practices and standards (e.g. ABYC or ISO standards)? <i>Note: Carriage of gaseous fuel, naphtha, liquefied petroleum gas (other than as indicated) and liquefied natural gas is prohibited on passenger-carrying vessels.</i>	•	•	•	•	721	721	
If the vessel has an inboard engine that uses gasoline as a fuel and is not equipped with multi-point fuel injection, is the design of the carburetor or the throttle-body fuel injector in accordance with the Construction Standards and is the carburetor is fitted with a flame arrestor?	•	•	•	•	722	722	
Are the fuel tank and fuel systems installed, maintained and tested in accordance with the Construction Standards?	•	•	•	•	724	724	
Are all fittings, joints or connections on a fuel system accessible?	•	•	•	•	724	724	
Are all components of the fuel system liquid-tight and vapour-tight to the hull interior in accordance with the Construction Standards?	•	•	•	•	724	724	
Are fuel tanks, fuel filters or fuel lines not installed over a source of ignition?	•	•	•	•	724	724	
Are fixed fuel tanks manufactured and tested in accordance with the Construction Standards, or with the recommended practices and standards that provide a level of safety at least equivalent to that provided by the Construction Standards, and installed in accordance with the Construction Standards?	•	•	•	•	725	725	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
Are there one or more permanently attached safety notices indicating the precautions that must be taken to minimize the risk of fire, explosion and any other hazard?	•	•	•	•	726	726	
Are all flexible hoses in the fuel system marked in accordance with the Construction Standards?	•	•	•	•	727	727	
Do the re-fuelling points indicate the type of fuel to be used?	•	•	•	•	727	727	
Are valves in the fuel system marked to indicate the function and the meaning of each valve position?	•	•	•	•	727	727	
Are fuel tanks permanently marked to indicate the information set out in the Construction Standards?	•	•	•	•	727	727	
ELECTRICAL SYSTEM							
Standards							
Does the electrical system if not more than 50 volts meet the requirements of the Construction Standards OR	•	•	•	•	728	728	
Does the electrical system if not more than 50 volts meet the requirements of the American Boat and Yacht Council Standards E-10, <i>Storage Batteries</i> , and E-11, <i>AC and DC Electrical Systems on Boat</i> ?	•	•	•	•	728	728	
Does the electrical system if more than 50 volts meet the requirements of the American Boat and Yacht Council Standard E-11, <i>AC and DC Electrical Systems on Boats</i> ? OR	•	•	•	•	728	728	
Does the electrical system if more than 50 volts meet the requirements of the recommended practices and standards that are appropriate for the system voltage and that provide a level of safety at least equivalent to that provided by Standard E-11?	•	•	•	•	728	728	
Is every component of the electrical system accessible and marked with the information and specifications set out in the Construction Standards?	•	•	•	•	728	728	
Batteries and Means of Charging							
Is the battery(s) installed and secured in accordance with the Construction Standards?	•	•	•	•	729	729	
Is the battery(s) accessible?	•	•	•	•	729	729	
Does the engine starting battery have an automatic means of recharging ?	•	•	•	•	729	729	
Does the battery's means of charging prevent overcharging?	•	•	•	•	729	729	
Are battery disconnect switches readily accessible, appropriate for the maximum current of the system, and correctly installed as per the Construction Standards or ABYC E-11 as appropriate?	•	•	•	•	729	729	
Is the location(s) of the battery(s) dry, well ventilated and above bilge water level?	•	•	•	•	730	730	
Ignition Protection							

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
On a vessel with gasoline or gaseous (LPG, CNG) fuel systems, are electrical components ignition-protected in accordance with Society of Automotive Engineers Recommended Practice SAE J1171, <i>External Ignition Protection of Marine Electrical Devices</i> or Underwriters Laboratories, Standard UL 1500, <i>Ignition-Protection Test for Marine Products</i> ?	•	•	•	•	731	731	
On a vessel with gasoline or gaseous (LPG, CNG) fuel systems, are all electrical components that are not ignition protected isolated, in accordance with the specifications set out in the Construction Standards, from fuel sources such as engines and cooking appliances, valves, connections or other fittings on vent lines, fill lines or distribution lines, and fuel tanks?	•	•	•	•	731	731	
Emergency Lighting							
On a vessel of more than 6 metres, is emergency lighting installed in accordance with the Construction Standards to allow passengers and crew to exit from any area of the vessel?		•	•	•	732	732	
MACHINERY SYSTEMS							
Exhaust Systems							
Are provisions made to prevent the leakage of exhaust gases and do these provisions meet the requirements of the Construction Standards?	•	•	•	•	733	733	
Auxiliary Machinery							
Do all auxiliary machinery systems meet the requirements of the Construction Standards?		•	•	•	735	735	
Where persons may come into contact with moving parts of machinery systems, are guards installed to protect persons from injury?		•	•	•	735	735	
Are instruments and controls permanently fitted at every operating position on the vessel as set out in the Construction Standards?		•	•	•	735	735	
Are watertight compartments and bilges fitted with a means of pumping or bailing when the vessel is in the normal operating condition?		•	•	•	736	736	
Are bilge spaces that are not easily visible from the operating position fitted with an automatic high bilge-water alarm and a bilge pumping system or a permanently installed automatic bilge pump that is connected to an indicator showing when the pump is running and to an overriding manual switch, both of which are located at the operating position?		•	•		736	736	
Are bilge spaces that are not easily visible from the operating position fitted with an automatic high bilge-water alarm located at the operating position and a bilge pumping system?				•	736	736	
Do the automatic bilge pump(s) or the bilge pumping system have a minimum capacity of 0.91 litres/second?		•	•	•	736	736	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
Is the vessel fitted with a safe and reliable main steering gear that is operable from the operating position under normal operating conditions?		•	•	•	737	737	
If required, is the vessel fitted with a means of emergency steering?		•	•	•	737	737	
Are all combustion engines for propulsion or auxiliary purposes designed for marine use?		•	•	•	738	738	
Are all materials and dimensions of shafting and propellers in accordance with the manufacturer's specifications or with recommended practices and standards?		•	•	•	739	739	
FIRE SAFETY							
Is the vessel fitted with a fire alarm panel in accordance with the Construction Standards?		•	•	•	740	740	
Is a dual action rate-of-rise and fixed temperature detector fitted in each engine space?		•	•	•	740	740	
Is a fire detector fitted in each accommodation and service space the vessel? (except in low-risk spaces such as washrooms and void spaces)		•	•	•	740	740	
If the vessel has an enclosed engine space, is it fitted with a marine certified fixed fire suppression system having a sufficient quantity of fire extinguishing agent?		•	•	•	741	741	
Does the vessel have a minimum of two means of escape from each accommodation space, service and engine space?		•	•	•	742	742	
COMPLIANCE NOTICES							
Does the vessel, if not more than 6 metres , have a Compliance Notice stating that it is built to the requirements of the Construction Standards?	•				801	801	
Does the vessel, if more than 6 metres , have a Compliance Notice stating that it is built to the requirements of the Construction Standards for pleasure craft ? OR		•	•	•	801	801	
Does the vessel, if more than 6 metres , have a Compliance Notice stating that it is built to the requirements of the Construction Standards for vessel other than pleasure craft ?		•	•	•	801	801	
Is this Compliance Notice displayed in a conspicuous location plainly visible from the normal operating position of the vessel?	•	•	•	•	801	801	
HULL IDENTIFICATION NUMBER							
Is the vessel marked with a Hull Identification Number (HIN) 12 characters located most often on the upper starboard of the transom?	•	•	•	•	901	901	

Description	Length in metres				Passenger	Workboat	Yes/No/NA
	≤ 6	> 6 ≤ 9	> 9 ≤ 12	> 12			
SAFETY PRECAUTIONS AND OPERATIONAL REQUIREMENTS							
MUFFLER							
Is the vessel equipped with a muffler designed to prevent excessive or unusual noise that is in good working order and properly connected at all times?	•	•	•	•	1000	1000	
If the muffler is equipped with a muffler cutout / by-pass, is the muffler cutout / by-pass visibly disconnected in a manner that ensures it cannot be easily reconnected while the vessel is in operation?	•	•	•	•	1000	1000	
VESSEL MANNING AND CREW QUALIFICATIONS							
Can you provide the required certificates of competency for all crew members?	•	•	•	•	MPR 203	MPR 203	
Does each person assigned a function on the vessel receive the on-board familiarization and safety training set out in standard TP 4957 <i>Marine Emergency Duties Training Program</i> , before they start to perform any duty on board the vessel?	•	•	•	•	MPR 205	MPR 205	
Has every member of the complement who is required to be on board in order for the vessel to meet the safe manning requirements of the <i>Marine Personnel Regulations</i> (MPR) obtained, before acquiring a total of 6 months of sea service, at least one of the training certificates in marine emergency duties required by the Regulations?	•	•	•	•	MPR 205	MPR 205	
Have the crew been familiarized with shipboard equipment that are specific to the vessel, the operational instructions that are specific to the vessel, and their assigned duties?	•	•	•	•	MPR 206	MPR 206	
Is a record of training containing the information set out in the MPR available for inspection?	•	•	•	•	MPR 206	MPR 206	
Is there enough crew to operate the vessel safely and handle an on board emergency?	•	•	•	•	MPR 207	MPR 207	
POLLUTION PREVENTION							
Unless you are in a specific designated area, are you aware that no ship or person shall discharge or permit the discharge of sewage? (Sewage)	•	•	•	•	RPPSDC s.128	RPPSDC s.128	
Are you aware that no ship or person shall discharge or permit the discharge of garbage?	•	•	•	•	RPPSDC s.139	RPPSDC s.139	
Unless you are in a specific designated area, are you aware that no ship or person shall discharge or permit the discharge of a noxious liquid? (Chemicals)	•	•	•	•	RPPSDC s.82	RPPSDC s.82	
Are you aware that no ship or person shall discharge or permit the discharge of an oil or oily mixture?	•	•	•	•	RPPSDC s.40	RPPSDC s.40	

Declaration		
<p>I certify that the information on this report is an accurate record of the compliance check carried out and that to the best of my knowledge, the vessel meets the requirements of the <i>Canada Shipping Act, 2001</i> and its associated regulations.</p>		
Name:	_____ Owner/Authorized Representative (Must sign)	_____ Person who carried out the compliance check (if other than the Owner/Authorized Representative)
Signature:	_____	_____
Date:	_____	_____

Regulation Abbreviations

- CR* – *Collision Regulations*
- CSA* – *Canada Shipping Act, 2001*
- MPR* – *Marine Personnel Regulations*
- NSR* – *Navigation Safety Regulations*
- RPPSDC* – *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals*
- SSRR* – *Ship Station (Radio) Regulations 1999*
- SVR* – *Small Vessel Regulations*

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