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(07/2009)

STANDARDS FOR THE DOUBLE HULL CONSTRUCTION OF OIL TANKERS

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The Director Operations and Environmental Programs is responsible for this document, including any change, correction, or update.	Director Operations and Environmental Programs Marine Safety

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REVISIONS

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Revision No.	Date of Issue	Affected Pages	Author(s)	Brief Description of Change
1	January 1, 2003	Sections 2, 3, 6, 7, 15, 16, 17, 18, 19, 20, 21 amended and section 27 added	**T. Morris**	Requirements revised to incorporate amendments to regulation 13G of Annex I of MARPOL
2	April 5, 2005	Sections 2, 10, 15, 16, 17, 19, 20 and 27 amended	**T. Morris**	Requirements revised to incorporate amendments to regulation 13G of Annex I of MARPOL and an additional new regulation 13H which called for further acceleration of the phase-out scheduled for single-hulled tankers, a ban on the carriage of heavy grades of oil by singled hulled tankers and an extended application of the Condition Assessment Scheme as contained in resolutions MEPC.111(50) and MEPC.112(50).
3	July 10, 2009	All sections updated	**T. Morris**	Updated to reflect the *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals* that revoked the *Oil Pollution Prevention Regulations* and to remove outdated provisions.

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PREFACE

Recognizing the need to improve the requirements for the design and construction of oil tankers to prevent accidental oil pollution in the event of collision or grounding, Transport Canada adopted Standards for the construction of new and existing Canadian tankers, and for new and existing non-Canadian registered oil tankers, when such non-Canadian-registered tankers operate in Canadian waters and the fishing zones of Canada in 1993.

These Standards were developed from two sources, namely:

- *the International Maritime Organization's (IMO) International Convention for the Prevention of Pollution from Ships (MARPOL), specifically Regulations 13F, 13G and 13H to Annex I of MARPOL for new tankers and existing large tankers and*
- *the U.S.* 0il Pollution Act of 1990, *with specific reference to the United States Coast Guard Interim Final Rule on Double Hull Standards for Vessels Carrying Oil in Bulk, issued 12 August 1992 for smaller existing tankers.*

In 1995, the *Oil Pollution Prevention Regulations* were amended to incorporate these Standards by reference in section 14.2, which stated "Any oil tanker that is engaged in voyages that take place in waters under Canadian jurisdiction shall comply with Standards for the Double Hull Construction of Oil Tankers, TP 11710, published by the Canadian Coast Guard on July 6, 1993, as amended from time to time, other than sections 3 and 5 and subparagraphs 24(a)(i), (b)(i) and (c)(i) of those Standards".

Subsequent to the sinking of the ERIKA off the coast of France in 1999, amendments were made to Regulation 13G of Annex I of MARPOL in resolution MEPC.95(46) in order to bring the international requirements more in line with OPA 90 requirements, including the phase out of smaller tankers and the elimination of single-hulled tankers by 2015. Following the PRESTIGE oil spill in 2002, further amendments were made to regulation 13G of Annex I of MARPOL and a new regulation 13H was added. These amendments incorporated further acceleration of the phase-out scheduled for single-hulled tankers, a ban on the carriage of heavy grades of oil by singled hulled tankers and an extended application of the Condition Assessment Scheme. The amendments are contained in resolutions MEPC.111(50) and MEPC.112(50). Annex I of MARPOL was revised in 2007, as a result of which the double hulling provisions are now contained in Regulations 19, 20 and 21 of Annex I.

The U.S. have indicated that they will continue to apply OPA 90 and will, therefore, not implement Annex I of MARPOL.

These Standards incorporate the new Annex I provisions for existing tankers but, recognizing that the US will still apply OPA 90 and that the two schemes are close but not identical, will also continue to include OPA 90 provisions in certain instances.

OPA 90 phase out provisions will continue to be applied to the following existing tankers:

- Canadian tankers on domestic trade or only trading to the U.S.
- U.S. tankers trading only to Canada or in transit through waters under Canadian jurisdiction
- Canadian tankers that are less than 5000 DWT, except tankers over 600 DWT on international trade carrying heavy grade oil as cargo
- non-Canadian tankers on the coasting trade
- non-Canadian tankers on international trade calling at Canadian ports that are less than 5000 DWT, except tankers over 600 DWT carrying heavy grade oil as cargo

MARPOL Annex I phase out provisions will be applied to other existing tankers:

- Canadian tankers over 5000 DWT requiring international certification
- non-Canadian tankers over 5000 DWT on international trade in waters under Canadian jurisdiction
- tankers over 600 DWT on international trade carrying heavy grade oil as cargo

In 2007, the *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals* amalgamated several regulations under the *Canada Shipping Act*, including the *Oil Pollution Prevention Regulations*. Rather than incorporating the provisions of TP 11710 by reference, as was done in section 14.2 of the *Oil Pollution Prevention Regulations*, the *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals* included the requirements for double hulling in the regulation itself in sections 54 to 57. The *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals* also include the double hulling requirements for non-propelled oil barges, as required under TP 11960, Standards and Guidelines for the Construction, Inspection and Operation of Barges that Carry Oil in Bulk. The Standards for the Double Hull Construction of Oil Tankers may be used as a companion document to the Regulations and should not be seen as adding to or detracting from existing statutory or regulatory requirements that will prevail in the case of conflict with this Standard.

Annex I of MARPOL provides Administrations with the option to accept or deny several provisions regarding double hulling. Canada's decisions regarding these have been incorporated into the *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals*, and may be summarized as follows:

- Regulation 19.5 of Annex I allows alternate designs to double hulls to be used – Canada has accepted this as noted in paragraph 54(2)(a) of the Regulations
- Regulation 20.8.2.1 of Annex I allows Parties to deny entry to tankers after 2015 even if they have been granted an extension to operate after that date by their own Administration under Regulation 20.5 – Canada has chosen to deny entry to such tankers after 2015 as noted in subsection 54(9) of the Regulations, but under subsection 54(8) they would be allowed entry up to 2015
- Regulation 20.8.2.2 of Annex I allows Parties to deny entry to tankers even if they have been granted an extension to operate after their phase-out date by their own Administration under Regulation 20.7 – Canada has chosen to allow entry to such tankers as noted in subsection 54(8) of the Regulations
- Regulation 21.7.1 of Annex I allows Parties to exempt tankers carrying heavy grade oil from the requirement to be double hulled immediately if they operate only domestically – Canada has chosen to exempt all such tankers from this requirement as noted in paragraph 56(3)(a) of the Regulations, but they would still be subject to the requirements of section 57 of the Regulations
- Regulation 21.8.2 of Annex I allows Parties to deny entry to tankers or deny them to transfer oil in their waters even if they have been granted an extension to operate after their phase-out date by their own Administration under Regulation 21.5 or 21.6 – Canada has chosen to allow entry to such tankers as noted in subsection 56(10) of the Regulations.

Section 36 of the *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals* specifies that non-Canadian tankers must carry international certification. Canadian tankers must carry either Canadian certification, if they operate exclusively in waters under Canadian jurisdiction, or international certification if they operate outside these waters; in many cases Canadian tankers carry both certificates. Canadian Oil Pollution Prevention Certificates (COPP) will reflect the OPA 90 phase out dates whereas International Oil Pollution Prevention Certificates (IOPP) issued to Canadian tankers will reflect the MARPOL Annex I phase out dates. Vessel operators would not be prohibited from changing the service of a tanker in order to take advantage of any delayed phase out under either the OPA 90 or MARPOL regimes, but tankers would be required to meet all other applicable requirements. In particular, a Canadian domestic tanker with a COPP Certificate would be expected to meet all applicable international safety requirements to operate as a foreign-going vessel before being issued an IOPP Certificate.

All resolutions produced by the International Maritime Organization that are mentioned in this Standard are available in English on the IMO's website at http://www.imo.org/ by selecting 'Information Resources', then 'Index of IMO Resolutions' then selecting the appropriate Committee (copies in French may be obtained from MaritimeKnowledgeCentre@imo.org on an ad hoc basis, provided that they are not sales items). The lists may also used to determine if further amendments have been made to any IMO documents – this version of this Standard reflects all amendments up to and including the 58th meeting of the Marine Environment Protection Committee in October 2008 (MEPC 58).

PART I - GENERAL

1. SHORT TITLE

1.1 These Standards may be cited as the Oil Tanker Double Hull Construction Standards.

2. INTERPRETATION

2.1 In these Standards,

"Act" means the Canada Shipping Act, 2001;

"Administration" means with respect to non-Canadian vessels, the Government of the State under whose authority the vessel is operating and non-governmental organizations which are authorized to act on the Government's behalf;

"Annex I of MARPOL" means the Regulations for the Prevention of Pollution by Oil contained in Annex I to MARPOL adopted by the Marine Environment Protection Committee by resolution MEPC.117(52) as amended by resolution MEPC.141(54);

"breadth" (B) means the maximum breadth of the vessel, measured amidships to the moulded line of the frame in a vessel with a metal shell and to the outer surface of the hull in a vessel with a shell of any other material;

"Board" means the Marine Technical Review Board established under section 26 of the Act;

"Canadian waters" includes the territorial sea of Canada and the internal waters of Canada;

"Category 1 oil tanker" has the same meaning as in subsection 55(1) of the Regulations and regulation 20.3.1 of Annex I to MARPOL where it is defined to mean an oil tanker of 20,000 tonnes deadweight and above carrying crude oil, fuel oil, heavy diesel oil or lubricating oil as cargo, and of 30,000 tonnes deadweight and above carrying oil other than the above, which does not comply with the requirements for oil tankers delivered after 1 June 1982 as defined in regulation 1.28.4 of Annex I;

"Category 2 oil tanker" has the same meaning as in subsection 55(1) of the Regulations and regulation 20.3.2 of Annex I to MARPOL where it is defined to mean an oil tanker of 20,000 tonnes deadweight and above carrying crude oil, fuel oil, heavy diesel oil or lubricating oil as cargo, and of 30,000 tonnes deadweight and above carrying oil other than the above, which complies with the requirements for oil tankers delivered after 1 June 1982 as defined in regulation 1.28.4 of Annex I;

"Category 3 oil tanker" has the same meaning as in subsection 55(1) of the Regulations and regulation 20.3.3 of Annex I to MARPOL where it is defined to mean an oil tanker of 5,000 tonnes deadweight and above but less than that specified for a Category 1 or a Category 2 oil tanker;

"combination carrier" means a vessel designed to carry either oil or solid cargoes in bulk;

"crude oil" has the same meaning as in subsection 1(1) of the Regulations where it is defined to mean any liquid hydrocarbon mixture occurring naturally in the earth whether or not treated to render it suitable for transportation and includes:

1. crude oil from which certain distillate fractions may have been removed, and
2. crude oil to which certain distillate fractions may have been added;

"crude oil tanker" has the same meaning as in subsection 1(1) of the Regulations where it is defined to mean an oil tanker engaged in the trade of carrying crude oil;

"deadweight" (DWT) has the same meaning as in subsection 1(1) of the Regulations where it is defined to mean the difference in tonnes between the displacement of a vessel in water of a specific gravity of 1.025 at the load waterline corresponding to the assigned summer freeboard and the lightweight of the vessel;

"fishing zone" means a fishing zone prescribed pursuant to section 16 of the *Oceans Act*;

"fuel oil" means heavy distillates or residues from crude oil or blends of such materials intended for use as a fuel for the production of heat or power of a quality equivalent to the specification acceptable to the IMO (refer to the American Society for Testing and Material's Specification for Number Four Fuel Oil (Designation D396) or heavier);

"gross tonnage" has the same meaning as in section 2 of the *Canada Shipping Act, 2001*, where it is defined to mean the volume of a vessel as determined by a tonnage measurer or calculated in accordance with the regulations made under paragraph 77(*h*);

"heavy diesel oil" means diesel oil other than those distillates of which more than 50 per cent by volume distils at a temperature not exceeding 340ºC when tested by the method acceptable to the IMO (refer to the American Society for Testing and Material's Standard Test Method (Designation D86));

"heavy grade oil" has the same meaning as in subsection 56(1) of the Regulations and as in regulation 21.2 of Annex I to MARPOL, where it is defined to mean any of the following:

1. crude oils having a density at 15ºC higher than 900 kg/m^3;
2. oils, other than crude oils, having either a density at 15ºC higher than 900 kg/m^3 or a kinematic viscosity at 50ºC higher than 180 mm^2/s;
3. bitumen, tar and their emulsions;

"IMO" means International Maritime Organization;

"Lt" means the length in metres between the forward and after extremities of the cargo tanks;

"length"(L) means 96 per cent of the total length on a waterline at 85 per cent of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater; in vessels designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline;

"lightweight" has the same meaning as in subsection 1(1) of the Regulations where it is defined to mean the displacement of a vessel in tonnes without cargo, fuel, lubricating oil, ballast water, fresh water and feed water in tanks, consumable stores, or passengers and crew and their effects;

"major conversion" has the same meaning as in subsection 1(1) of the Regulations where it is defined to mean a conversion of an existing vessel:

1. that substantially alters the dimensions or carrying capacity of the vessel; or
2. that changes the type of the vessel; or
3. the intent of which is to substantially to prolong the life of the vessel; or
4. that alters the vessel such that it becomes subject to the provisions of the Regulations that would not be applicable to it otherwise;

"MARPOL" means the International Convention for the Prevention of Pollution by Ships, 1973, and the Protocols of 1978 and 1997 relating to the Convention, as amended from time to time;

"Minister" means the Minister of Transport and includes any Transport Canada marine safety inspector, person, classification society or other organization if they have been authorized by the Minister to perform any particular function mentioned in this Standard;

"oil" has the same meaning as in section 165 of the *Canada Shipping Act, 2001* where it is defined to mean petroleum in any form, including crude oil, fuel oil, sludge, oil refuse and refined products;

"oil fuel" has the same meaning as in regulation 1.4 of Annex I of MARPOL where it is defined to mean any oil used as fuel in connection with the propulsion and auxiliary machinery of the vessel in which such oil is carried;

"oil tanker" means a self-propelled vessel that is constructed or adapted primarily to carry oil in bulk in its cargo spaces, and includes a combination carrier, an NLS tanker as defined in Annex II of MARPOL or a gas

carrier that is carrying a cargo or part cargo of oil in bulk (note that in the Regulations an oil tanker includes both self-propelled and non-self-propelled vessels);

"oil tanker delivered after 1 June 1982" has the same meaning as in regulation 1.28.4 of Annex I where it is defined to mean an oil tanker:

1. for which the building contract is placed after 1 June 1979; or
2. in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction after 1 January 1980; or
3. the delivery of which is after 1 June 1982; or
4. which has undergone a major conversion:
    1. for which the contract is placed after 1 June 1979; or
    2. in the absence of a contract, the construction work of which is begun after 1 January 1980; or
    3. which is completed after 1 June 1982;

"oil tanker delivered before 6 July 1996" means an oil tanker which is not an oil tanker delivered on or after 6 July 1996, as defined in regulation 1.28.5 of Annex I of MARPOL;

"oil tanker delivered on or after 6 July 1996" refers to an oil tanker mentioned in subsection 54(1) of the Regulations and has the same meaning as in regulation 1.28.6 of Annex I of MARPOL were it is defined to mean an oil tanker:

1. for which the building contract is placed on or after 6 July 1993, or
2. in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 6 January 1994, or
3. the delivery of which is on or after 6 July 1996, or
4. which has undergone a major conversion:
    1. for which the contract is placed on or after 6 July 1993; or
    2. in the absence of a contract, the construction work of which is begun on or after 6 January 1994; or
    3. which is completed on or after 6 July 1996;

"product carrier" has the same meaning as in subsection 1(1) of the Regulations where it is defined to mean an oil tanker engaged in the trade of carrying oil other than crude oil;

"Regulations" means the *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals*;

"segregated ballast" has the same meaning as in subsection 1(1) of the Regulations where it is defined to mean ballast water introduced into a tank that is completely separated from the cargo and oil fuel system and permanently allocated to the carriage of ballast or to the carriage of ballast or cargoes other than pollutants;

"tank" has the same meaning as in regulation 1.13 of Annex I of MARPOL were it is defined to mean an enclosed space which is formed by the permanent structure of a vessel and which is designed for the carriage of liquid in bulk;

"wing tank" has the same meaning as in regulation 1.14 of Annex I of MARPOL were it is defined to mean any tank adjacent to the side shell plating.

2.2 Unless specifically defined in subsection 2.1, all other words and expressions used in these Standards have the same meaning as in the *Canada Shipping Act, 2001* and the *Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals*.

3. APPLICATION

3.1 These Standards apply to:

1. all Canadian-registered oil tankers; and
2. all oil tankers registered in a country other than Canada, when operating in Canadian waters and the fishing zones of Canada.

3.2 These Standards do not apply in respect of any warship, naval auxiliary or other vessel that is owned or operated by a state and used in government non-commercial service.

4. RESPONSIBILITY

4.1 The owner and operator of every oil tanker shall ensure that the vessel complies with all the applicable provisions of these Standards, in addition to the applicable regulations under the *Canada Shipping Act, 2001* and the *Arctic Waters Pollution Prevention Act*.

5. EQUIVALENTS

5.1 Subject to subsection 5.2, where these Standards require that a particular fitting, material, appliance, apparatus, item of equipment or type thereof shall be fitted or carried on an oil tanker, or that any particular provision shall be made, or any procedure or arrangement shall be complied with, the Minister may allow any other fitting, material, appliance, apparatus, item of equipment or type thereof to be fitted or carried, or any other provision, procedure or arrangement to be made on the oil tanker, if the Minister is satisfied by trial thereof or otherwise that such fitting, material, appliance, apparatus, item of equipment or type thereof or that any particular provision, procedure or arrangement is at least as effective as that required by these Standards.

5.2 Approval of an equivalent arrangement may be revoked at any time if it is found that the chosen arrangement is not satisfactory.

PART II - DOUBLE HULL CONSTRUCTION REQUIREMENTS FOR NEW OIL TANKERS

6. APPLICATION

6.1 The requirements of this Part shall apply to oil tankers delivered on or after 6 July 1996.

6.2 This Part reflects the provisions of regulation 19 of Annex I of MARPOL.

7. REQUIREMENT TO BE DOUBLE HULLED OR HAVE ALTERNATE ARRANGEMENTS

7.1 Unless it is subject to the provisions of sections 9 or 10, every oil tanker delivered on or after 6 July 1996 shall comply with the requirements of section 8 and also comply, if applicable, with the requirements of section 11.

8. DIMENSIONS OF PROTECTIVE SPACES

8.1 The entire cargo tank length shall be protected by ballast tanks or spaces other than cargo and oil fuel tanks as follows:

Wing Tanks or Spaces

1. wing tanks or spaces shall extend either for the full depth of the vessel's side or from the top of the double bottom to the uppermost deck, disregarding a rounded gunwale where fitted, and arranged such that the cargo tanks are located inboard of the moulded line of the side shell plating, nowhere less than the distance ***w*** which, as shown in Figure 1, is measured at any cross-section at right angles to the side shell, specified as follows:

    1. vessels of 5,000 tonnes deadweight (DWT) and above

$$\boldsymbol{w} = 0.5 + \frac{DWT}{20\,000}(m),$$

    or 2.0 m whichever is the lesser, with a minimum value of ***w*** = 1.0 m;

    2. vessels of less than 5,000 tonnes deadweight (DWT)

$$\boldsymbol{w} = 0.4 + \frac{2.4 \times DWT}{20000}(m),$$

    with minimum value of ***w*** = 0.76 m;

Double Bottom Tanks or Spaces

2. at any cross-section the depth of each double bottom tank or space shall be such that the distance ***h*** between the bottom of the cargo tanks and the moulded line of the bottom shell plating measured at right angles to the bottom shell plating as shown in Figure 1 is not less than specified as follows:

    1. oil tankers of 5,000 tonnes deadweight (DWT) and above

    h = B/15 (m) or 2.0 m , whichever is the lesser,
    with a minimum value of ***h*** = 1.0 m ;

    2. oil tankers of less than 5,000 tonnes deadweight (DWT)

    h = B/15 (m), but in no case less than 0.76 m;

3. at the turn of the bilge area, or at locations without a clearly defined turn of the bilge, when the distances ***h*** and ***w*** are different,

1. for oil tankers of 5,000 tonnes deadweight and above, the distance ***w*** shall have preference at levels exceeding 1.5***h*** above the baseline as shown in Figure 1; and

2. for oil tankers of less than 5,000 tonnes deadweight, the cargo tank boundary line shall run not less than the distance ***h*** above and parallel to the line of the midship flat bottom as shown in Figure 2, and at levels greater than ***h*** above the line of the midship flat bottom, the cargo tanks shall be located not less than the distance ***w*** inboard of the moulded line of the side shell plating as shown in Figure 2.

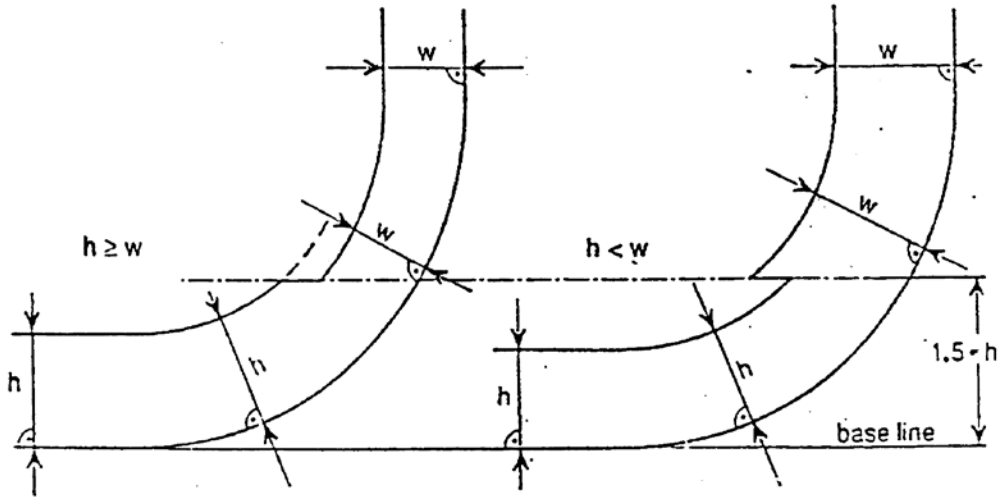

Figure 1 *Cargo tank boundary lines for the purpose of section 8*

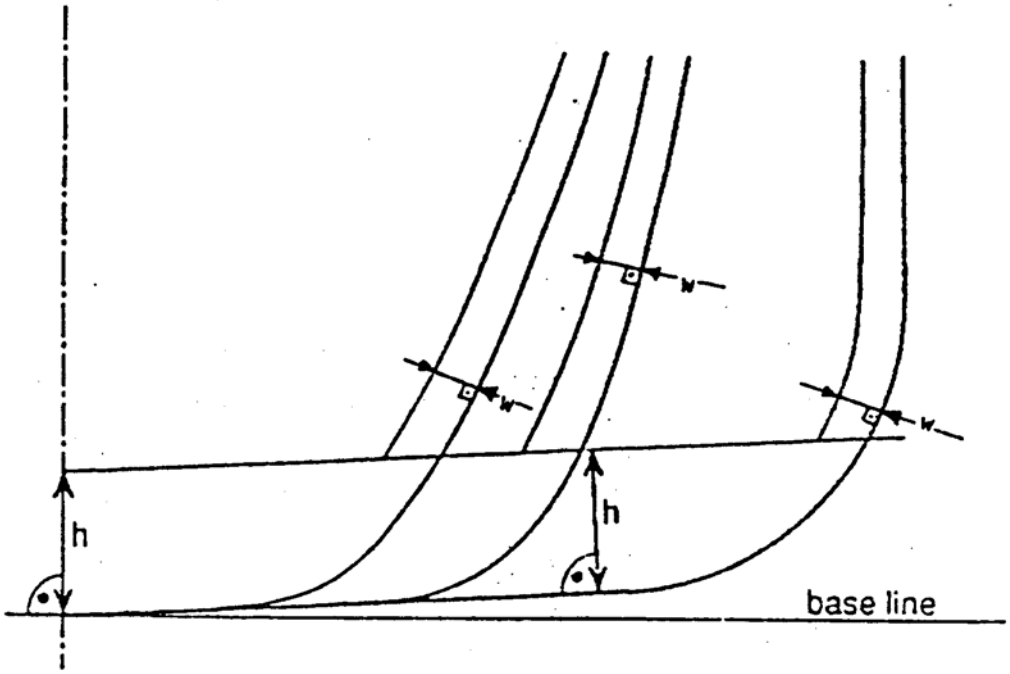

Figure 2 Cargo tank boundary lines within the turn of bilge for oil tankers under 5,000 tonnes DWT

8.2 On crude oil tankers of 20,000 tonnes deadweight and above and product carriers of 30,000 tonnes deadweight and above, the aggregate capacity of wing tanks, double bottom tanks, forepeak tanks and afterpeak tanks shall not be less than the capacity of segregated ballast tanks necessary to meet the requirements of Regulation 18 of Annex 1 of MARPOL, and wing tanks or spaces and double bottom tanks used to meet the requirements of Regulation 18 of Annex I of MARPOL shall be located as uniformly as practicable along the cargo tank length; additional segregated ballast capacity provided for reducing longitudinal hull girder bending stress, trim, etc., may be located anywhere within the vessel.

8.3 Suction wells in cargo tanks may protrude into the double bottom below the boundary line defined by the distance ***h*** provided that such wells are as small as practicable and the distance between the well bottom and bottom shell plating is not less than 0.5 ***h***.

8.4 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 exemptions may be granted for short lengths of piping, provided that they are completely welded or equivalent.

9. ALTERNATIVE ARRANGEMENTS FOR DOUBLE BOTTOM SPACES

9.1 Double bottom tanks or spaces as required by paragraph 8.1.2 may be dispensed with, provided that the design of the tanker is such that the cargo and vapour pressure exerted on the bottom shell plating forming a single boundary between the cargo and the sea does not exceed the external hydrostatic water pressure, as expressed by the following formula:

$$f \times h_c \times \rho_c \times g + p \leq d_n \times \rho_s \times g, \text{ where:}$$

h_c = height of cargo in contact with the bottom shell plating (metres)
ρ_c = maximum cargo density (kilograms per cubic metre, kg/m^3)
d_n = minimum operating draught under any expected loading condition (metres)
ρ_s = density of seawater (kilograms per cubic metre, kg/m^3)
p = maximum set pressure above atmospheric pressure (gauge pressure) of pressure/vacuum valve provided for the cargo tank (pascals, Pa)
f = safety factor = 1.1
g = standard acceleration due to gravity (9.81 metres per second squared, m/sec^2).

9.2 Any horizontal partition necessary to fulfil the above requirements shall be located at a height of not less than ***B***/6 or 6 m, whichever is the lesser, but not more than 0.6***D***, above the baseline where ***D*** is moulded depth amidships.

9.3 The location of wing tanks or spaces shall be as defined in paragraph 8.1.1 except that below a level 1.5 ***h*** above the baseline, where ***h*** is as defined in paragraph 8.1.2, the cargo tank boundary line may be vertical down to the bottom plating, as shown in Figure 3.

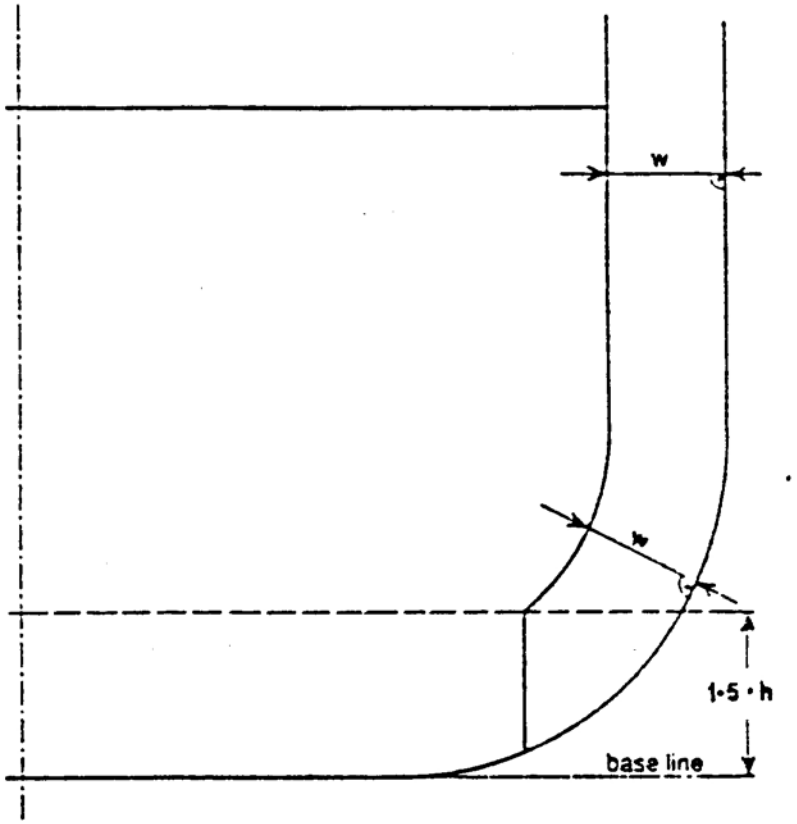

Figure 3 Cargo tank boundary lines for oil tankers adopting alternative arrangements for double bottom spaces (Section 9 refers)

10. ALTERNATIVE DESIGNS

10.1 Other methods of design and construction of oil tankers may also be accepted by the Minister as alternatives to the requirements prescribed in section 8, provided that such methods ensure at least the same level of protection against oil pollution in the event of collision or stranding and are approved in principle by the Marine Environment Protection Committee of the International Maritime Organization, based on guidelines developed by the Organization (resolution MEPC.110(49) as may be amended from time to time).

11. ASSUMPTIONS FOR BOTTOM RAKING DAMAGE

11.1 For oil tankers of 20,000 tonnes deadweight and above the damage assumptions prescribed in Regulation 28.2.2 of Annex I of MARPOL shall be supplemented by the following assumed bottom raking damage:

1. longitudinal extent shall be:
    1. for vessels of 75,000 tonnes deadweight and above, 0.6*L* measured from the forward perpendicular, and
    2. for vessels of less than 75,000 tonnes deadweight, 0.4*L* measured from the forward perpendicular;
2. transverse extent shall be *B*/3 anywhere in the bottom; and
3. vertical extent shall only include breach of the outer hull.

12. CARGO LOCATION RELATIVE TO COLLISION BULKHEAD

12.1 Oil shall not be carried in any space extending forward of a collision bulkhead located in accordance with regulation II-1/11 of the *International Convention for the Safety of Life at Sea, 1974*, as amended, and an oil tanker that is not required to have a collision bulkhead in accordance with that regulation shall not carry oil in any space extending forward of the transverse plane perpendicular to the centreline that is located as if it were a collision bulkhead located in accordance with that regulation.

13. GENERAL SAFETY ASPECTS

13.1 In approving the design and construction of oil tankers to be built in accordance with the provisions of these Standards, due regard shall be given to the general safety aspects including the need for the maintenance and inspections of wing and double bottom tanks or spaces (refer to IMO Resolution MSC.158(78)).

14. LIMITATION OF SIZE AND ARRANGEMENT OF CARGO TANKS

14.1 The length of each cargo tank shall not exceed 10 m or one of the following values for ℓ, whichever is the greater:

1. where no longitudinal bulkhead is provided inside the cargo tanks,

$$\ell = (0.5\frac{\boldsymbol{b}_i}{\boldsymbol{B}} + 0.1)\boldsymbol{L}$$, but ℓ is not to exceed 0.2**L**; or

2. where a centreline longitudinal bulkhead is provided inside the cargo tanks,

$$\ell = (0.25\frac{\boldsymbol{b}_i}{\boldsymbol{B}} + 0.15)\boldsymbol{L}$$; or

3. where two or more longitudinal bulkheads are provided inside the cargo tanks,
   1. for wing cargo tanks,

$$\ell = 0.2\boldsymbol{L}$$, and

   2. for centre cargo tanks,
      1. if $\frac{\boldsymbol{b}_i}{\boldsymbol{B}}$ is equal to or greater than one fifth,

then $\ell = 0.2\boldsymbol{L}$, or

      2. if $\frac{\boldsymbol{b}_i}{\boldsymbol{B}}$ is less than one fifth, then,

where no centreline longitudinal bulkhead is provided,

$$\ell = (0.5\frac{\boldsymbol{b}_i}{\boldsymbol{B}} + 0.1)\boldsymbol{L}$$; or

where a centreline longitudinal bulkhead is provided,

$$\ell = (0.25\frac{\boldsymbol{b}_i}{\boldsymbol{B}} + 0.15)\boldsymbol{L}$$

where:

"$\mathbf{b}_i$" means the minimum distance from the vessel's side to the outer longitudinal bulkhead of the tank in question measured inboard at right angles to the centreline at the level corresponding to the assigned summer freeboard;

"***B***" means "breadth" as defined in section 2; and

"***L***" means "length" as defined in section 2**.**

PART III - INTERNATIONAL REQUIREMENTS FOR EXISTING OIL TANKERS OF 5,000 TONNES DEADWEIGHT AND ABOVE AND FOR EXISTING OIL TANKERS OF 600 TONNES DEADWEIGHT AND ABOVE CARRYING HEAVY GRADE OIL AS CARGO

15. APPLICATION

15.1 The requirements of this Part shall

1. for the purposes of sections 16 and 17, apply to Category 1, Category 2 and Category 3 oil tankers delivered before 6 July 1996;
2. apply to Canadian oil tankers delivered before 6 July 1996 for the purposes of issuing an International Oil Pollution Prevention Certificate;
3. not apply to oil tankers delivered before 6 July 1996 to which Part IV of these Standards apply;
4. not apply to oil tanker delivered before 6 July 1996 complying with Part II of these Standards;
5. not apply to oil tanker delivered before 6 July 1996 covered by paragraph 15.1.1 above which comply with paragraphs 8 .1.1 and 8.1.2 or sections 9 or section 10 of this Standard (regulation 19.3.1 and 19.3.2 or 19.4 or 19.5of Annex I of MARPOL), except that the requirement for minimum distances between the cargo tank boundaries and the vessel side and bottom plating need not be met in all respects, provided that the side protection distances are not less than those specified in the International Bulk Chemical Code for type 2 cargo tank location (nowhere less than 760 mm from the shell plating) and the bottom protection distances at centerline shall comply with Regulation 18.15.2of Annex I of MARPOL (B/15 or 2 metres, whichever is the lesser); and
6. for the purposes of section 18, apply to oil tankers of 600 tonnes deadweight and above on international trade.

16. INSPECTION

16.1 An oil tanker to which this Part applies shall be subject to an enhanced programme of inspections during periodical, intermediate and annual surveys, the scope and frequency of which shall at least comply with the guidelines developed by the IMO (resolution A.744(18), as amended by resolution MSC.49(66), by resolution 2 of the 1997 Conference of Contracting Governments to SOLAS, by resolution MSC.105(73), by resolution MSC.125(75), by resolution MSC.144(77) and by resolution MSC.261(84) and as may be amended from time to time).

16.2 An oil tanker over five years of age to which this Part applies shall have on board a complete file of the survey reports, including the results of all scantling measurement required, as well as the statement of structural work carried out.

16.3 This file shall be accompanied by a condition evaluation report, containing conclusions on the structural condition of the vessel and its residual scantlings, endorsed to indicate that it has been accepted by the Minister or by or on behalf of the flag Administration if the tanker is of non-Canadian registry; this file and condition evaluation report shall be prepared in a standard format as contained in the guidelines developed by the IMO.

16.4 A Category 2 or 3 oil tanker of 15 years and over after the date of its delivery shall comply with the Condition Assessment Scheme adopted by the Marine Environment Protection Committee by resolution MEPC.94 (46), as amended by resolution MEPC.99(48), resolution MEPC.112(50), resolution MEPC.131(53) and resolution MEPC.155(55) and as may be amended from time to time.

16.5 The Board may allow continued operation of a Canadian Category 2 or 3 oil tanker beyond the date specified in section 17 of this Standard, if satisfactory results of the Condition Assessment Scheme warrant that, in the opinion of the Board, the vessel is fit to continue such operation, provided that the operation shall not go beyond the anniversary of the date of delivery of the vessel in 2015 or the date on which the vessel reaches 25 years after the date of its delivery, whichever is the earlier date.

16.6 A non-Canadian Category 2 or 3 oil tanker may operate in Canadian waters and the fishing zones of Canada until a date beyond the date specified in section 17 of this Standard (Regulation 20.4 of Annex I of MARPOL) if such continued operation has been allowed by or on behalf of its flag Administration under Regulation 20.7 of Annex I of MARPOL.

17. REQUIREMENTS FOR CATEGORY 1, CATEGORY 2 AND CATEGORY 3 OIL TANKERS

17.1 An oil tanker to which this Part applies shall comply with the requirements of Part II of this Standard (regulation 19 of Annex I of MARPOL) not later than 5 April 2005 or the anniversary of the date of delivery of the vessel on the date or in the year specified in the following table:

Category of oil tanker	**Year**
Category 1	All such tankers were required to meet Part II by 2005 at the latest
Category 2 and Category 3	All such tankers delivered in 1982 or earlier were required to meet Part II by 2008 at the latest 2009 for vessels delivered in 1983 2010 for vessels delivered in 1984 or later

17.2 Notwithstanding the provisions of subsection 17.1, in the case of a Canadian Category 2 or 3 oil tanker fitted with only double bottoms or double sides not used for the carriage of oil and extending to the entire cargo tank length or double hull spaces which are not used for the carriage of oil and extend to the entire cargo tank length, but does not fulfill conditions specified in paragraph 15.1.5 of this Standard, the Board may allow continued operation of such a vessel beyond the date specified in subsection 17.1, provided that:

1. the vessel was in service on 1 July 2001;
2. the Board is satisfied by verification of the official records that the vessel complied with the conditions specified above;
3. the conditions of the vessel specified above remain unchanged; and
4. such continued operation does not go beyond the date on which the vessel reaches the anniversary of the date of delivery of the vessel in 2015 or the date on which the vessel reaches 25 years after the date of its delivery, whichever is the earlier date.

17.3 Subject to subsection 17.4 of this Standard, a non-Canadian Category 2 or 3 oil tanker may operate in Canadian waters and the fishing zones of Canada until a date beyond the date specified in subsection 17.1 (Regulation 20.4 of Annex I of MARPOL) if such continued operation has been allowed by or on behalf of its flag Administration under Regulation 20.5 of Annex I of MARPOL.

17.4 A non-Canadian tanker operating in accordance with paragraph 20.5 of Annex I of MARPOL beyond the anniversary of the date of delivery of the vessel in 2015 shall be denied entry into ports or offshore terminals situated in Canadian waters and the fishing zones of Canada.

18. PREVENTION OF OIL POLLUTION FROM OIL TANKERS CARRYING HEAVY GRADE OIL AS CARGO

18.1 This section shall apply to oil tankers of 600 tonnes deadweight and above carrying heavy grade oil as cargo regardless of the date of delivery.

18.2 An oil tanker to which this section applies shall comply with the provisions of subsections 18.3 to 18.7 of this section in addition to complying with the applicable provisions of Part III of this Standard.

18.3 Subject to the provisions of subsections 18.4, 18.5, 18.6 and 18.7 of this section, an oil tanker to which this section applies shall:

1. if 5,000 tonnes deadweight and above, comply with the requirements of Part II of this Standard (regulation 19 of Annex I of MARPOL) ; or
2. if 600 tonnes deadweight and above but less than 5,000 tonnes deadweight, be fitted with both double bottom tanks or spaces complying with the provisions of subparagraphs 8.1.2.2 and 8.1.3.2 of this Standard (regulation 19.6.1 of Annex I of MARPOL), and wing tanks or spaces arranged in accordance with paragraph 8.1.1 of this Standard (regulation 19.3.1 of Annex I of MARPOL) and complying with the requirement for distance *w* as referred to in subparagraph 8.1.1.2 (regulation 19.6.2 of Annex I of MARPOL).

18.4 In the case of a Canadian oil tanker of 5,000 tonnes deadweight and above, carrying heavy grade oil as cargo fitted with only double bottoms or double sides not used for the carriage of oil and extending to the entire cargo tank length or double hull spaces which are not used for the carriage of oil and extend to the entire cargo tank length, but does not fulfill conditions for being exempted from the provisions of paragraph 15.1.5 (regulation 21.1.2 of Annex I of MARPOL), the Board may allow continued operation of such a vessel provided that:

1. the vessel was in service on 4 December 2003;
2. the Board is satisfied by verification of the official records that the vessel complied with the conditions specified above;
3. the conditions of the vessel specified above remain unchanged; and
4. such continued operation does not go beyond the date on which the vessel reaches 25 years after the date of its delivery.

18.5 The Board may allow continued operation of a Canadian oil tanker of 5,000 tonnes deadweight and above, carrying crude oil having a density at 15ºC higher than 900 kg/m3 but lower than 945 kg/m3 that does not meet the double hulling requirements of this section if satisfactory results of the Condition Assessment Scheme referred to in subsection 16.4 of this Standard (regulation 20.6 of Annex I of MARPOL) warrant that, in the opinion of the Board, the vessel is fit to continue such operation, having regard to the size, age, operational area and structural conditions of the vessel and provided that the operation shall not go beyond the date on which the vessel reaches 25 years after the date of its delivery.

18.6 The Board may allow continued operation of a Canadian oil tanker of 600 tonnes deadweight and above but less than 5,000 tonnes deadweight, carrying heavy grade oil as cargo that does not meet the double hulling requirements of this section if, in the opinion of the Board, the vessel is fit to continue such operation, having regard to the size, age, operational area and structural conditions of the vessel, provided that the operation shall not go beyond the date on which the vessel reaches 25 years after the date of its delivery.

18.7 A non-Canadian oil tanker may operate in Canadian waters and the fishing zones of Canada until a date allowed by or on behalf of its flag Administration under Regulations 21.5 or 21.6 of Annex I.

PART IV - DOMESTIC REQUIREMENTS FOR EXISTING OIL TANKERS

19. APPLICATION

19.1 The requirements of this Part shall

1. apply to Canadian oil tankers delivered before 6 July 1996 for the purpose of issuing a Canadian Oil Pollution Prevention Certificate;
2. apply to US registered oil tankers delivered before 6 July 1996 operating in Canadian waters and the fishing zones of Canada;
3. apply to oil tankers delivered before 6 July 1996 operating in the coasting trade as defined in the *Coasting Trade Act*;
4. apply to all oil tankers delivered before 6 July 1996 less than 5000 tonnes deadweight, except tankers on international trade of 600 tonnes deadweight and above carrying heavy grade oil as cargo; and
5. not apply to oil tankers delivered before 6 July 1996 complying with Part II of these Standards.

20. AGE OF A VESSEL

20.1 In this Part the age of the vessel is determined from the later of either :

1. the date on which the vessel was delivered after original construction, or
2. after completion of a major conversion, where such a conversion was completed before 6 July 1996.

21. CONSTRUCTION REQUIREMENTS FOR EXISTING OIL TANKERS OF LESS THAN 5,000 GROSS TONNAGE

21. An oil tanker of less than 5,000 gross tonnage, for which a building contract or contract for major conversion was placed before 6 July 1993 or that is delivered under that contract before 6 July 1996, may not operate after January 1, 2015, unless the vessel is equipped with a double hull or with a double containment system determined by the Minister to be as effective as a double hull for the prevention of a discharge of oil.

22. TIMETABLE FOR APPLICATION OF PART II REQUIREMENTS FOR EXISTING TANKERS 5,000 GROSS TONNAGE AND OVER

22.1 An oil tanker for which a building contract or contract for major conversion was placed before 6 July 1993 or that is delivered under that contract before 6 July 1996 shall comply with the requirements of Part II of these Standards

1. in the case of a vessel of at least 5,000 gross tonnage but less that 30,000 gross tonnage, when the vessel is 25 years old or older and has a single hull, or is 30 years old or older and has a double bottom or double sides; and
2. in the case of a vessel of at least 30,000 gross tonnage, when the vessel is 23 years old or older and has a single hull, or is 28 years old or older and has a double bottom or double sides.

23. TERMINAL DATES FOR EXISTING TANKERS TO COMPLY WITH PART II REQUIREMENTS

23.1 Except as provided in section 21 and paragraph 23.2, a vessel that has a single hull may not operate after January 1, 2010.

23.2 A vessel that has a double bottom or double sides may not operate after January 1, 2015.

24. DOUBLE SIDES OR DOUBLE BOTTOMS IN WAY OF CARGO COMPARTMENTS

24.1 For the purposes of Sections 22 and 23 double sides and double bottoms in way of the cargo compartment must be constructed in accordance with the requirements of Section 8.

25. INSPECTION

25.1 An oil tanker to which this Part applies shall be subject to an enhanced programme of inspections during periodical, intermediate and annual surveys, the scope and frequency of which shall at least comply with the guidelines developed by the IMO (resolution A.744(18), as amended by resolution MSC.49(66), by resolution 2 of the 1997 Conference of Contracting Governments to the *International Convention for the Safety of Life at Sea* (SOLAS), by resolution MSC.105(73), by resolution MSC.125(75), by resolution MSC.144(77) and by resolution MSC.261(84) and as may be amended from time to time).