

STANDARDS AND GUIDELINES
FOR THE CONSTRUCTION, INSPECTION AND
OPERATION OF BARGES THAT CARRY OIL IN BULK

Canadian Coast Guard
Marine Regulatory Directorate
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STANDARDS FOR THE CONSTRUCTION, INSPECTION AND OPERATION
OF BARGES THAT CARRY OIL IN BULK

Short Title

1. These Standards may be cited as the Oil Barge Standards.

Interpretation

2. (1) In these Standards,

"Act" means the Canada Shipping Act;

"approved classification society" means the American Bureau of Shipping, Bureau Veritas, Det norske Veritas or Lloyd's Register of Shipping;

"Board" means the Board of Steamship Inspection;

"bulk oil" means oil that is loaded directly into the barge or its permanently mounted independent tanks, and is confined only by the permanent structures thereof, without intermediate packaging;

"cargo area" means that part of an oil barge that includes

- (a) the cargo tanks into which bulk oil is intentionally introduced, and holds containing such tanks,
- (b) all intervening space within, between, below or outboard of the tanks and holds described in paragraph (a), and
- (c) the deck area, over the length and full breadth of the oil barge, above the tanks, holds and spaces described in paragraphs (a) and (b);

"cargo control station" means a space from which a person is able to control the loading, discharging or transferring of liquid cargo;

"Class A oil barge" means an oil barge that carries bulk oil having

- (a) a flashpoint not exceeding 60°C, and
- (b) a Reid vapour pressure that is below atmospheric pressure;

"Class B oil barge" means an oil barge that carries bulk oil having a flashpoint exceeding 60°C;

"deadweight" means the difference in tonnes between the displacement of an oil barge when floating at its load waterline, and the lightweight of the oil barge;

"existing oil barge" means an oil barge that is not a new oil barge;

"flashpoint" means the temperature in degrees Celsius at which a liquid will give off enough flammable vapour to be ignited, as determined by the Pensky Marten closed cup test;

"independent cargo tank" means a cargo containment envelope that is not contiguous with, or part of, the hull structure;

"inspector" means a person appointed as a steamship inspector pursuant to section 301 of the Act;

"integrated tug and oil barge combination" means a tug and oil barge combination in which the tug normally pushes the oil barge and is physically locked to it by a locking arrangement other than or additional to chain or rope.

"length (L)", in respect of an oil barge, means 96 per cent of the total length on a waterline at 85 percent of the least moulded depth, measured from the top of the keel;

"lightweight" means the displacement of an oil barge in tonnes, without cargo, fuel, lubricating oil, ballast water, fresh water and feed water in tanks;

"machinery space" means any enclosed space containing boilers, steam or internal combustion engines, generators, oil pumps, major electrical machinery, oil filling stations, refrigerating machinery and any similar spaces, and includes any trunk to a machinery space;

"new oil barge" means an oil barge the construction contract for which was placed, which was transferred into Canadian registry from a registry other than in Canada, or which is subjected to major conversion after the coming into force of these Standards;

"oil" means oil of any kind or in any form and, without limiting the generality of the foregoing, includes petroleum, fuel oil, sludge, and oil refuse;

"oil barge" means any description of non-self propelled vessel, other than an oil or gas offshore drilling unit or production unit, that is constructed or converted to carry bulk oil as cargo;

"pressure-vacuum relief valve" means a device or assembly that automatically regulates the pressure or vacuum existing within an enclosed space;

"Reid vapour pressure" means the vapour pressure as determined by the American Society for Testing of Materials, Test number D 323-89, Standard Method of Test for Vapour Pressure of Petroleum Products (Reid Method);

"Regional Manager" means the Ship Safety manager of a Canadian Coast Guard Region;

"service space" includes any galley, pantry containing cooking appliances, laundry, locker and store-room, workshop other than a workshop forming part of a machinery space, and any other similar space and any trunk to such space;

"spark arrester" means a device or assembly that retains or quenches sparks in the exhaust piping of an internal combustion engine.

(2) Unless specifically defined in subsection 2(1), all words and expressions used in these Standards have the same meaning as in the Canada Shipping Act.

PART I

General

Application

3. (1) Parts I, II, III, IV, V, VI, VIII, IX, X, XI and XII of these Standards apply
 - (a) to every Canadian oil barge over 15 tons gross tonnage, and
 - (b) except where otherwise provided by subsection (3), to every oil barge over 15 tons gross tonnage that is registered in a country other than Canada and that operates in Canadian waters.
- (2) Part VII of these Standards applies
 - (a) to every Canadian oil barge, and
 - (b) except where otherwise provided by subsection (3), to every oil barge that is registered in a country other than Canada and that operates in Canadian waters.
- (3) An oil barge that
 - (a) is registered in a country other than Canada that has oil barge regulations which, in the opinion of the Board, closely approximate those of these Standards, and
 - (b) is in possession of a valid inspection certificate issued by the Government of that country,

need not be inspected and certificated in accordance with these Standards but shall comply with the towing and operational requirements of Part X thereof.

Exemptions and Equivalents

4. (1) Notwithstanding anything contained in these Standards, the Board may if satisfied that it can do so with propriety, exempt any oil barge from full compliance with any of the requirements of these Standards.

(2) Where these Standards require a particular construction, fitting, apparatus or material to be fitted or carried aboard an oil barge, the Board may allow any other construction, fitting, apparatus or material to be fitted or carried, or any other provision to be made, if satisfied that such other construction, fitting, apparatus, material or provision is at least as effective as that required by these Standards.

Oil Barges that Carry a Crew

5. The construction, inspection and operation of an oil barge that carries a crew shall be specially considered by the Board.

Oil Pollution Prevention Regulations

6. Notwithstanding anything contained in these Standards, every oil barge shall comply with all applicable requirements of the Oil Pollution Prevention Regulations.

Arctic Shipping Pollution Prevention Regulations

7. Notwithstanding anything contained in these Standards, every oil barge that navigates in an Arctic Waters Shipping Safety Control Zone shall comply with all applicable requirements of the Arctic Shipping Pollution Prevention Regulations.

PART II

First Inspection

Submission of Plans and Data : New Oil Barges

8. (1) Every new oil barge shall be constructed in accordance with plans and data that have been approved by the Board, or by the Regional Manager on behalf of the Board, as set out in Table 1.

(2) If construction or installation is commenced before approval has been obtained, the owner may be required to make such alterations as are necessary to comply with the conditions of approval.

(3) The plans shall

(a) be submitted in quadruplicate, in English or French and in fully dimensioned form;

(b) identify the flashpoint and, except in the case of a Class B oil barge, the Reid vapour pressure of the oil intended to be carried;

(c) identify the intended area of operation of the oil barge;

(d) in the case of a Class A oil barge, reflect the requirements of Parts V and VIII of these Standards; and

(e) in the case of a Class B oil barge, reflect the requirements of Parts VI and VIII of these Standards.

(4) Plans approved by an approved classification society may be accepted as evidence of the structural adequacy and reliability of the hull, machinery, equipment, fittings and electrical installation provided

(a) the arrangements shown thereon comply fully with these Standards; and

(b) confirmation of such compliance is included in the classification society's approval endorsement.

Submission of Plans and Data : Existing Oil Barges

9. (1) For existing oil barges coming under inspection for the first time, plans shall be submitted in accordance with the requirements of section 8.
- (2) In cases where not all of the plans of an existing oil barge are available,
 - (a) where the oil barge has been maintained in class with an approved classification society, the plan submission requirements may be waived at the discretion of the approval authority identified in Table 1; and
 - (b) where the oil barge has not been maintained in class with an approved classification Society, the matter shall be referred to the approval authority identified in Table 1 for consideration.

TABLE 1

Subsections 8 (1) and 9 (1)

Plans and Data to be Submitted for Approval

Plan/Data	Oil Barges length (L) < 30.5m		Oil Barges length (L) ≥ 30.5m	
	Board Approval	Regl. Mgr. Approval	Board Approval	Regl. Mgr. approval
<u>Hull</u>				
General Arrangement	-	X	X	-
Midship Section }see	-	X	X	-
Structural Profile and Decks }note	-	X	X	-
Shell Expansion } 2	-	-	-	X
Watertight and Oiltight Bulkheads}	-	-	-	X
Forward and Aft End Structure } Foundations	-	X	-	X
Independent tanks, supports and Superstructure and deckhouse structure	-	-	-	X
Hatches and hatch covers	-	-	-	X
Natural and mechanical ventilation	-	-	-	X
Towing attachments	-	X	-	X
Intact stability	-	X	-	X
Damage stability	-	X	X}see	X}see
Loading information	-	X	X}note	X}note
Fire extinguishing equipment	-	-	X} 1	X} 1
	-	X	-	X
<u>Machinery</u>				
Machinery arrangement	-	X	X	-
Applicable plans per <u>Marine Mchv. Regs</u>	-	X	-	X
Arrangement/details of cargo pumps and piping	-	X	X	-
Exhaust arrangements	-	X	-	X
Vent and sounding arrangements	-	X	-	X
<u>Electrical</u>				
Electrical single line diagram	-	X	X	-
Applicable plans per Ship Safety <u>Electrical Standards, TP127</u>	-	-	-	X
<u>Other plans and data</u> as considered necessary by the Board or Regl. Mgr.	-	X	X	X

Note 1: May be approved by the Regional Manager for oil barges not exceeding 100m in length.

Note 2: May be shown on a single plan that includes structural arrangements scantlings and typical construction details.

New Oil Barges - General

10. (1) Before a new oil barge may be issued with a Letter of Compliance, a First Inspection shall take place which may consist of a series of inspections during construction.

(2) The First Inspection, which shall include functional testing where found necessary, shall satisfy the inspector that

- (a) all arrangements, materials and scantlings are in accordance with plans that have been approved by the Board, or by the Regional Manager on behalf of the Board, as set out in section 8 of these Standards;
- (b) all workmanship is in every respect satisfactory; and
- (c) the barge complies with these Standards and all other applicable regulatory requirements, and is fit for its intended service.

New Oil Barges - First Inspection Requirements

11. The First Inspection of a new oil barge shall include

- (a) a complete internal and external structural inspection of the hull, superstructures, deckhouses and any permanently mounted independent cargo tanks including, where the new barge is a barge transferring into Canadian registry from a registry other than in Canada, thickness gauging appropriate to its age in accordance with the requirements of Sections 21, 22, and 23 of these Standards;
- (b) the hose or pressure testing of hull compartments and independent cargo tanks in accordance with the requirements of the Hull Inspection Regulations respecting new vessels, except that as an alternative to those requirements, a combination of air testing and hydrostatic testing in accordance with the construction rules of an approved classification society may be accepted by the inspector;
- (c) the inspection of all sea connections and hull discharges;
- (d) the inspection of closing appliances in the hull, decks, superstructures and deckhouses including, where such appliances are required to be weathertight, the hose testing thereof using a hose pressure not less than 207 kPa;
- (e) the inspection of all required structural fire protection measures;
- (f) the inspection of all ventilation and tank venting installations;

- (g) an inspection of the cargo handling system;
- (h) an examination of the towing attachments and emergency pick-up gear;
- (i) where an anchor windlass is fitted, the inspection and testing thereof to demonstrate the satisfactory operation of the entire anchoring system;
- (j) an inspection of the firefighting equipment, and of the navigation lights and shapes required by the Collision Regulations;
- (k) the inspection and testing of cargo gear in accordance with the requirements of the Tackle Regulations;
- (l) an inspection of the electrical installation, in accordance with the initial inspection requirements of the Canadian Coast Guard Ship Safety Electrical Standards, TP127; and
- (m) an inspection of the machinery and associated systems in accordance with the construction and installation inspection requirements of the Marine Machinery Regulations.

Existing Oil Barges - General

12. (1) Before an existing oil barge that is coming under inspection for the first time may be issued with a Letter of Compliance, a First Inspection shall take place.

(2) The First Inspection, which shall include functional testing where found necessary, shall satisfy the inspector that

- (a) all arrangements, materials and scantlings are in accordance with plans that have been approved by the Board, or by the Regional Manager on behalf of the Board, as set out in section 9 of these Standards;
- (b) all workmanship is in every respect satisfactory; and
- (c) the barge complies with these Standards and all other applicable regulatory requirements and is fit for its intended service.

(3) Where an existing oil barge that is coming under inspection for the first time does not fully comply with any requirement of these Standards, and it can be shown that such non-compliance does not reduce the operational or environmental safety of the intended service, an owner may submit a request for equivalency or exemption to the Regional Manager who may, at his discretion,

- (a) respond to the request himself, or
- (b) refer the matter to the Board.

Existing Oil Barges - First Inspection Requirements

13. Except where otherwise provided by section 14 of these Standards, the First Inspection of every existing oil barge shall include

- (a) the inspection requirements described in subsections 11(a) to (k) inclusive;
- (b) an operational inspection of the machinery and electrical systems and installation, except that a more extensive inspection may be required where the inspector considers the condition of any system to be unsatisfactory;
- (c) in the case of an oil barge that has operated only in salt water, or that has spent less than six months annually in fresh water, the thickness gauging requirements of sections 21 and 22 of these standards; and
- (d) in the case of an oil barge that has spent at least six months annually in fresh water, the thickness gauging requirements of sections 21 and 23 of these Standards.

Credit for Inspection by other Approved Authorities

14. (1) Notwithstanding anything in section 13 of these Standards, where an existing oil barge that is coming under inspection for the first time is

- (a) in class with an approved classification society, or
- (b) certificated by another approved governmental authority,

the Regional Manager shall, at the request of the owner, determine the extent to which credit may be granted for previous inspections carried out by such society or authority.

(2) Any request for inspection credit made by an owner in accordance with subsection (1) shall be supported by history and inspection records, thickness gauging data where applicable, and other like information, endorsed by the classification society or governmental agency concerned.

PART III

Periodical Inspection

Periodical Inspections - General

15. (1) Except where otherwise provided by these Standards, every oil barge shall be inspected

- (a) annually, in accordance with the requirements of section 17;
- (b) quinquennially, in accordance with the requirements of section 18; and
- (c) out of the water, in accordance with sections 19 and 20
 - (i) in the case of a barge that operates only in salt water or that spends less than six months annually in fresh water, on two occasions in any five year period such that no more than three years elapse between any two inspections, and
 - (ii) in the case of an oil barge that spends at least six months annually in fresh water, at five year intervals.

(2) Notwithstanding subsection (1), no repairs or alterations which affect the operational or environmental safety of any oil barge shall be made without the approval of the Regional Manager.

Issue and Extension of Short Term Certificates

16. (1) Notwithstanding subsection 15(1), where an inspector is satisfied from such inspection as is possible while the oil barge is afloat, and without opening up all compartments, that the hull, machinery and equipment are seaworthy and environmentally safe for the intended service, the inspector may issue or extend a short term Inspection Certificate or Letter of Compliance for a period not exceeding

- (i) 2 months beyond the due date of the periodic inspection, or
- (ii) 5 months beyond the due date of the periodic inspection if authorized to do so by the Regional Manager

provided that such action does not contravene any requirement of an applicable load line regulation referenced in section 78.

(2) A short term Inspection Certificate or Letter of Compliance issued or extended up to the maximum period allowed under this section shall not be renewed or further extended unless

- (i) the periodic inspection is completed, or
- (ii) permission is granted by the Board.

Annual Inspection Requirements

17. The annual inspection referred to in subsection 15(1) shall be carried out as follows:

(a) the oil barge shall be inspected externally and internally as far as is possible without extensive opening up except as provided by subsection (b); tests, if found necessary, shall be conducted and the inspector shall be satisfied that the hull, machinery and equipment are

- (i) in compliance with all applicable regulatory standards, and
- (ii) in satisfactory condition for the intended voyages and cargoes;

(b) (i) all side tanks, rakes, cofferdams and other void spaces that are not connected to a fixed bilge system shall be opened and checked from on-deck for the presence of water or oil indicating hull damage or cargo tank leakage, and

- (ii) if required by the inspector as a result of the on-deck check, tanks shall be prepared for personnel entry in accordance with the Safe Working Practices Regulations and the Marine Occupational Safety and Health Regulations, and subjected to internal inspection;

(c) Notwithstanding the requirements of subsection (b), side tanks, rakes, cofferdams and other void spaces that are not connected to a fixed bilge system need not be checked by an inspector provided

- (i) the inspector is satisfied with the structural condition of the oil barge after completion of the inspections required by subsection (a), and
- (ii) the owner or his appointed representative has submitted a statement certifying that such side tanks, rakes, cofferdams and other void spaces were examined and found satisfactory by a competent person not more than 3 months prior to the date of the Annual Inspection.

- (d) special attention shall be given to
 - (i) potential sources of ignition in or near the cargo pumproom and cargo area, and
 - (ii) those parts of the hull structure that are particularly subject to deterioration due to chafing, abrasion and like causes; and
- (e) the inspection shall include an examination of the following items:
 - (i) weathertight, watertight and gastight fittings and closing appliances, including pumproom bulkhead seals,
 - (ii) structural fire protection requirements,
 - (iii) machinery and associated systems,
 - (iv) electrical installation,
 - (v) ventilation systems,
 - (vi) tank venting arrangements, including pressure/vacuum valves and flame screens,
 - (vii) cargo handling system,
 - (viii) towing attachments and emergency towline,
 - (ix) windlass, anchors and cables when fitted,
 - (x) firefighting equipment,
 - (xi) navigation lights and shapes required by the Collision Regulations, and
 - (xii) cargo gear.

Quinquennial Inspection Requirements

18. The quinquennial inspection referred to in subsection 15(1) shall be carried out as follows:

- (a) the oil barge shall be inspected out of the water in accordance with section 19;
- (b) tanks, rakes, voids and cofferdams shall be prepared for personnel entry in accordance with the Safe Working Practices Regulations and the Marine Occupational Safety and Health Regulations, cleaned as necessary to reveal any structural deterioration, and means provided for access to the upper parts as required for examination and thickness gauging;
- (c) the hull structure shall be gauged as required by sections 21, 22 and 23;
- (d) a complete and satisfactory inspection of all internal hull structure shall be made;
- (e) all piping and fittings within the tanks shall be examined;
- (f) all cargo tanks located against the side or bottom shell, and all cargo tank bulkheads
 - (i) located at the ends of the cargo tank area, or
 - (ii) forming the boundaries between cargo tanks and adjacent side or bottom tanks

shall be tested with a head of water to the top of the overflow except where an alternative method of testing is acceptable to the inspector; and

- (g) independent cargo tanks shall be inspected in the following manner:
 - (i) tanks shall be prepared for inspection in accordance with the requirements of subsection (b),
 - (ii) a complete and satisfactory inspection of all internal structure shall be made,
 - (iii) where there is evidence of corrosion, the plating or structure is to be gauged to determine thickness,
 - (iv) all tank supports and foundations shall be closely examined,

- (v) all piping and fittings shall be examined, and
- (vi) the tanks shall be tested by a head of water to the top of the overflow except where an alternative method of testing is acceptable to the inspector.

Out of Water Inspection Requirements

19. Except where otherwise provided by section 20, at every out of water inspection referred to in subsection 15(1),
- (a) the oil barge shall be hauled out of the water, or placed on a drydock or slipway, on blocks of sufficient height to permit easy access for inspection purposes;
 - (b) staging shall be provided to the inspector's satisfaction to facilitate proper inspection of the hull and appendages;
 - (c) the exterior of the hull and its appendages shall be cleaned as necessary, inspected and placed in satisfactory condition, special attention being given to those parts likely to experience contact with docks, sea or river bottoms and other floating equipment; and
 - (d)
 - (i) all sea chests, sea valves and other through-hull fittings shall be examined and found satisfactory, and
 - (ii) at 5 year intervals, such valves & fittings shall be opened up for inspection purposes.

In-water Survey

20. (1) Notwithstanding the requirements of section 19, every oil barge that is
- (a) less than 15 years old;
 - (b) constructed of a material other than wood;
 - (c) fitted with an effective hull protection system; and
 - (d) required to be inspected out of the water on two occasions in every five year period,

may be considered by the Regional Manager for in-water surveys instead of those alternate, out of water inspections that occur between the quinquennial inspections described in section 18.

(2) Any request made by an owner under subsection (1) must be received by the Regional Manager at least one month prior to each scheduled out of water inspection for which an in-water survey is proposed, and shall be accompanied by the following information:

- (a) the location at which the proposed in-water survey will take place;
- (b) details of the equipment, experience and management structure of the diving contractor who will carry out the survey;
- (c) the procedures that will be followed in carrying out the survey;
- (d) confirmation that the oil barge will be in the lightship condition at time of survey, so that as much of the hull as possible may be directly examined by the inspector;
- (e) confirmation that the underwater portion of the oil barge will be sufficiently clean to permit satisfactory survey;
- (f) the method proposed to accurately determine the diver's location relative to the hull;
- (g) the means that will be provided for the examination of sea chests and through-hull fittings; and
- (h) details of the hull protection system fitted to the oil barge, and the means that will be provided to renew deteriorated anodes.

(3) Oil barges that otherwise qualify under subsection (1) for in-water survey instead of alternate out of water inspections but are more than 15 years old may be considered by the Board for participation in the in-water survey program provided

- (a) a formal request is submitted by the owner at least six weeks prior to each scheduled inspection for which an in-water survey is proposed; and
- (b) inspection records and structural thickness gaugings obtained at previous inspections confirm the hull structure to be in satisfactory condition.

Thickness Gauging - General

21. Thickness gauging procedures shall comply with the following requirements:
- (a) paint and rust shall be locally removed to the inspector's satisfaction before gaugings are taken,
 - (b) gauging shall be carried out by an approved means,
 - (c) a record shall be kept of the location and thickness of every gauging, and
 - (d) where any part is found to be defective, repairs shall be carried out to the satisfaction of the inspector.

Thickness Gauging - Salt Water Barges

22. For oil barges that operate only in salt water, or that spend less than six months annually in fresh water, thickness gauging shall comply with the following requirements:

- (a) at quinquennial inspections due when the oil barge is
 - (i) 5 years old, and
 - (ii) 10 years old,

gauging shall take place at any location where, owing to the condition of the barge, the inspector deems it necessary;

- (b) at the quinquennial inspection due when the oil barge is fifteen years old, gauging shall take place
 - (i) in every plate at two girths of the shell, deck and bottom within the midships half length in way of two different cargo tanks,
 - (ii) in the internal strength members near those girthing positions, including frames, cross ties and bulkheads, and
 - (iii) at any other location where, owing to the condition of the barge, the inspector deems it necessary; and
- (c) at the quinquennial inspection due when the oil barge is twenty years old, and at all subsequent quinquennial inspections, gauging shall take place

- (i) in every plate at three girths of the shell, deck and bottom within the midships half length,
- (ii) in the internal strength members near those girthing positions, including frames, cross ties and bulkheads, and
- (iii) at any other location where, owing to the condition of the barge, the inspector deems it necessary.

Thickness Gauging - Fresh Water Barges

23. For oil barges that spend at least six months annually in fresh water, thickness gauging shall comply with the following requirements:

- (a) at every quinquennial inspection, gauging shall take place at any location where, owing to the condition of the barge, the inspector deems it necessary, and
- (b) at the quinquennial inspection due when the oil barge is twenty years old, and at alternate quinquennial inspections thereafter, gauging shall take place
 - (i) in every plate at three girths of the shell, deck and bottom within the midships half length, and
 - (ii) in the internal strength members near those girthing positions, including frames, cross ties and bulkheads.

PART IV

Stability and Loading Information

Intact Stability

24. Every existing unmanned oil barge that is assigned a load line, and every new unmanned oil barge whether or not assigned a load line, shall satisfy the stability requirements for unmanned cargo barges defined by the Canadian Coast Guard Stability, Subdivision and Load Line Standards, TP7301.

Damage Stability

25. Every oil barge shall comply with the applicable damage stability requirements of the Oil Pollution Prevention Regulations.

Loading Information

26. The person in charge of cargo handling during the loading or unloading of any oil barge exceeding 90m in length (L) shall be provided with sufficient information, in a form approved by the Board, to permit the avoidance of unacceptable stresses in the barge structure.

PART V

Construction Requirements : Class A Oil Barges

(Cargo flashpoint not exceeding 60° C)

Hull Requirements - General

27. (1) The hull, structural bulkheads, decks, superstructures and deckhouses of every Class A oil barge shall be constructed of steel or an equivalent material with respect to fire risk.

(2) Scantlings, material, workmanship, welding, subdivision of cargo spaces and fitting of cofferdams shall be at least equivalent to the standards of an approved classification society.

(3) Every Class A oil barge shall comply with the double hull requirements of Part VII of these Standards.

Cargo Tank Pressures

28. (1) Provision shall be made to ensure that the liquid level in any cargo tank does not rise to a height that would exceed the test head established by paragraph 18(g)(vi).

(2) The requirements of subsection (1) may be achieved by the use of high level alarms, overflow control systems, gauging devices or tank filling procedure control.

Cargo Segregation

29. In every Class A oil barge,

(a) tanks used to carry oil of flashpoint not exceeding 60°C shall be segregated from

(i) service spaces excluding any isolated cargo handling gear locker,

(ii) machinery spaces, and

(iii) any other space in which any source of ignition is normally present

by cofferdams, voids, pumprooms, open deck spaces, or tanks used to carry oil of flashpoint exceeding 60°C;

- (b) any opening in the cargo tank area or the boundary of a superstructure or deckhouse shall be arranged to
 - (i) minimize the possibility of gas entering an enclosed space containing a source of ignition, and
 - (ii) prevent gas from accumulating in the vicinity of any deck machinery or equipment that may constitute an ignition hazard;
- (c) any source of ignition such as electrical equipment shall be arranged so as to avoid the danger of explosion; and
- (d) where a deck on which oil spills may occur contains any space in which any source of ignition is normally present, the deck shall be fitted with coamings or other suitable means for keeping oil spills away from such spaces.

Location of Spaces

30. In every new Class A oil barge,
- (a) every service space, machinery space, cargo control station and enclosed general cargo space shall be located aft of any cofferdam, void or pumproom used for segregation purposes in accordance with section 29, except
 - (b) the Board, or the Regional Manager when authorized by Section 8 of these Standards, may permit such spaces and stations to be located elsewhere in the oil barge if satisfied that an equal standard of safety would be attained.

Openings in Restricted Areas

31. In every new Class A oil barge,
- (a) no entrance, air inlet or like opening to a service space or machinery space, other than a bolted plate for the removal of machinery, shall be fitted
 - (i) in any exterior superstructure or deckhouse bulkhead that faces the cargo area, and
 - (ii) in the outboard sides of any superstructure or deckhouse within 0.04 x length (L) of a bulkhead defined by paragraph (i), except that such distance shall not be less than 3 metres and need not exceed 5 metres;

- (b) every window or portlight located within the areas defined by paragraphs (a)(i) and (ii) shall be of the non-opening type and, if located in the first tier above the main deck, shall have an inside cover of steel or an equivalent material; and
- (c) skylights to cargo pumprooms shall be of steel, shall not contain any window or portlight, and shall be capable of being closed from outside the pumproom.

Independent Cargo Tanks

32. Independent cargo tanks may be located in other cargo tanks, in hold spaces or on an exposed deck, provided

- (a) each independent tank is
 - (i) constructed in accordance with approved plans,
 - (ii) supported in a saddle or on a foundation of steel or other suitable material,
 - (iii) securely attached to prevent shifting or damage resulting from collision, movement of the barge at sea, or other like causes;
- (b) tank support arrangements allow for thermal expansion;
- (c) tank supports and foundations are arranged so that loads transmitted through them are properly absorbed by the hull structure;
- (d) where an independent cargo tank is located in an enclosed space other than another cargo tank, that enclosed space is ventilated and protected from sources of vapour ignition in like manner to a cargo pumproom; and
- (e) adequate clear working space is provided around each independent tank to permit access for inspection purposes.

Machinery - General

33. Except where otherwise provided by these Standards, the machinery and associated systems of every Class A oil barge shall be

- (a) designed, constructed and installed in accordance with the requirements of the Marine Machinery Regulations, notwithstanding the application restrictions of subsection 3(2) thereof, and

- (b) at least equivalent to the standards of an approved classification society.

Electrical Installation

34. The electrical installation of every Class A oil barge shall comply with the applicable requirements of the Canadian Coast Guard Ship Safety Electrical Standards, TP127.

Installation of Compression Ignition Engines

35. Every compression ignition engine located on the weather deck shall be
- (a) installed in a well ventilated deckhouse of sufficient size to permit proper operation and maintenance, or
 - (b) provided with a ventilated metal hood.

Installation of Compression Ignition Engines

36. Every compression ignition engine that is located on the weather deck and is used to drive a cargo pump shall be fitted with at least one remote, manually operated shutdown station that
- (a) is located at least 0.5 x length (L) from the engine;
 - (b) is conspicuously marked; and
 - (c) provides a means for immediately stopping the engine.

Installation of Compression Ignition Engines

37. The exhaust piping of every compression ignition engine shall
- (a) extend at least 2.4 m above the weather deck;
 - (b) be fitted with spark arresters;
 - (c) be insulated with fireproof material, or watercooled, such that the temperature of exposed parts does not exceed 200°C; and

- (d) be constructed with screwed or welded connections, or with bolted connections having fireproof gaskets.

Air Compressors

38. No air compressor or air compressor intake shall be installed in a location in which cargo vapours may be present, including any

- (a) cargo handling room;
- (b) enclosed space containing cargo piping or cargo hose stowage;
- (c) enclosed space adjacent to a cargo tank or cargo tank hold used for the carriage of oil of flashpoint not exceeding 60°C;
- (d) space within 3 m of any
 - (i) cargo tank opening,
 - (ii) outlet for cargo vapour,
 - (iii) cargo pipe flange,
 - (iv) cargo valve, or
 - (v) entrance or ventilation opening into a cargo handling room; and
- (e) enclosed space having an opening into a location described in subsections (a), (b), (c) or (d).

Cargo Handling Arrangements - Pumprooms

39. (1) Spaces containing pumps, piping, or valves for handling oil of flashpoint not exceeding 60°C shall be completely isolated from all sources of vapour ignition by steel, gastight bulkheads having no openings except where necessary to pass cargo pump drive shafts and controls that are fitted through stuffing boxes having readily accessible gastight glands.

(2) A steam driven pump shall not be considered a source of vapour ignition provided the steam temperature does not exceed 260°C.

- (3) Access to cargo pumprooms shall be directly from the weather deck.

Cargo Pumps and Piping

40. In every Class A oil barge
- (a) the cargo pumps shall be designed and installed so as to minimize the danger of sparking;
 - (b) compressed air shall not be used as a means of cargo discharge; and
 - (c) a pressure gauge shall be installed for each pump discharge, located where clearly visible from the pump controls; and
 - (d) a relief valve, piped back into the suction, shall be fitted in the discharge of every cargo pump, except that such a valve need not be fitted when the system is served only by centrifugal pumps designed so that the delivered pressure cannot exceed the piping design pressure.

Cargo Piping Systems; Cargo flashpoint <27°C

41. Every Class A oil barge that carries oil of flashpoint lower than 27°C shall be fitted with a fixed cargo piping system that
- (a) complies with the requirements of section 43 of these Standards; and
 - (b) does not pass through ship service oil fuel tanks, or through machinery spaces in which sources of vapour ignition are normally present.

Cargo Piping Systems; Cargo flashpoint ≥27°C

42. Every Class A oil barge that only carries oil of flashpoint equal to or greater than 27°C shall be
- (a) fitted with a fixed cargo piping system that complies with the requirements of section 41 of these Standards; or
 - (b) served by a portable piping system that complies with the requirements of section 44 of these Standards.

Fixed Cargo Piping Systems; details

43. Every fixed cargo piping system shall be

- (a) independent of all other piping systems; and
- (b) so arranged that
 - (i) all pipe connections, valves and valve operating rods are of suitable design,
 - (ii) packing materials are suitable for the cargo carried,
 - (iii) all cargo loading and discharge hose connections are fitted with valves or blind flanges,
 - (iv) provision is made for pipe expansion,
 - (v) loading pipes are led as low as practicable into the cargo tanks, and
 - (vi) all valves are operable from an easily accessible location.

Portable Cargo Piping Systems; details

44. In every portable cargo piping system,
- (a) all flexible hoses in the system shall comply with the requirements of the Oil Pollution Prevention Regulations respecting transfer hose;
 - (b) a shutoff valve shall be fitted at or near the point of entry into the cargo tank;
 - (c) any opening through which oil cargo is transferred shall be fitted with a vapour tight seal that
 - (i) is arranged to be bolted or dogged in place, and
 - (ii) has the hose and dropline connected thereto; and
 - (d) droplines shall be of metallic construction.

Ventilation - General

45. In every Class A oil barge
- (a) all enclosed spaces other than cargo tanks, fuel and water tanks, cofferdams and void spaces shall be provided with adequate means of ventilation;

- (b) the ventilation system of every machinery space shall
 - (i) effectively ventilate the whole volume of the space,
 - (ii) provide for extraction of air from the floor level and bilges,
 - (iii) be arranged so that all inlet and outlet trunks may be closed from outside the machinery space, and
 - (iv) in the case of a mechanical ventilation system, be so arranged that the power ventilation may be stopped from at least one, easily accessible and prominently marked location outside the machinery space.

Ventilation - Cargo Pump Rooms

46. (1) Every cargo pumproom shall be fitted with a ventilation system that
- (a) effectively ventilates the whole volume of the room;
 - (b) provides inlet air from the weather deck;
 - (c) provides for extraction of air from the pumproom bilges immediately above the floorplates or bottom structure;
 - (d) is capable of properly ventilating the pumproom when all access openings thereto are closed;
 - (e) is constructed so that all inlet and outlet trunks may be closed from outside the pumproom; and
 - (f) in the case of a mechanical ventilation system, is so arranged that the system may be stopped from at least one, easily accessible and prominently marked location outside the pumproom.
- (2) Cargo pumprooms on existing Class A oil barges that carry oil of flashpoint below 27°C, and on all new Class A oil barges, shall be fitted with a suction type mechanical ventilation system that
- (a) is of sufficient capacity to provide at least 20 air changes per hour, based on the gross volume of the room;
 - (b) is constructed and arranged so as not to provide a source of vapour ignition;

- (c) is arranged to discharge the air, gases and vapours extracted from the pumproom at a safe location on the weatherdeck that is
 - (i) not less than 2 metres from any opening to an interior part of the oil barge that normally contains a source of vapour ignition, and
 - (ii) so located as to minimize the possibility of recirculating contaminated air through the pumproom.

Tank Vents - General

47. (1) Except where otherwise provided by subsection (2), tank vents shall be fitted to every
- (a) tank used for the carriage of bulk oil;
 - (b) tank, cofferdam or void space located adjacent to a tank used for the carriage of bulk oil;
 - (c) void space through which pressure piping passes; and
 - (d) tank that is filled or emptied through fixed pumping arrangements.
- (2) Existing barges not fitted with fixed bilge systems serving cofferdams and void spaces need not be provided with vents to those spaces unless otherwise required by the Board.
- (3) Each tank, cofferdam or void space that is required to have a tank vent shall be fitted with at least one vent pipe, located at the highest point of the tank and arranged to provide adequate self-drainage under normal conditions.
- (4) The structural arrangement of every tank, cofferdam or void space that is required to have a tank vent shall permit the free passage of air and gases from all parts of the space to the vent pipe.
- (5) Vent outlets from cargo tanks used to carry oil of flashpoint not exceeding 60°C or from cofferdams and void spaces adjacent thereto, shall be located at least 3.0m from openings to spaces containing sources of vapour ignition such as service spaces, machinery spaces, and internal combustion engines on deck.
- (6) The design of vents and vent systems shall take into consideration the performance characteristics of any pump unit used for filling or discharge.

Vents - Tanks that carry Oil of Flashpoint $\leq 60^{\circ}\text{C}$

48. (1) Venting arrangements for cargo tanks used to carry bulk oil of flashpoint not exceeding 60°C shall be designed and operated such that neither the pressure nor the vacuum in any cargo tank shall exceed the structural design parameters thereof, and shall provide for:

(a) the flow of small volumes of air or vapour caused by thermal variations in the cargo tank, through pressure-vacuum relief valves, and

(b) the passage of large volumes of air or vapour during cargo loading and discharging.

(2) the requirements of subsection (1) may be achieved:

(a) by individual vent pipes that

(i) have an internal diameter not less than 63.5mm,

(ii) extend at least 2.0 m above the weather deck, and

(iii) are fitted with pressure-vacuum relief valves and flame screens; or

(b) by a venting system that connects branch lines from each tank to a common header such that

(i) each branch line has an internal diameter not less than 63.5mm,

(ii) if stop valves are placed in individual branch lines, each such valve is bypassed by a pressure-vacuum relief valve,

(iii) the common header extends at least 2.0m above the weather deck and is fitted with a pressure-vacuum relief valve and flame screen, and

(iv) the venting system is provided with flushing and draining arrangements.

(3) Notwithstanding the requirements of paragraphs (2)(a)(i) and (2)(a)(ii), existing vent pipes on an existing oil barge may have

(a) an internal diameter not less than 50mm, and

- (b) a height above the working deck not less than 760mm, provided that
 - (i) the venting arrangements have a demonstrated record of safe and effective operation, and
 - (ii) the vents are upgraded to comply fully with subsection (2) when renewal becomes necessary.

Vents - Tanks that carry Oil of Flashpoint >60°C

49. Cargo tanks that are used only to carry bulk oil of flashpoint exceeding 60°C shall be fitted with

- (a) tank vents that comply with the requirements of section 48; or
- (b) gooseneck vents that
 - (i) are of at least 125% of the effective area of the filling line, but not less than 63.5mm internal diameter, except that existing vent pipes on an existing oil barge may have an internal diameter not less than 50mm provided
 - (A) the venting arrangements have a demonstrated record of safe and effective operation, and
 - (B) the vents are upgraded to full compliance when renewal becomes necessary,
 - (ii) extend at least 760mm above the weather deck, except that where this height interferes with the working of the oil barge, a lower height may be considered by the Board, and
 - (iii) are provided with flame screens consisting of
 - (A) fitted single screens of corrosion-resistant wire of at least 30 by 30 mesh, or
 - (B) two fitted screens, both of corrosion-resistant wire of at least 20 by 20 mesh, spaced not less than 12.5 mm nor more than 37.5 mm apart.

Vents - Cofferdams and Voids

50. Except where otherwise permitted by subsection 47(2), every tank, cofferdam and void space described in paragraphs 47(1)(b), (c) and (d) shall be fitted with a gooseneck vent that complies with the requirements of paragraphs 49(b)(i), (ii) and (iii)

Bilge Systems

51. (1) Every oil barge shall be provided with an approved means for pumping and draining every watertight hull compartment that is not permanently appropriated for the carriage of oil or other liquid.

(2) The requirements of subsection (1) may be satisfied by the provision of suitable pumps that are

- (a) either fixed or portable, and
- (b) carried aboard the oil barge or on the towing vessel

(3) The bilge system, particularly in way of pumprooms and adjacent cofferdams, shall be designed and fitted for operation so as to avoid risk of fire or explosion.

Sounding Arrangements

52. (1) Means shall be provided for sounding

- (a) all tanks that are permanently appropriated for the carriage of liquids, and
- (b) the bilges of other watertight compartments that are not readily accessible for inspection.

(2) Approved tank-level indicating appliances may be used for tank liquid level gauging if a supplementary means of manual sounding is also provided.

(3) Sounding pipe arrangements and details shall comply with the requirements of Schedule XV of Marine Machinery Regulations.

PART VI

Construction Requirements : Class B Oil Barges

(Cargo flashpoint exceeding 60° C, except where otherwise provided by Section 87)

Hull Requirements - General

53. (1) The hull, structural bulkheads, decks, superstructures and deckhouses of every Class B oil barge shall be constructed of steel or an equivalent material with respect to fire risk.

(2) Scantlings, material, workmanship, welding, subdivision of cargo spaces and fitting of cofferdams shall be at least equivalent to the published standards of an approved classification society.

(3) Every Class B oil barge shall comply with the double hull requirements of Part VII of these Standards.

Cargo Tank Pressures

54. Every class B oil barge shall comply with the cargo tank pressure requirements of section 28 of these Standards.

Cargo Segregation

55. Tanks used to carry oil shall be segregated from spaces in which any source of ignition is normally present by oiltight and gastight decks and bulkheads.

Independent Cargo Tanks

56. Independent cargo tanks shall comply with the requirements of section 32 of these Standards.

Machinery - General

57. Except where otherwise provided by these Standards, the machinery and associated systems of every Class B oil barge shall be

- (a) designed, constructed and installed in accordance with the requirements of the Marine Machinery Regulations, notwithstanding the application restrictions of subsection 3(2) thereof, and
- (b) at least equivalent to the standards of an approved classification society.

Electrical Installation

58. The electrical installation of every Class B oil barge shall comply with the applicable requirements of the Canadian Coast Guard Ship Safety Electrical Standards TP 127.

Installation of Compression Ignition Engines

59. Compression ignition engine installations shall comply with the requirements of sections 35, 36 and 37 of these Standards.

Cargo Pumps and Piping

60. In every Class B oil barge,

- (a) cargo pumps shall be designed and installed so as to minimize the danger of sparking;
- (b) compressed air shall not be used as a means of cargo discharge;
- (c) a pressure gauge shall be installed for each pump discharge, located where clearly visible from the pump controls; and
- (d) a relief valve, piped back into the suction, shall be fitted in the discharge of every cargo pump, except that such a valve need not be fitted when the system is served only by centrifugal pumps designed so that the delivered pressure cannot exceed the piping design pressure.

Cargo Piping Systems

61. Every Class B oil barge shall be
- (a) fitted with a fixed cargo piping system that complies with the requirements of section 41; or
 - (b) served by a portable piping system that complies with the requirements of section 44 of these Standards.

Ventilation

62. The ventilation arrangements of every Class B oil barge shall comply with the requirements of Section 45 and subsection 46(1) of these Standards.

Tank Vents

63. The tank venting arrangements of every Class B oil barge shall comply with the requirements of
- (a) subsections 47(1), (2), (3), (4) and (6); and
 - (b) sections 49 and 50 of these Standards.

Bilge Systems

64. The bilge system of every Class B oil barge shall comply with the requirements of Section 51 of these Standards.

Sounding Arrangements

65. The sounding arrangements of every Class B oil barge shall comply with the requirements of Section 52 of these Standards.

PART VII

Double Hull Requirements

New Oil Barges

66. The entire sides, ends and bottom of every new oil barge that operates in Canadian waters, or in any fishing zone of Canada prescribed pursuant to the Territorial Sea and Fishing Zones Act, shall be protected within the cargo tank length by spaces that

- (a) are dimensioned in accordance with sections 68 and 69 of these Standards, and
- (b) do not contain oil,

unless the oil barge is of an alternative design which, in the opinion of the Board, provides equivalent environmental protection.

Existing Oil Barges

67. (1) Every existing oil barge that operates in Canadian waters, or in any fishing zone of Canada prescribed pursuant to the Territorial Sea and Fishing Zones Act, shall comply with the requirements of section 66 as if it were a new oil barge, or be withdrawn from bulk oil transportation service

- (a) if of less than 5000 gross tons, no later than January 1st, 2015; or
 - (b) if of 5000 gross tons or more, in accordance with the time schedule applicable to single hulled tankers of like tonnage.
- (2) The requirements of subsection (1) do not apply to any existing oil barge that
- (a) is of less than 2000 gross tons;
 - (b) has no cargo tanks that exceed 200 cubic metres capacity; and
 - (c) operates solely on the Mackenzie River, those waters contiguous to the river not within Arctic Shipping Safety Control Zone 12, or on a river or lake that feeds into the Mackenzie River.

(3) Every existing oil barge that is converted by the addition of side tanks, peak tanks or double bottoms to achieve the double hull requirements of section 66 shall be considered a new oil barge with respect to the application of these Standards.

Dimensions of Protective Spaces

68. (1) The moulded side tank width of any oil barge, measured at right angles to the shell plating, shall in no location be less than **W** metres, where

(a) for oil barges of 5000 tonnes deadweight (DWT) and above,

$$\mathbf{W} = 0.5 + \frac{\text{DWT}}{20000} \text{ m}, \text{ or } 2.0\text{m, whichever is the lesser,}$$

with a minimum value of **W** = 1.0m; and

(b) for oil barges of less than 5000 tonnes deadweight (DWT),

$$\mathbf{W} = 0.4 + \frac{2.4 \times \text{DWT}}{20000} \text{ m}$$

with a minimum value of **W** = 0.76m.

(2) The moulded double bottom height of any oil barge of less than 5000 tonnes deadweight that operates only in Canadian waters and the fishing zones of Canada prescribed pursuant to the Territorial Sea and Fishing Zones Act, not more than 40 miles offshore, shall in no location be less than the side tank width determined in accordance with subsection (1).

(3) The moulded double bottom height of any oil barge of 5000 tonnes deadweight or above, and of any oil barge of less than 5000 tonnes deadweight that operates beyond the limits described in subsection (2), shall comply with the requirements for oil tankers established by Canadian Coast Guard Standards for the Double Hull Construction of Oil Tankers, TP11710E.

(4) Notwithstanding the requirements of subsections (2) and (3), cargo tank drainage wells may be constructed in the double bottom provided they

(i) are as small as practicable; and

(ii) in no case extend below the tank top for a distance greater than half the double bottom height.

(5) Every side tank and double bottom tank shall be constructed to provide adequate access for inspection and maintenance purposes.

(6) Ballast piping and other piping such as sounding and vent piping to ballast tanks shall not pass through cargo tanks, nor shall cargo piping and piping to cargo tanks pass through ballast tanks, except that short lengths of piping may be permitted provided that they are completely welded.

Forward and Aft Peaks

69. (1) No oil barge cargo tank shall extend forward of a transverse plane located at the lesser of

- (a) 0.05 x length (L); and
- (b) 7.5 metres

measured aft from the outside of the stem plating at freeboard deck level.

(2) No oil barge cargo tank shall extend aft of a transverse plane located at a distance equal to the required side tank width, measured forward from the outside of the stern plating at freeboard deck level.

(3) Notwithstanding subsection (2), where an oil barge is fitted with a stern notch, no part of a cargo tank containing oil shall extend closer to the notch than a distance equal to the required side tank width.

PART VIII

Outfit and Equipment

Fire Extinguishing Equipment

70. (1) Every oil barge shall be provided with the following fire extinguishing equipment during any transfer of cargo, or operation of barge machinery or boilers;
- (a) in the boiler room of every barge fitted with oil burners,
 - (i) one 9L foam fire extinguisher where the number of burners does not exceed two, and with one additional 9L foam fire extinguisher for each additional burner, except that in no case need there be more than four such extinguishers, and
 - (ii) either
 - A) a receptacle containing an adequate quantity of sand or other dry material suitable for quenching oil fires, and a scoop for distributing the material or
 - B) one additional 9L foam fire extinguisher.
 - (b) in every compartment containing internal combustion engines, one 9L foam fire extinguisher where the brake power of the engines does not exceed 373 kW, and with one additional 9L foam fire extinguisher for each additional 746 kW or fraction thereof except that in no case need there be more than four such extinguishers;
 - (c) in the pumproom, one 9L foam fire extinguisher; and
 - (d) in the cargo tank area, two 9L foam fire extinguishers located where most convenient in case of emergency.
- (2) One 4.5 kg CO₂ fire extinguisher or one dry chemical fire extinguisher of at least 2.25 kg capacity may be provided in lieu of any 9L foam fire extinguisher required by subsection (1).
- (3) All fire extinguishers shall comply with the requirements of the applicable fire detection and extinguishing equipment regulations.

Protection of Dangerous Places

71. In every oil barge, all exposed and dangerous places such as gears and machinery shall be protected by covers, guards or rails in order that the danger of accident may be minimized.

Aluminum Paint

72. Paint containing aluminum shall not be used in cargo oil tanks, on tank decks within the cargo area, in pumprooms, cofferdams or in any other area where cargo vapour may accumulate, unless it can be shown that the paint does not increase the hazard of fire.

Sacrificial Anodes

73. (1) Sacrificial anodes made of magnesium or of an alloy that contains magnesium shall not be fitted in any oil cargo tank.

(2) sacrificial anodes made of aluminum or aluminum alloy may be fitted in any oil cargo tank provided that:

- (a) anodes shall be constructed with steel cores such that the anodic material is retained even when wasted;
- (b) each anode shall have at least two welded or bolted connections to the tank structure, and shall not be attached thereto by clamps or setscrews;
- (c) anodes shall not be attached to the shell, nor shall the two ends of support be attached to separate structural members;
- (d) no anode shall be installed more than 2 m above the bottom of a cargo tank except where the structural arrangement of the tank would prevent a detached anode from falling any greater distance;
- (e) no anode shall be located under a tank hatch or Butterworth opening unless protected by the adjacent structure; and
- (f) the potential energy of the anode shall not exceed 275J, the height of the anode being measured from the tank bottom to the centre of the anode except where otherwise provided by paragraph (d), and its weight being the total weight including securing devices.

(3) Sacrificial anodes made of materials other than magnesium, aluminum or alloys thereof, may be fitted in any oil cargo tank.

Cargo Gear

74. The cargo gear of every oil barge shall comply with all applicable requirements of the Tackle Regulations.

Towing Attachments

75. (1) Every oil barge shall be equipped with a sufficient number of cleats, bollards, eyeplates or other fittings, appropriately arranged to ensure safe and secure attachment of the barge to the towing vessel.

(2) Every towing attachment provided under subsection (1) shall be of adequate strength for the intended loadings, and the barge structure in way thereof shall be suitably reinforced.

Boarding Ladders

76. (1) Except in the case of an oil barge where it can be shown that safe boarding at sea may be accomplished without the use of a ladder, every oil barge shall be fitted with boarding ladders at each quarter.

(2) Every boarding ladder provided in accordance with the requirements of subsection (1) shall extend from the light waterline to the freeboard deck, and shall consist of

(a) a steel ladder or rungs attached to the exterior of the hull and adequately protected against operational damage by permanent fenders or deflector plates, or

(b) footholds cut into the side shell of the oil barge at approved locations such that

(i) the corners of each foothold are smooth and well radiussed to avoid structural cracking, and

(ii) the footholds are backed within the hull by a watertight recess of equivalent strength to the surrounding hull structure.

(3) Handholds shall be arranged on the freeboard deck at the head of each ladder and, except in the case of an oil barge that operates only on sheltered voyages, safety lines or grab rails shall be provided between the ladder locations and the towline attachment points.

Fenders

77. Suitable resilient fendering shall be provided whenever an oil barge is moored alongside another vessel, dock or like marine facility.

PART IX

Load Lines

Guidance re Application of Load Line Regulations

78. (1) Notwithstanding anything contained in these Standards, every oil barge shall comply with all applicable requirements of the

- (a) Load Line Regulations (Sea);
- (b) Load Line Regulations (Inland);
- (c) General Load Line Rules; or
- (d) Load Line Rules for Lakes and Rivers.

(2) Guidance respecting the applicability of the Regulations listed in subsection (1) to unmanned oil barges may be found in the Canadian Coast Guard Stability, Subdivision and Load Line Standards, TP 7301.

PART X

Towing and Operational Requirements

(Applicable to every Canadian oil barge and to every oil barge registered in a country other than Canada, when operating in Canadian waters)

Towing Vessel Assignment

79. (1) When assigning a towing vessel to any oil barge towing operation, the owner and the Master thereof shall ensure by the evaluation of all pertinent factors that

- (a) the towing vessel is in all respects capable of maintaining safe control over the oil barge in all foreseeable conditions during the intended voyage, and
- (b) the towing equipment, including towline, winches, towhook, chains, bridles, shackles and associated gear, is in all respects adequate for the intended operation and is maintained to a high standard of reliability.

(2) Guidelines respecting compliance with the requirements of subsection (1) are provided in Appendix A to these Standards.

Emergency Towline

80. (1) Every oil barge that operates on voyages other than Minor Waters voyages and does not form part of an integrated tug and oil barge combination described in subsection 88(b), shall be equipped with an emergency towline that is

- (a) capable of immediate deployment without need for personnel from the towing vessel to board the barge, and
- (b) kept rigged and ready for use.

(2) All chains, shackles and other gear used in making up the emergency towline to the towing vessel shall be at least equal in strength to the emergency towline.

(3) Unless otherwise required or permitted by the inspector, the emergency towline shall be renewed at five year intervals.

(4) Guidelines respecting the make-up of emergency towline assemblies are provided in Appendix A to these Standards.

Pre-voyage Emergency Towline Inspection

81. Before commencing to tow any oil barge, the Master of the towing vessel shall confirm by entry in the towing vessel log book

- (a) that the emergency towline required by section 80 is aboard the oil barge and ready for immediate deployment,
- (b) that the towing vessel is properly equipped to pick up the floating messenger line from the sea, and to haul aboard and properly secure the emergency towline, and
- (c) that all gear provided for making fast the emergency towline to the towing vessel is compatible, one part with another.

Carriage of Cargo Oil in Peak Tanks

82. No cargo oil shall be carried in the forward or aft peak tanks of any oil barge.

Deck Cargoes

83. An oil barge that is operating in the transportation of bulk oil may also carry deck cargoes, provided

- (a) the structural strength of the barge is adequate for the intended loadings;
- (b) precautions are taken to avoid any risk of fire or explosion when loading or unloading the deck cargo, and during the voyage;
- (c) the deck is properly dunnaged to prevent any chafing of metal parts;
- (d) the deck cargo is securely lashed or stowed prior to departure;
- (e) all cargo tank openings and vents are closed prior to the handling of any deck cargo;
- (f) no deck cargo is loaded or discharged except under the direction of the person in charge of the cargo loading operation; and
- (g) in the case of a Class A oil barge, at no time shall any potential source of ignition enter a zone extending at least 3.0m from any open cargo tank vent, hatch or other opening.

Dangerous Goods and Dangerous Bulk Materials

84. Notwithstanding section 83 of these Standards, no dangerous goods or dangerous bulk materials shall be carried by any oil barge except in accordance with the Dangerous Goods Shipping Regulations and the Dangerous Bulk Materials Regulations, respectively;

Opening of Cargo Tanks

85. Unless a cargo tank has been gas-freed, no hatch, ullage hole, Butterworth plate or other like opening thereto shall be opened or shall remain open without a flame screen except under the supervision of the person in charge of the cargo loading operation.

Shallow Water Operation

86. Notwithstanding any maximum draft permitted by the loadline regulations referenced in Section 78 of these Standards, the owner of every oil barge that operates in shallow waters such as those of the Mackenzie River system shall ensure that the loaded draft provides a safe margin of bottom clearance with respect to the available water depths.

Oil Barge Operations in Northern Canadian Waters

87. Notwithstanding the requirements of Sections 48, 49 and 63 of these Standards, oil cargoes of flashpoint above 40°C but not exceeding 60°C may be carried in an existing single hulled Class B oil barge in cargo tanks fitted with vents complying with subsection 49(b), provided that the owner and the person in charge of the oil barge

- (a) are in possession, prior to the commencement of cargo loading, of certified data that
 - (i) pertains to the actual oil cargo to be carried,
 - (ii) confirms the oil cargo flashpoint to exceed 40°C, and
 - (iii) confirms the oil cargo to contain a static dissipator additive in accordance with the applicable Canadian General Standards Board fuel specification;

(b) ensure that during active cargo operations such as bulk oil or deck cargo loading or unloading, the temperature of all parts of the oil barge that may come into contact with the oil cargo or oil cargo vapour remains at least 10°C below the certified cargo flashpoint; and

(c) ensure that the voyage of the oil barge does not extend south of 60°N latitude except within Hudson Bay and Ungava Bay where the voyage may extend as far south as 58°N latitude.

PART XI

TUG AND OIL BARGE COMBINATIONS

Integrated Tug and Oil Barge Combinations

88. Notwithstanding anything contained in these Standards,
- (a) the construction, inspection, operation and connecting systems of every integrated tug and oil barge combination shall be specially considered by the Board;
 - (b) where the tug component of an integrated tug and oil barge combination
 - (i) can demonstrate quick and safe separation from the oil barge under all operating conditions for which the tug and oil barge are designed to operate as a combined unit, and
 - (ii) is fitted and rigged with the equipment necessary for towing the oil barge by hawser,

the tug and the oil barge shall be treated as separate vessels with regard to construction and inspection requirements, and the Inspection Certificate of the oil barge shall identify those tugs which have been approved as suitable for operation with the barge when operating as an integrated tug and oil barge combination; and

- (c) except where operations only take place on Home Trade Class IV or Minor Waters voyages, every integrated tug and oil barge combination in which the tug cannot satisfy the requirements of paragraphs (b) (i) and (ii) shall comply with the construction and inspection requirements applicable to a single, self-propelled vessel of tonnage equal to the aggregate tonnage of the tug and oil barge combination.

Bridge Visibility

89. Every tug and oil barge combination shall provide the person in charge of its navigation with a field of vision from the normal conning position that is at least equal to that described in Ship Safety Bulletin number 3/92.

PART XII

CERTIFICATION

Letters of Compliance

90. When an oil barge has been duly inspected in accordance with the provisions of the Canada Shipping Act and found to comply in all respects with the regulations and standards made thereunder, a Letter of Compliance shall be issued in the format shown in Schedule I hereto.

LETTER OF COMPLIANCE

FOR A NON SELF-PROPELLED CLASS..... OIL BARGE

NAME OF VESSEL	OFFICIAL NUMBER	GROSS TONNAGE	PORT OF REGISTRY

THIS IS TO CERTIFY:

1. That the above mentioned oil barge has been duly inspected in accordance with the provisions of the Canada Shipping Act and found to comply in all respects with the applicable regulations and standards made thereunder, including the Standards for the Construction, Inspection and Operation of Barges that Carry Oil in Bulk.

LIMITATIONS: This Letter of Compliance shall be valid only

(a) for voyages as follows:

(b) for the carriage of bulk oil cargo of flashpoint by closed cup test having a Reid vapour pressure below atmospheric pressure.

2. That the inspection showed:

(a) that the service supply and heating boilers may carry a working pressure not in excess of kPa, and

(b) that the air receivers may carry a working pressure not in excess of kPa.

3. During cargo transfer or operation of barge machinery, at least fire extinguishers shall be properly located aboard the vessel.

THIS LETTER OF COMPLIANCE shall remain in force until the day of , 19 .

Steamship Inspector

Port and date of issue

APPENDIX `A`

GUIDELINES FOR TUG AND BARGE SYSTEMS USED FOR THE TRANSPORTATION OF OIL IN BULK

Preamble

Section 79 of the Oil Barge Standards requires the owner and the Master of any tug used for oil barge towing to ensure that the tug and towing equipment are in all respects capable of maintaining safe control over the oil barge in all foreseeable conditions during the intended voyage.

Safe tug-barge matching decisions require the assessment of a number of variables related to the characteristics of the vessels concerned, the weather and navigational conditions likely to be encountered, the availability of safe refuge and the experience of the crew. The following guidelines are provided to assist rather than to direct the tug-barge matching process, it being emphasized that operational and environmental safety must be the prime concerns when tug-barge assignment decisions are made.

Primary Towlines

- 1.1 The bollard pull of every tug that tows an oil barge on Foreign, Home Trade or Inland Waters voyages should be determined by a recognized test procedure, and checked by retest whenever changes are made to the propulsion system that affect bollard pull.
- 1.2 The towline should
 - (a) comply with the strength criteria given in Table 1, which were derived from successful Canadian towing practice, and
 - (b) be supplied to the tug with manufacturer's certificates which attest to the strength rating thereof.

VOYAGE DESCRIPTION	BOLLARD PULL OF TUG (BP) in tonnes	BREAKING STRENGTH OF TOWLINE in tonnes
EXPOSED COASTAL TOWS	≤ 32 te > 32 te	$4.5 \times \text{BP}$ $144 + 0.7 (\text{BP}-32)$
SHELTERED COASTAL TOWS	≤ 35 te > 35 te	$4 \times \text{BP}$ $140 + 0.75 (\text{BP}-35)$
PROTECTED WATER TOWS	≤ 35 te > 35 te	$3 \times \text{BP}$ $105 + 1.15 (\text{BP}-35)$

TABLE 1

**TUG BOLLARD PULL VS TOWLINE BREAKING STRENGTH
for tugs not exceeding 100 te bollard pull**

- 1.3 The breaking strength of chains, bridles, shackles and other gear used in making up the towline assembly should be consistent with the breaking strength of the towline.
- 1.4 A formal towline inspection schedule and procedure should be established for every tug, to provide for
- (a) visual examination of the towline and associated equipment prior to each voyage,
 - (b) regular towline lubrication,
 - (c) towline testing, end-for-end rotation, and replacement, and
 - (d) sign-off by the officer responsible for each towline inspection or maintenance procedure.

Bollard Pull of Towing Vessel

2. The following empirical formula is widely used for determining the required bollard pull:

$$BP = \left[\frac{\frac{2/3 V^3}{120 \times 60} + (0.06 B \times D_1)}{\quad} \right] \times K$$

where:

- BP = required bollard pull (tonnes),
- = full displacement of towed vessel (tonnes),
- V = tow speed (knots),
- B = breadth of towed vessel (metres),
- D₁ = depth of the exposed transverse section of the towed vessel including deck cargo, measured above the waterline (metres),
- K = a factor that reflects potential weather and sea conditions.

An examination of Canadian Coastal towing practice suggests that in those specific waters, a record of safe towing has been established using the following K values at a towing speed of six knots.

- (a) for exposed coastal tows K = 1.0 to 3.0
- (b) for sheltered coastal tows K = 0.75 to 2.0
- (c) for protected water tows K = 0.50 to 1.5

Two Independent Means of Propulsion

3. Every tug used for oil barge towing should be fitted with at least two independent means of forward propulsion, such that any one propulsion system is capable of providing sufficient thrust to maintain safe control of the oil barge in all anticipated navigational conditions.

Single Towing

4. Oil barges should be towed singly, except that where particular circumstances make such restriction impractical, a tow may consist of more than one oil barge provided the operational and environmental safety of the intended service is not impaired.

Tug Fenders

5. Every tug used for handling oil barges should be thoroughly fendered, with no protruding steel structure.

Emergency Towlines

6. Every emergency towline assembly should consist of
 - a) flexible steel wire rope towline of length not less than the length (L) of the oil barge, and breaking strength not less than three times the required bollard pull of the towing vessel; and
 - b) messenger and trailing lines of size and length that ensure the safe pick-up and handling of the wire rope towline to the towing vessel, so arranged that the trailing line is
 - (i) of sufficient length to extend at least 35m astern of the oil barge, and
 - (ii) provided at its trailing end with a clearly visible marker buoy.