(3) The requirements of paragraphs (1) and (2) of this regulation shall not apply to any ship which is engaged exclusively on voyages:-

(i) within special areas; or

(ii) within 12 miles of the nearest land outside special areas, if the ship is either in trade between ports or terminals within the Cayman Islands or on restricted voyages as determined by the Governor.

provided that in respect of both sub-paragraphs (i) and (ii) all of the following conditions are complied with:-

(a) the ship is fitted with a holding tank having a volume adequate, to the satisfaction of the Chief Marine Surveyor for the total retention on board of the oily bilge water;

(b) all oily bilge water is retained on board for subsequent discharge to reception facilities;

(c) the Chief Marine Surveyor has determined that adequate reception facilities are available to receive such oily bilge water;

(d) the IOPP or CIOPP Certificate is endorsed to the effect that the ship is exclusively engaged on the voyages specified in sub-paragraphs (i) or (ii) of this paragraph; and

(e) the quantity, time and port of the discharge are recorded in the Oil Record Book.

(4) Ships of less than 400 GT (other than an oil tanker) shall be equipped so far as practicable and reasonable, (in the case of Cayman Islands ships to the satisfaction of the Governor or such person as he may authorise for the purpose), with installations to ensure the storage of oil or oily mixtures on board and their discharge to reception facilities, or to ensure the discharge of such mixtures is in accordance with regulation 12.

CAYMAN ISLANDS

Supplement No. 2 published with Extraordinary Gazette of Friday 22nd July, 1988.

THE MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS, 1988

(4) No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purposes of circumventing the conditions of discharge prescribed by this regulation.

(5) Insofar as any oil or oily mixture has not been unloaded as cargo and may not be discharged into the sea in compliance with paragraph (2) of this regulation, it shall be retained on board and shall only be discharged into reception facilities.

Oil discharge monitoring and control system and oil-water separating and oil filtering equipment

14.-(1) Every ship of 400 GT and above but less than 10,000 GT to which these Regulations apply shall be fitted with oily-water separating equipment (100 ppm equipment) complying with paragraph (6) of this regulation. Any ship to which these Regulations apply which carries ballast water in its bunker fuel tanks shall comply with paragraph (2) of this regulation (notwithstanding that the ship is of less than 10,000 GT) or regulation 24(2).

(2) Every ship of 10,000 GT and above to which these Regulations apply shall be fitted with either:

(a) oily-water separating equipment (100 ppm equipment) complying with paragraph (6) of this regulation and with an oil discharge monitoring and control system complying with paragraph (5) of this regulation; or

(b) oil filtering equipment (15 ppm equipment) complying with paragraph (7) of this regulation.

(b) every other oil tanker when it is within the Cayman Islands or the territorial waters thereof.

(2) Subject to paragraph (3) of this regulation an oil tanker to which this regulation applies shall not discharge any oil or oily mixture (except those for which provision is made in regulation 12) into any part of the sea unless all the following conditions are satisfied:

(a) the tanker is not proceeding on a voyage;

(b) the tanker is not within a special area;

(c) the tanker is more than 50 miles from the nearest land;

(d) the instantaneous rate of discharge of oil content does not exceed 60 litres per mile;

(e) the total quantity of oil discharge into the sea does not exceed 1/30,000 of the total quantity of the particular cargo of which the residue formed a part, or, in the case of existing tankers, the total quantity of oil discharged does not exceed 1/15,000 of the total quantity of the particular cargo of which the residue formed a part; and

(f) the tanker has in operation an oil discharge monitoring and control system and a slop tank arrangement as required by regulation 15.

(3) The provisions of paragraph (2) of this regulation shall not apply to the discharge of clean or segregated ballast or unprocessed oily mixture which without dilution has an oil content not exceeding 15ppm and which does not originate from cargo pump room bilges and is not mixed with oil cargo residues.

(6) **THE MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS 1988**

Made _ _ _ _ 1988

Coming into Operation 1988

ARRANGEMENT OF REGULATIONS

Part 4

REQUIREMENTS FOR THE SEGREGATION OF CARGO OIL AND BALLAST WATER

Part 5

REQUIREMENTS FOR MINIMISING OIL POLLUTION FROM OIL TANKERS DUE TO SIDE AND BOTTOM DAMAGE

Part 6

OFFSHORE INSTALLATIONS

Part 7

POWER TO INSPECT, DENY ENTRY, DETENTION AND PENALTIES

the mixture; and

(e) the ship has in operation an oil discharge monitoring and control system, oily-water separating equipment, oil filtering system or other installation as required by regulation 14.

(3) The provisions of paragraph (2) of this regulation shall not apply to the discharge of processed oily mixture, provided that all of the following conditions are satisfied:-

(a) the oily mixture does not originate from cargo pump room bilges;

(b) the oily mixture is not mixed with oil cargo residues;

(c) the oil content of the effluent without dilution does not exceed 15 ppm; and

(d) the ship has in operation oil filtering equipment complying with regulation 14(7).

(4) No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purpose of circumventing the conditions of discharge prescribed by this regulation.

(5) Insofar as any oil or oily mixture has not been unloaded as cargo and may not be discharged into the sea in compliance with paragraph (2) or (3) of this regulation, it shall be retained on board and shall only be discharged into reception facilities.

Oil tankers

13.-(1) Subject to regulation 11 this regulation applies to:

(a) every Cayman Islands oil tanker; and

would probably result; or

(c) any approved discharge into the sea of substances containing oil, when being used for the purpose of combating specific pollution incidents in order to minimise the damage from pollution. Any such discharge shall be subject to the approval of any Government in whose jurisdiction it is contemplated the discharge will occur.

Ships other than oil tankers and machinery space bilges of oil tankers

12.-(1) Subject to regulation 11 this regulation applies to:

(a) (i) Cayman Islands ships other than oil tankers; and

(ii) Cayman Islands oil tankers in relation to discharges from their machinery space bilges (unless mixed with oil cargo residue) but excluding cargo pump room bilges, wherever they may be and to:

(b) (i) other ships other than oil tankers; and

(ii) other oil tankers in relation to discharges from their machinery space bilges (unless mixed with oil cargo residue) but excluding cargo pump room bilges; when they are within the Cayman Islands or the territorial waters thereof.

(2) Subject to paragraph (3) of this regulation a ship to which this regulation applies shall not discharge oil or oily mixture into any part of the sea unless all the following conditions are satisfied:

(a) the ship is proceeding on a voyage;

(b) the ship is not within a special area;

(c) the ship is more than 12 miles from the nearest land;

(d) the oil content of the discharge is less than 100 ppm parts of

SCHEDULES

The Governor in Council, after consultation with the Secretary of State for Transport of the United Kingdom, in exercise of the powers conferred on him by section 59 of the Merchant Shipping (Applicable Conventions) Law 1987 and of all other powers enabling him in that behalf, hereby makes the following Regulations:

PART 1 - GENERAL

Citation, commencement and interpretation

1.-(1) These Regulations may be cited as the Merchant Shipping (Prevention of Oil Pollution) (Cayman Islands) Regulations 1988 and shall come into operation in accordance with the provisions of the Merchant Shipping (Control of Pollution)(Cayman Islands) (Commencement) Regulations 1988.

(2) In these Regulations, except where the context otherwise requires:

"amidships" means at the middle of the length (L);

"Annex I" means Annex I to the Convention (which sets out regulations for the prevention of pollution by oil);

"anniversary date" means the date in each year corresponding to the date of expiry of IOPP Certificate;

"approved" means approved by the Chief Marine surveyor or the Secretary of State for Transport of the United Kingdom and any approval given in respect of any matter referred to in these Regulations by the Secretary of State for Transport of the United Kingdom shall be deemed to be any approval given by the Government of the Cayman Islands;

(6) A person authorised by the Certifying Authority may inspect the Oil Record Book on Board any ship whilst the ship is in a port or off shore terminal and may make a copy of any entry in that book and may require the master of the ship to certify that the copy is a true copy of such entry. Any copy so made which has been certified by the master of the ship as a true copy of an entry in the ship's Oil Record Book shall be admissible in any judicial proceedings as evidence of the facts stated in the entry. The inspection of an Oil Record Book and the taking of a certified copy by the competent authority, or an authorised person, under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

PART 3-REQUIREMENTS FOR CONTROL OF OPERATIONAL POLLUTION-CONTROL OF DISCHARGE OF OIL

General exceptions

11. The provisions of regulations 12, 13 and 16 shall not apply to:

(a) any discharge into the sea of oil or oily mixture which is necessary for the purpose of securing the safety of a ship or saving life at sea; or

(b) any discharge into the sea of oil or oily mixture which results from damage to a ship or its equipment:

(i) provided that all reasonable precautions were taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimising the discharge; and

(ii) unless the owner or the master acted either with intent to cause damage, or recklessly and with knowledge that damage

tanks;

(v) cleaning of cargo tanks including crude oil washing;

(vi) discharge of ballast except from segregated ballast tanks;

(vii) discharge of water from slop tanks;

(viii) closing of all applicable valves or similar devices after slop tank discharge operations;

(ix) closing of valves necessary for the isolation of dedicated clean ballast tanks from cargo and stripping lines after slop tank discharge operations;

(x) disposal of residues.

(3) In the event of such discharge of oil or oily mixture as is referred to in regulation 11 or in the event of an accidental or other exceptional discharge of oil not excepted by that regulation, a statement shall be made in the Oil Record Book of the circumstances of, and the reasons for, the discharge.

(4) Each operation described in paragraph (2) of this regulation shall be fully recorded without delay in the Oil Record Book so that all entries in the book appropriate to that operation are completed. Each completed operation shall be signed by the officer or officers in charge of the operations concerned and each completed page shall be signed by the master.

(5) The Oil Record Book shall be kept in such a place as to be readily available for inspection at all reasonable times and, except in the case of unmanned ships under tow, shall be kept on board. It shall be preserved for a period of three years after the last entry has been made.

"area" in relation to a ship shall be calculated in all cases to moulded lines;

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

"CIOPP Certificate" means the Cayman Islands Oil Pollution Prevention Certificate;

"Cayman Islands ship" means a ship which is registered in the Cayman Islands or a ship which is not registered under the law of any country but is wholly owned by persons each of whom is a citizen of the Cayman Islands or a body corporate which is established under the law of the Cayman Islands and has its principal place of business in a part of the Cayman Islands;

"centre tank" means any tank inboard of a longitudinal bulkhead;

"Certifying Authority" means the Chief Marine Surveyor or any person authorised by the Chief Marine Surveyor and includes in particular (if so authorised) Lloyd's Register of Shipping, the British Committee of the Bureau Veritas, the British Committee of Det norske Veritas, the British Committee of Germanischer Lloyd, and the British Technical Committee of the American Bureau of Shipping;

"chemical tanker" means a ship constructed or adapted primarily to carry a cargo of noxious liquid substances in bulk and includes an oil tanker when carrying a cargo or part cargo of noxious liquid substances in bulk;

"Chief Marine Surveyor" means the Chief Marine Surveyor appointed by the Governor under the Merchant Shipping (Applicable Conventions) Law 1987 or any person duly appointed by the Chief Marine Surveyor to act on his behalf;

"clean ballast" means the ballast in a tank which, since oil was last carried therein, has been so cleaned that the effluent therefrom, if it were discharged from a ship which is stationary into clean calm water on a clear day would not produce visible traces of oil on the surface of the water or on adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines. If the ballast is discharged through an approved oil discharge monitoring and control system, evidence based on such a system to the effect that the oil content of the effluent did not exceed 15 ppm shall be determinative that the ballast was clean, notwithstanding the presence of visible traces;

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

"the Convention" means the International Convention for the Prevention of Pollution from Ships 1973, including its protocols, Annex I (but no other Annex) and appendices thereto, as amended by the Protocol of 1978 to that Convention;

"Convention Country" means a country which is a Party to the Convention;

"crude oil" means any liquid hydrocarbon mixture occurring naturally in the earth, whether or not treated to render it suitable for transportation, and includes:

(a) crude oil from which certain distillate fractions may have been removed; and

(b) crude oil to which certain distillate fractions may have been added;

"crude oil tanker" means an oil tanker engaged in the trade of carrying crude oil;

"deadweight" (DW) means the difference in metric tons between the

leave the port for the purpose of proceeding to the nearest appropriate repair yard available without presenting an unreasonable threat of harm to the marine environment.

Oil Record Book

10.-(1) Every ship to which these Regulations apply of 400 GT and above, other than an oil tanker, and every oil tanker of 150 GT and above shall be provided with an Oil Record Book Part I (Machinery Space Operations). Every oil tanker of 150 GT and above shall also be provided with an Oil Record Book Part II (Cargo/Ballast Operations). The Oil Record Book, whether it forms part of the ship's official log book or engine room log book or otherwise, shall be in the form set out in Schedule 2, hereto.

(2) The Oil Record Book shall be completed on each occasion, on a tank-to tank basis if appropriate, whenever any of the following operations take place in the ship:

(a) for machinery space operations (all ships):

(i) ballasting or cleaning of oil fuel tanks;

(ii) discharge of ballast or cleaning water from oil fuel tanks which have been ballasted or cleaned;

(iii) disposal of oily residues (sludge);

(iv) discharge overboard of bilge water which has accumulated in machinery spaces;

(b) for cargo/ballast operation (oil tankers):

(i) loading of oil cargo;

(ii) internal transfer of oil cargo during voyage;

(iii) unloading of oil cargo;

(iv) ballasting of cargo tanks and dedicated clean ballast

owner shall on receipt of notice of suspension deliver up the duplicate certificate to the Chief Marine Surveyor.

(4) When the Certifying Authority is satisfied that the corrective action has been taken it shall notify the Chief Marine Surveyor. The Chief Marine Surveyor shall thereupon, in any case where the validity of the Certificate has been suspended;

(a) restore the validity of the Certificate;

(b) give notice thereof to the Certifying Authority and the owner; and

(c) return the duplicate Certificate to the owner.

The Certifying Authority shall return the Certificate issued in relation to the ship to the master.

(5) Where the ship is in a port of a country (other than the Cayman Islands) which is a party to the Convention and corrective action in accordance with paragraph (2) of this regulation has not been taken, the Certifying Authority shall in addition immediately notify the appropriate authorities of the country in which the port is situated.

(6) Where, in the case of a ship of a country (other than the Cayman Islands) which is a party to the Convention which is for the time being in a Cayman Islands port, the nominated surveyor or the recognised organisation responsible for issuing an IOPP Certificate to the ship determines that it is necessary to withdraw the certificate, a report shall, unless made by the nominated surveyor or recognised organisation, be made by the master of the ship to the Chief Marine Surveyor. The Chief Marine surveyor may then take such steps as will ensure that the ship shall not sail until it can proceed to sea or

displacement of a ship in water of a specific gravity of 1.025 at the load waterline corresponding to the assigned summer freeboard and the lightweight of the ship;

"discharge", in relation to harmful substances or effluents containing such substances, means any release, howsoever caused, from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying; but does not include:

(a) dumping within the meaning of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter signed in London on 13 November 1972; or

(b) release of harmful substances directly arising from the exploration, exploitation and associated off-shore processing of sea-bed mineral resources; or

(c) release of harmful substances for purposes of legitimate scientific research into pollution abatement or control;

and "to discharge" shall be constructed accordingly;

"existing ship", without prejudice to regulation 17(2), means a ship which is not a new ship;

"filtering equipment" means filters or any combination of separators and filters which are designed to produce effluent containing not more than 15 ppm of oil;

"forward and after perpendiculars" shall be taken at the forward and after ends of the length (L). The forward perpendicular shall coincide with the foreside of the stem on the waterline on which the length is measured;

"Government ship" has the same meaning as in section 80(3) of the Merchant Shipping Act 1906;

"Governor" means Governor in Council;

"GT" means gross tonnage and a reference to GT:

(a) in relation to a ship having alternative gross tonnages under paragraph 13 of schedule 4 of the Merchant Shipping (Tonnage) Regulations 1988 is a reference to the larger of those tonnages; and

(b) in relation to a ship having its tonnage determined both under Part II and regulation 20 of those Regulations is a reference to gross tonnage as determined under regulation 20 of those Regulations;

"harmful substance" means any substance which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea, and includes oil;

"instantaneous rate of discharge of oil content" means the rate of discharge of oil in litres per hour at any instant divided by the speed of the ship in knots at the same instant;

"IOPP Certificate" means International Oil Pollution Prevention Certificate;

"length" (L) means 96 percent of the total length on a waterline at 85 percent 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 ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline. The length (L) shall be measured in metres;

"lightweight" means the displacement of a ship in metric tons without cargo, fuel, lubricating oil, ballast water, fresh water and feed water in tanks, consumable stores, and passengers and crew and their effects;

"major conversion" means a conversion of an existing ship:

an unreasonable threat of harm to the marine environment. Without prejudice to any other action he may take, the Chief Marine Surveyor may request the authority responsible for issuing an IOPP Certificate to the ship to carry out such surveys and inspections as he may consider to be necessary to establish that the condition of the ship is such that it can proceed to sea without presenting an unreasonable threat of harm to the marine environment.

Procedure to be adopted when corrective action is necessary

9.-(1) In any case where the Certifying Authority determines that the condition of a Cayman Islands ship or its equipment does not correspond with the particulars of the IOPP or CIOPP Certificate or is such that the ship is not fit to proceed to sea without presenting an unreasonable threat of harm to the marine environment, the Certifying Authority shall advise the owner or master of the corrective action which in its opinion is required, and shall give notice thereof to the Chief Marine Surveyor.

(2) If such corrective action is not taken within such period (being a reasonable period) as the Certifying Authority may specify, the Certifying Authority shall, at the end of that time, immediately notify the Chief Marine Surveyor who may, on receipt of such notification, suspend the validity of the IOPP or CIOPP certificate issued in relation to the ship and shall give notice of any such suspension to the owner and to the Certifying Authority.

(3) The master shall thereupon deliver up the Certificate issued in relation to the ship to the Certifying Authority on demand and the

a surveyor is necessary and may in that event require such a survey to be carried out. If a ship is in a port of a country (other than the Cayman Islands) which is a party to the Convention the master or (if the master fails to do so) the owner shall, in addition, make such a report immediately to the appropriate authorities of the country in which the port is situated and the Chief Marine Surveyor shall ascertain that such a report has been made.

(4)(a) If an accident has occurred to or a defect has been discovered in or on any ship of a country (other than the Cayman Islands) and which is for the time being in a Cayman Islands port, and the accident or defect is such as to affect the integrity of the ship or the efficiency or completeness of its equipment, the owner or (if he fails to do so) the master shall make a report immediately to the Chief Marine Surveyor and where appropriate to the authority responsible for issuing an IOPP Certificate to the ship;

(b) The owner or (if he fails to do so) the master shall report the results of any investigation or survey initiated by the authority responsible for issuing the IOPP Certificate to the ship to the Chief Marine Surveyor who may detain the ship until such a report has been made.

(c) If within a reasonable period the Chief Marine Surveyor is not satisfied that a full and proper report has been made to the authority responsible for issuing an IOPP Certificate to the ship, or that the action taken is sufficient to restore the integrity of the ship or the efficiency or completeness of its equipment, he may take such steps as will ensure that the ship shall not sail until it can proceed to sea without presenting

(a) which substantially alters the dimensions or carrying capacity of the ship; or

(b) which changes the type of the ship; or

(c) the intent of which in the opinion of the Secretary of State is substantially to prolong its life; or

(d) which otherwise so alters the ship that, if it were a new ship, it would become subject to relevant provisions of the Protocol not applicable to it as an existing ship;

but conversion of an existing oil tanker of 20,000 tons deadweight and above to meet the requirements of regulation 18 of these Regulations shall not be deemed to constitute a major conversion;

"Merchant Shipping Notice" means a Notice described as such, issued by the United Kingdom Department of Transport and published by Her Majesty's Stationery Office, and any reference to a particular Merchant Shipping Notice includes a reference to that Notice as amended from time to time by a subsequent Notice;

"mile" means an international nautical mile that is to say a distance of 1,852 metres;

"nearest land": in relation to all land other than the part of Australia specified below, "from the nearest land" means from the nearest base-line from which the territorial sea of any territory is established in accordance with the Geneva Convention on the Territorial Sea and the Contiguous Zone 1958; and in relation to the part of the North-eastern coast of Australia which lies between the points 11 degrees 00'S , 142 degrees 08'E and 24 degrees 42'S, 153 degrees 15'E, "from the nearest land" means from the nearest of the straight lines joining consecutively the following points:

11 degrees 00'S, 142 degrees 08'E;

10 degrees 35'S, 141 degrees 55'E;

10 degrees 00'S, 142 degrees 00'E;
9 degrees 10'S, 143 degrees 52'E;
9 degrees 00'S, 144 degrees 30'E;
13 degrees 00'S, 144 degrees 00'E;
15 degrees 00'S, 146 degrees 00'E;
18 degrees 00'S, 147 degrees 00'E;
21 degrees 00'S, 153 degrees 00'E and
24 degrees 42'S, 153 degrees 15'E.;

"new ship", except as provided in regulation 17(1), means a ship:

(a) for which the building contract was placed after 31 December 1975; or

(b) in the absence of a building contract, the keel of which was laid or which was at a similar stage of construction after 30 June 1976; or

(c) the delivery of which is after 31 December 1979; or

(d) which has undergone a major conversion:

(i) for which the contract was placed after 31 December 1975; or

(ii) in the absence of a contract, the construction work of which was begun after 30 June 1976; or

(iii) which is or was completed after 31 December 1979;

"oil" means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products, other than petrochemicals specified in Merchant Shipping Notice No. 1077;

"oil fuel" means any oil used as fuel in connection with the propulsion and auxiliary machinery of the ship in which such oil is carried;

"oil tanker" means a ship constructed or adapted primarily to carry oil in bulk in its cargo spaces and includes a combination carrier or

or fittings;

(b) in the case of an IOPP Certificate, if the intermediate survey required by regulation 6 is not carried out within the period specified in that regulation; or

(c) if the ship transfers to the flag of another State.

(7) One copy of the appropriate Certificate shall be kept on board every Cayman Islands ship which is either an oil tanker of 150 GT or above or a ship of 400 GT or above, other than an oil tanker, and shall be available for inspection at all reasonable times.

Reponsibilities of owner and master

8.-(1) The owner and master of every ship to which these Regulations apply shall each ensure that the condition of the ship and its equipment is maintained so as to comply with the relevant provisions of these Regulations.

(2) After any survey of a Cayman Islands ship required by these Regulations has been completed, no material change shall be made in the structure, equipment, systems, fittings, arrangements or material subject to such survey without the approval of the Chief Marine Surveyor.

(3) Whenever an accident occurs to a Cayman Islands ship or a defect is discovered, either of which affects the integrity of a ship or the efficiency or completeness of its equipment, it shall be reported by the master or (if the master fails to do so) the owner at the earliest opportunity to the Chief Marine Surveyor or a proper officer, who may cause investigations to be initiated to determine whether a survey by

(2) The Chief Marine Surveyor may request the Government of another Party to the Convention to survey a Cayman Islands ship and, if they are satisfied that the provisions of Annex I to the Convention are complied with, they shall issue, or authorised the issue of, an IOPP Certificate in duplicate to the ship.

(3) A certificate so issued shall contain a statement to the effect that it has been issued at the request of the Chief Marine Surveyor and it shall have the same force and receive the same recognition as a Certificate issued under paragraph (1) of this regulation.

(4) The Chief Marine Surveyor may at the request of the Government of another Party to the Convention survey a ship registered in that State and entitled to fly the flag of that State as if it were a Cayman Islands ship, and, if satisfied that the provisions of Annex I to the Convention are complied with, shall issue an IOPP Certificate to that ship; a Certificate so issued shall contain a statement that it has been issued at the request of the Government in question.

(5) The appropriate Certificate shall be in one of the forms set out in Schedule 1 hereto and shall be expressed to be valid for a period not exceeding five years from the date of issue.

(6) A Certificate issued by the Chief Marine Surveyor shall cease to be valid:

(a) if without the approval of the Chief Marine Surveyor significant alterations have taken place in the construction, equipment, systems, fittings, arrangements or material required by the Regulations, other than the direct replacement of such equipment

a chemical tanker when it is carrying a cargo or part cargo of oil in bulk;

"oily mixture" means a mixture with any oil content;

"the Organisation" means the International Maritime Organisation;

"permeability" of a space means the ratio of the volume within that space which is assumed to be occupied by water to the total volume of that space;

"ppm" means parts per million;

"product carrier" means an oil tanker engaged in the trade of carrying oil other than crude oil;

"proper officer" means a consular officer appointed by Her Majesty's Government in the United Kingdom and, in relation to a port in a country outside the United Kingdom or the Cayman Islands which is not a foreign country, also any officer exercising in that port functions similar to those of a superintendent in the United Kingdom;

"sea" includes any estuary or arm of the sea;

"segregated ballast" means the ballast water introduced into a tank which is completely separated from the cargo oil and oil fuel system and which is permanently allocated to the carriage of ballast or to the carriage of ballast or cargoes other than oil or noxious liquid substances;

"separating equipment" means either separators or filters, or any combination of them, which are designed to produce effluent containing not more than 100 ppm of oil;

"ship" means a vessel of any type whatsoever operating in the marine environment including waters navigable by sea-going vessels and includes submersible craft, floating craft, and a structure which is a fixed or floating platform but excludes hovercraft;

"slop tank" means a tank specifically designed for the collection of

tank drainings, tank washings and other oily mixtures;

"special area" means a sea area where, for recognised technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic, the adoption of special mandatory methods for the prevention of sea pollution by oil is required, and shall include those areas listed in regulation 16;

"surveyor" means a surveyor appointed by a Certifying Authority;

"tank" means an enclosed space which is formed by the permanent structure of a ship and which is designed for the carriage of liquid in bulk;

"volume" in relation to a ship shall be calculated in all cases to moulded lines;

"wing tank" means any tank adjacent to the side shell plating.

(3) Any reference to Regulations made in the United Kingdom shall be references to such Regulations as they are applied in or extended to the Cayman Islands.

Applications and exemptions

2.-(1) Unless expressly provided otherwise, these Regulations apply to:

(a) Cayman Islands ships;

(b) other ships while they are within the Cayman Islands or the territorial waters thereof; and

(c) Government ships registered in the Cayman Islands and Government ships not so registered but held for the purposes of Her Majesty's Government in the Cayman Islands.

(2) These Regulations do not apply to any warship, naval auxiliary

surveyed by a surveyor.

(3) The surveyor shall survey the ship in accordance with the procedures specified by the Secretary of State for Transport of the United Kingdom in Merchant Shipping Notice M 1076 and satisfy himself:

(a) that such of the parts of the ship and its equipment specified in that Merchant Shipping Notice as are the subject of the application for survey are in good working order and fully comply with these regulations;

(b) that no material alterations have been made in the structure, equipment, systems, fittings, arrangements and material to which the IOPP Certificate relates without the approval of the Chief Marine Surveyor.

(4) On completion of the survey in accordance with the requirements of the preceding paragraph, the surveyor, where he is so satisfied, shall endorse the IOPP Certificate to that effect and forward a report to the Certifying Authority.

Issue and duration of Certificate

7.-(1) The Chief Marine Surveyor shall, on receipt of a declaration of survey under regulation 4(5) which relates to a Cayman Islands ship, issue to the ship the appropriate Certificate in duplicate which:

(a) in the case of an oil tanker of 150 GT and above and any other ship of 400 GT and above which is engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention, is an IOPP Certificate; and

(b) in the case of any other oil tanker of 150 GT and above and any other ship of 400 GT and above, is a CIOPP Certificate.

survey and any fee payable on such application cause the ship to be surveyed by a surveyor.

(3) The surveyor shall survey the ship in accordance with the procedures specified by the Secretary of State for Transport of the United Kingdom in Merchant Shipping Notice M 1076 and satisfy himself:

(a) that such of the parts of the ship and its equipment specified in that Merchant Shipping Notice as are the subject of the application for survey remain efficient and,

(b) that no material alterations have been made in the structure, equipment systems, fittings, arrangements and material to which the IOPP Certificate relates without the approval of the Chief Marine Surveyor.

(4) On completion of the survey in accordance with the requirements of the preceding paragraph the surveyor shall, where he is so satisfied, endorse the IOPP Certificate to that effect.

Intermediate Survey

6.-(1) The owner of every Cayman Islands ship in respect of which an IOPP Certificate has been issued shall so long as the Certificate remains in force cause the ship to be subject to an intermediate survey during the period of validity of the Certificate. This intermediate survey shall be held not earlier than six months before nor later than six months after the half-way date of the period of validity of the Certificate.

(2) A Certifying Authority shall upon receipt of an application for a survey and any fee payable on such application cause the ship to be

or other ship owned or operated by a State and used, for the time being, only on government non-commercial service.

(3) Any new type of ship whose constructional features are such as to render the application of any of the provisions of regulation 10 to 30 of these Regulations relating to construction and equipment unreasonable or impracticable may be exempted by the Chief Marine Surveyor from those provisions, provided that the construction and equipment of that ship provides equivalent protection against pollution by oil, having regard to the service for which it is intended. Particulars of any such exemption granted by the Chief Marine Surveyor shall be indicated in the IOPP or CIOPP Certificate referred to in regulation 7.

(4) In ships, other than oil tankers, fitted with cargo spaces which are constructed and used to carry oil in bulk of an aggregate capacity of 200 cubic metres or more, the requirements of regulations 10, 12, 13, 15(1), (2) and (3), 16, 24, 26 and 28(4) for oil tankers shall also apply to the construction and operation of these spaces, except that where such aggregate capacity is less than 1,000 cubic metres it shall be sufficient to comply with the requirements of regulation 15(4) as if they applied to the ship in lieu of those regulation 15(1), (2) and (3).

(5) The Chief Marine Surveyor may grant exemptions from all or any of the provisions of these Regulations (as may be specified in the exemption) for classes of cases or individual cases on such terms (if any) as he may so specify and may, subject to giving reasonable notice, alter or cancel any such exemption.

Equivalents

3. The Chief Marine Surveyor may permit any fitting, material, appliance or apparatus to be fitted in a ship as an alternative to that required by these Regulations if such fitting, material, appliance or apparatus is at least as effective as that required by these Regulations, but shall not permit the substitution of operational methods to control the discharge of oil as being equivalent to those design and construction features which are prescribed by these Regulations.

PART 2-SURVEYS, CERTIFICATES AND OIL RECORD BOOK

Surveys before issue of a Certificate

4.-(1) The owner of every Cayman Islands oil tanker of 150 GT and above and every other Cayman Islands ship of 400 GT and above, shall cause the same to be surveyed before the ship is put into service or before an IOPP Certificate or CIOPP Certificate in respect of the ship is issued for the first time, and thereafter at intervals not exceeding five years by a surveyor appointed by the governor. Any application for a survey shall be accompanied by calculations in accordance with part 5 of these regulations and such information relating to the ship as the chief marine surveyor may require for the purposes of the survey.

(2) the governor shall upon receipt of an application for survey and any fee payable on such application cause the ship to be surveyed by a surveyor.

(3) the surveyor shall survey the ship and satisfy himself that its

structure, equipment, systems, fittings, arrangements and material are in accordance with the requirements of these regulations and that the equipment and associated pump and piping systems, including oil discharge monitoring and control systems, crude oil washing systems, oily water separating equipment and oil filtering systems are in good working order.

(4) The initial and any renewal survey to be carried out under this regulation shall be in accordance with the procedures specified by the Secretary of State for Transport of the United Kingdom in Merchant Shipping Notice M 1076.

(5) The surveyor, if satisfied on the survey that he may properly do so, shall forward to the Chief Marine Surveyor a declaration of survey containing such particulars of the ship as are required by the Chief Marine Surveyor to enable him to issue the appropriate Certificate in respect of the ship.

Annual Survey

5.-(1) The owner of every Cayman Islands ship in respect of which an IOPP Certificate has been issued shall, so long as the certificate remains in force, cause the ship to be subject to an annual survey, which shall be carried out within three months before or after the anniversary date of the IOPP Certificate, provided that no annual survey shall be required when the intermediate survey pursuant to regulation 6 is carried out within three months before or after the anniversary date of the IOPP Certificate.

(2) A Certifying Authority shall upon receipt of an application for

0.2L

(2) if b_i/B is less than 1/5:

- where no centreline longitudinal bulkhead is provided:

$(0.5b_i/B + 0.1)$ L

- where a centreline longitudinal bulkhead is provided:

$(0.25b_i/B + 0.15)$ L

(5) In order not to exceed the volume limits established by paragraph (2), (3) and (4) of this regulation and irrespective of the type of cargo transfer system installed, when such a system inter-connects two or more cargo tanks, valves or other similar closing devices shall be provided for separating the tanks from each other. These valves or devices shall be closed when the tanker is at sea.

(6) Lines of piping which run through cargo tanks in a position less than t_c from the ship's side or less than v_s from the ship's bottom shall be fitted with valves or similar closing devices at the point at which they open into any cargo tank. These valves shall be kept closed at sea at any time when the tanks contain cargo oil, except that they may be opened for cargo transfer needed for the purpose of trimming of the ship.

Subdivision and stability

29.- (1) Every new oil tanker shall comply with the subdivision and damage stability criteria as specified in paragraph (3) of this regulation, after the assumed side or bottom damage as specified in paragraph (2) of this regulation, for any operating draught reflecting

(5) The oil discharge monitoring and control system referred to in paragraph (2)(a) of this regulation shall be of a design approved as being in accordance with the specification set out in Schedule 3 hereto. The system shall be fitted with a recording device to provide a continuous record of the oil content of the discharge of effluent or oily mixtures in ppm. This record shall be identifiable as to time and date and shall be kept for at least three years. The monitoring and control system shall come into operation when there is any discharge of effluent into the sea and shall be such as to ensure that any discharge of oily mixture is automatically stopped when the oil content of the effluent exceeds that permitted by regulation 12(2)(d). On any failure of the monitoring and control system the discharge shall be stopped and the failure shall be noted in the Oil Record Book. The defective unit shall be made operable before the ship commences its next voyage unless it is proceeding to a repair port. On existing ships, the system shall comply with all the requirements of this paragraph, except that the stopping of the discharge may be performed manually.

(6) The oily water separating equipment referred to in paragraph (1) and (2)(a) of this regulation shall be of a design approved as being in accordance with the specification set out in schedule 3 hereto and shall be such as to ensure that any oily mixture discharged into the sea after passing through the system shall have an oil content of not more than 100 ppm.

(7) The oil filtering equipment referred to in paragraph (2)(b) of this regulation shall be of design approved as being in accordance with the specification set out in schedule 3 hereto and shall be such

as to ensure that any oily mixture discharged into the sea after passing through the system shall have an oil content which does not exceed 15 ppm. It shall be provided with alarm arrangements in accordance with the specification in the Schedule to indicate when this level is not being maintained. Ships less than 10,000 GT, other than those carrying large quantities of oil fuel or those discharging bilge water under regulation 16(3)(b) which are provided with oil filtering equipment in lieu of oily-water separating equipment need comply only so far as practicable and reasonable with 15 ppm alarm arrangements.

(8) The oil filtering equipment referred to in paragraph (2)(b) of this regulation may include any combination of a separator, filter or coalescer or may consist of a single unit designed to produce an effluent with an oil content not exceeding 15 ppm. If the oil filtering equipment consists of a combination of oily-water separating equipment, approved as being in accordance with the specifications set out in schedule 3 hereto for an effluent of less than 100 ppm, and attached equipment, the attached equipment shall be of a design approved as being in accordance with the specifications set out in Merchant Shipping Notice M 1081.

Retention of oil on board

15.-(1) Subject to the provisions of paragraphs (5) and (6) of this regulation, oil tankers of 150 GT and above to which these regulations apply shall be provided with arrangements in accordance with the requirements of paragraphs (2) and (3) of this regulation.

(2)(a) Adequate means shall be provided for cleaning the cargo tanks

(2) Cargo tanks of oil tankers shall be of such size and arrangements that the hypothetical outflow O_c or O_s, calculated in accordance with the provisions of regulation 27(1)(b), anywhere in the length of the ship does not exceed 30,000 cubic metres or 400 ^{3} DW, whichever is the greater, but subject to a maximum of 40,000 cubic metres.

(3) The volume of any one wing cargo oil tank of an oil tanker shall not exceed 75 per cent of the limits of the hypothetical outflow O_c or O_s referred to in paragraph (2) of this regulation. The volume of any one centre cargo oil tank shall not exceed 50,000 cubic metres. However, in segregated ballast oil tankers as defined in regulation 18 of these Regulations the permitted volume of a wing cargo oil tank situated between two segregated ballast tanks, each exceeding l_c in length may be increased to the maximum limit of hypothetical oil outflow provided that the width of the wing tanks exceeds t_c.

(4) The length of each cargo tank shall not exceed 10 metres or one of the following values, whichever is the greater:

(a) where no longitudinal bulkhead is provided:

$$0.1L$$

(b) where a longitudinal bulkhead is provided at the centreline only:

$$0.15L$$

(c) where two or more longitudinal bulkheads are provided:

(i) for wing tanks:

$$0.2L$$

(ii) for centre tanks:

(1) if b_i/B is equal to or greater than 1/5:

may be assumed where a cargo transfer system is installed which has an emergency high suction in each cargo tank capable of transferring from a breached tank or tanks to segregated ballast tanks or to cargo tanks, if such tanks have sufficient ullage, and if the cargo transfer system complies with the following requirements:

(i) in two hours of operation it is capable of transferring oil equal to one half of the largest of the breached tanks involved;

(ii) the ballast or cargo tanks are available and capable of receiving such quantity; and

(iii) the pipes for such suction are installed at a height of not less than the vertical extent of the bottom damage v_s.

(b) Where those requirements are satisfied, the calculation of Os shall be in accordance with formula (III) set out in paragraph (4) of this regulation.

Limitation of size and arrangement of cargo tanks

28.-(1) Every new oil tanker shall comply with the provisions of this regulation. Every existing oil tanker shall comply with the provisions of this regulation if:

(a) it was delivered to its first owner after 1st January 1977; or

(b) it was delivered to its first owner on or before:

(i) 1st January 1977; and

(ii) the building contract for the tanker was placed after 1st January 1974, or in cases where there was no building contract the keel was laid or the tanker was at a similar stage of construction after 30th June 1974.

and transferring the dirty ballast residues and tank washings from the cargo tanks into a slop tank of an approved type. In existing oil tankers, any cargo tank may be designated as a slop tank.

(b) Arrangements shall be provided to transfer the oily waste into a slop tank or combination of slop tanks in such a way that any effluent discharges into the sea will be such as to comply with regulation 13.

(c) The slop tank or combination of slop tanks provided pursuant to subparagraph (b) above shall have sufficient capacity to retain the slops generated by tank washings, oil residues and dirty ballast residues; and that capacity shall be not less than 3 per cent of the cargo oil carrying capacity of the ship unless-

(i) segregated ballast tanks or dedicated clean ballast tanks are provided in accordance with regulation 18, or a cargo tank cleaning system using crude oil washing, in accordance with regulation 21, in either of which events the total capacity of the slop tank or tanks may be reduced to 2 per cent of the oil carrying capacity of the ship;

(ii) in the case of combination carriers, the oil cargo is carried in tanks with smooth walls, when the said total capacity may be reduced to 1 per cent of the oil carrying capacity of the ship:

Provided that, where the tank washing arrangements are such that, once the slop tank or tanks are charged with washing water, this water is sufficient for the tank washing and, where applicable, for providing the driving fluid for the pumps (including eductors) without the introduction of additional water into the system, the above figures of 3 per cent, 2 per

cent and 1 per cent may be reduced to 2 per cent and 1.5 per cent and 0.8 per cent respectively.

(d) Slop tanks shall be so designed, particularly as regards the position of inlets, outlets, baffles or weirs (where fitted) as to avoid excessive turbulence and entrainment of oil or emulsion with water.

(e) New oil tankers of 70,000 tons deadweight and above shall be provided with at least two slop tanks.

(3)(a) An oil discharge monitoring and control system of an approved design shall be fitted. It shall be designed and installed in compliance with the guidelines and specifications set out in Schedule 4 hereto.

(b) Any such system shall be fitted with a recording device to provide, unless otherwise required by Schedule 4, a continuous record of the discharge of oil in litres per mile and the total quantity of oil discharged, or in lieu of the total quantity of oil discharged, the oil content and rate of discharge of effluent. The record shall be identifiable as to the time and date and shall be kept for at least three years.

(c) The system shall be brought into operation when there is a discharge of effluent into the sea and shall be such as to ensure that any discharge of oily mixture is, unless otherwise permitted by Schedule 4, automatically stopped when the instantaneous rate of discharge of the oil exceeds 60 litres per mile.

(d) On any failure of the system the discharge shall be stopped and the failure shall be noted in the Oil Record Book. A manually operated alternative system shall be provided and may be used

above.

(b) Where the double bottom does not extend for the full length and width of the tank involved, the double bottom shall be considered nonexistent and the volume of the tanks above the area of the bottom damage shall be included in formula (II) set out in paragraph (1)(b) of this regulation even if the tank is not considered breached because of the installation of such a partial double bottom.

(c) Suction wells may be neglected in the determination of the value of h_i provided such wells are not excessive in area and extend below the tank in no case more than half the height of the double bottom. If the depth of such a well exceeds half the height of the double bottom, h shall be taken to be equal to the double bottom height minus the well height.

(d) Piping serving suction wells if installed within the double bottom shall be fitted with valves or other closing arrangements located at the point of connection to the tank served so as to prevent oil outflow in the event of damage to the piping. Such piping shall be installed as high from the bottom shell as possible. These valves shall be kept closed at sea whenever the tank contains oil cargo, except that they may be opened only to transfer cargo for trimming the ship.

(4) In the case where bottom damage simultaneously involves four centre tanks, the valve of O_s may be calculated according to the formula.

$$O_s = 1/4 \left(\sum Z_i W_i + \sum Z_i C_i \right) \qquad \text{(III)}$$

(5)(a) In the case of bottom damage, a reduced amount of oil outflow

side at right angles to the centreline at the level corresponding to the assigned summer freeboard.

h_i = minimum depth in metres of the double bottom under consideration; where no double bottom is fitted h shall be taken as equal to zero.

The symbols set out in this sub-paragraph shall have the meanings assigned to them, which shall apply for the purposes of this Part of these Regulations.

(2) Where a void space or segregated ballast tank of a length less than l_c as defined in paragraph (1)(a)(i) of this regulation is located between wing oil tanks, O_c in formula (I) set out in paragraph (1)(b) of this regulation may be calculated on the basis of volume W_i being the actual volume of one such tank (where they are of equal capacity) or the smaller of the two tanks (if they differ in capacity), adjacent to such space, multiplied by S as defined below and taking for all other wing tanks involved in such a collision the value of the actual full volume of those tanks.

$$S_i = 1 - l_i/l_c$$

where l_i = length in metres of void space or segregated ballast tank under consideration.

(3)(a) For the purpose of paragraph (1)(b) of this regulation account shall be taken of double bottom tanks which are either empty or carrying clean water only when cargo is carried in the tanks

in the event of such a failure, but the defective unit shall be made operable before the oil tanker commences its next ballast voyage, unless it is proceeding to a repair port.

(e) Effective oil/water interface detectors, of a design approved as being in accordance with the specifications set out in Schedule 5 hereto, shall be provided for the rapid and accurate determination of the oil/water interface in slop tanks and shall be available for use in other tanks where the separation of oil and water is effected and from which it is intended to discharge effluent direct to the sea.

(f) Approved instruction manuals on the operation and maintenance of the various items comprising the oil discharge monitoring and control system shall be provided. These manuals shall contain information on manual as well as automatic operations and shall be so drawn up as to ensure that at no time shall oil be discharged except in compliance with the conditions specified in regulation 13.

(4) The discharge of oil from oil tankers of less than 150 GT pursuant to regulation 13 shall be effected by the retention of the oil on board until subsequent discharge of all contaminated washings to reception facilities. The total quantity of oil and water used for washing and returned to a storage or slop tank shall be recorded in the Oil Record Book. This total quantity shall be discharged to reception facilities unless adequate arrangements are made to ensure that any effluent which is allowed to be discharged into the sea is effectively monitored to ensure that the provisions of regulation 13 are complied with.

(5)(a) Paragraphs (1), (2) and (3) of this regulation shall not apply to any oil tanker which is engaged exclusively on voyages both of 72 hours or less in duration and within 50 miles of the nearest land, provided that:-

(i) the oil tanker is engaged exclusively in trade between ports or terminals within the Cayman Islands;

(ii) the oil tanker retains on board all oily mixtures for subsequent discharge to reception facilities;

(iii) the Chief Marine Surveyor has determined that adequate facilities are available to receive such oily mixtures.

(b) The requirements of paragraph (3) of this regulation shall not apply to any oil tanker where:-

(i) the tanker is an existing oil tanker of 40,000 deadweight tons or above, as referred to in regulation 22(1) of these Regulations, engaged in specific trade, and the conditions specified in regulation 22(2) are complied with; or

(ii) the tanker is engaged exclusively on voyages:-

(aa) within special areas, or

(bb) within 50 miles from the nearest land outside special areas where the tanker is engaged in:

(A) trade between ports and terminals within the Cayman Islands; or

(B) restricted voyages as determined by the Governor of 72 hours or less in duration;

provided that in respect of all such tankers to which this sub-paragraph (b)(ii) applies, all of the following are complied with:

(AA) all oily mixtures are retained on board for subsequent discharge to reception facilities;

shall apply for the purposes of this Part of these Regulations.

(b) The hypothetical outflow of oil in the case of side damage (O_c) and bottom damage (O_s) shall be calculated by the following formulae with respect to compartments breached by damage at all conceivable locations along the length of the ship to the extent as described in paragraph (1)(a) of this regulation.

(i) for side damage:

$$O_c = \sum W_i + \sum K_i C_i \qquad (I)$$

(ii) for bottom damage:

$$O_s = 1/3 \left(\sum Z_i W_i + \sum Z_i C_i \right) \qquad (II)$$

where:

W_i = volume in cubic metres of a wing tank assumed to be breached by the damage as described in paragraph (1)(a) of this regulation. W for a segregated ballast tank may be taken as equal to zero.

C_i = volume in cubic metres of a centre tank assumed to be breached by the damage as described in paragraph (1)(a) of this regulation. C_i for a segregated ballast tank may be taken as equal to zero.

$K^i = 1 - b_i/t_i$ when b_i is equal to or greater than t_c, K_i shall be taken as equal to zero.

$Z_i = 1 - h_i/v_s$ when h is equal to or greater than v_s, Z_i shall be taken as equal to zero.

b_i = minimum width in metres of the wing tank under consideration, measured inboard from the ship's

27.-(1) For the purposes of this Part "side and bottom damage" and "hypothetical outflow of oil" shall have the following meanings:

(a) side and bottom damage shall be assumed to be damage having the dimensions described below caused to the side or bottom of the ship. In the case of bottom damage the dimensions to be assumed are those which relate to the position of damage, as described below.

(i) Side damage

Longitudinal extent (l_c):	$1/3\ L^{2/3}$ or 14.5 metres, whichever is less
Transverse extent (t_c): (inboard from the ship's side at right angles to the centreline at the level corresponding to the assigned summer freeboard)	B/5 or 11.5 metres, whichever is less
Vertical extent (v^c):	from the base line upwards without limit

(ii) Bottom damage

	Position of Damage	
	For 0.3L from the forward perpendicular of the ship	Any other part of the ship
Longitudinal extent (l_s):	L/10	L/10 or 5 metres, whichever is less
Transverse extent (t_s):	B/6 or 10 metres, whichever is less but not less than 5 metres	5 metres
Vertical extent from the base line(v_s):	B/15 or 6 metres, whichever is less	

The symbols in brackets in the first column of the above table shall have the meaning indicated in relation thereto, which

(BB) for voyages specified in sub-paragraph (b)(ii)(bb) of this paragraph, the Chief Marine Surveyor has determined that adequate reception facilities are available to receive such oily mixtures in those oil loading ports or terminals the tanker calls at;

(CC) the IOPP or CIOPP Certificate is endorsed to the effect that the ship is exclusively engaged in one or more of the categories of voyages specified in sub-paragraphs (b)(ii)(aa) and (b)(ii)(bb) of this paragraph; and

(DD) the quantity, time and port of the discharge are recorded in the Oil Record Book.

(6) Paragraphs (1), (2) and (3) of this regulation shall not apply to oil tankers carrying asphalt or other products subject to the provisions of these Regulations which, through their physical properties, inhibit effective product/water separation and monitoring: in such cases the control of discharge under regulation 13 shall be effected by the retention of residues on board and the discharge of all contaminated washings to reception facilities.

Methods for the prevention of oil pollution from ships operating in special area

16.-(1) For the purposes of these Regulations the special areas are the Mediterranean Sea area, the Baltic Sea area and the Black Sea area, defined as follows:-

(a) "the Mediterranean Sea area" means the Mediterranean Sea

including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41 degrees N parallel and bounded to the west by the Straits of Gibraltar at the meridian of 5 degrees 36'W;

(b) "the Baltic Sea area" means the Baltic sea with the Gulf of Bothnia, the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57 degrees 44.8'N; and

(c) "the Black Sea area" means the Black Sea with the boundary between the Mediterranean and the Black Sea constituted by the parallel 41 degrees N.

(2) Subject to the provisions of regulation 11:-

(a) any discharge into the sea of oil or oily mixture from any Cayman Islands oil tanker and any Cayman Islands ship of 400 GT and above other than on oil tanker shall be prohibited while in a special area;

(b) any discharge into the sea of oil or oily mixture from a Cayman Islands ship of less than 400 GT other than a Cayman Islands oil tanker shall be prohibited while in a special area, except when the oil content of the effluent without dilution does not exceed 15 ppm or alternatively when all the following conditions are satisfied:

(i) the ship is proceeding on a voyage;

(ii) the oil content of the effluent is less than 100 ppm parts of mixture; and

(iii) the discharge is made as far as practicable from the land, but in no case less than 12 nautical miles from the nearest land.

provided that the discharge of the ballast water is supervised with the aid of an oil content meter as provided for in regulation 20(3).

(d) Dirty ballast water or oil contaminated water from tanks in the cargo area of an oil tanker at sea, other than slop tanks, may be discharged by gravity below the waterline, provided that sufficient time has elapsed in order to allow oil/water separation to have taken place and the ballast water has been examined immediately before the discharge with an oil/water interface detector of the kind referred to in regulation 15(3)(e), in order to ensure that the height of the interface is such that the discharge does not involve any increased harm to the marine environment.

(e) Dirty ballast water or oil contaminated water from cargo tank areas of an existing oil tanker at sea may be discharged below the waterline, subsequent to or in lieu of discharge by the method referred to in sub-paragraph (d) of this paragraph, provided that:-

(i) a part of the flow of such water is led through permanent piping to a readily accessible location on the upper deck or above where it may be visually observed during the discharge operation; and

(ii) such part flow arrangements comply with the requirements of Schedule 8 hereto.

PART 5 - REQUIREMENTS FOR MINIMISING OIL POLLUTION FROM OIL TANKERS DUE TO SIDE AND BOTTOM DAMAGE

Interpretation of Part 5

pump drainings shall be capable of being discharged both ashore and to a cargo tank or a slop tank. For discharge ashore a special small diameter line shall be provided and connected outboard of the deck manifold valves, both port and starboard.

(5) Every existing crude oil tanker required to be provided with segregated ballast tanks, or to be fitted with a crude oil washing system, or to operate with dedicated clean ballast tanks shall comply with the provisions of paragraph (4)(b) of this regulation.

(6) Ballast water or oil contaminated water from the cargo tank areas of any oil tanker shall be discharged only above the waterline: provided that:

(a) segregated ballast and clean ballast may be discharged below the waterline:

(i) in ports or at offshore terminals, or

(ii) at sea by gravity, provided that the surface of the ballast water has been examined immediately before the discharge to ensure that no contamination with oil has taken place.

(b) Existing oil tankers which, without modification, are not capable of discharging segregated ballast above the waterline may discharge segregated ballast below the waterline at sea, provided that the surface of the ballast water has been examined immediately before the discharge to ensure that no contamination with oil has taken place.

(c) Existing oil tankers operating with dedicated clean ballast tanks which without modification are not capable of discharging ballast water from the dedicated clean ballast tanks above the waterline, may discharge this ballast below the waterline

(3)(a) Paragraph (2) of this regulation shall not apply to the discharge of clean or segregated ballast.

(b) Sub-paragraph (2)(a) of this regulation shall not apply to the discharge of processed bilge water from machinery spaces, provided that all the following conditions are satisfied:

(i) the bilge water does not originate from cargo pump room bilges;

(ii) the bilge water is not mixed with the cargo oil residues;

(iii) the ship is proceeding on a voyage;

(iv) the oil content of the effluent, without dilution, does not exceed 15 ppm parts of mixture;

(v) the ship has in operation an oil filtering system complying with regulation 14(7); and

(vi) the oil filtering system is equipped with a stopping device which will ensure that the discharge is automatically stopped if the oil content of the effluent exceeds 15 ppm parts of the mixture.

(4)(a) No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purpose of circumventing the conditions of discharge specified in this regulation.

(b) In any case where any residues of oil or oily mixture may not be discharged into the sea in compliance with paragraphs (2) or (3) of this regulation, they shall be retained on board and shall only be discharged into reception facilities.

(5) Nothing in this regulation shall prohibit a ship on a voyage

only part of which is in a special area from discharging outside the special area in accordance with regulations 12 and 13.

PART 4-REQUIREMENTS FOR THE SEGREGATION OF CARGO

Interpretation of Part 4

17.-(1) Notwithstanding the provisions of regulation 1(2), for the purpose of regulations 18, 19, 21, and 26(4), a "new oil tanker" means an oil tanker:-

(a) for which the building contract was placed after 1st June 1979; or

(b) in the absence of a building contract, the keel of which was laid, or which was at a similar stage of construction after 1st January 1980; or

(c) the delivery of which was after 1st June 1982; or

(d) which has undergone a major conversion:

(i) for which the contract was placed after 1st June 1979; or

(ii) in the absence of a contract, the construction work of which was begun after 1st January 1980; or

(iii) which was completed after 1st June 1982,

except that, for oil tankers of 70,000 tons deadweight and above, the definition in regulation 1(2) shall apply for the purposes of regulation 18(1).

(2) For the purposes of regulations 18, 20, 21, 22, 23, 26(5) and 26(6)(c) an "existing oil tanker" means an oil tanker which is not a new oil tanker as defined in paragraph (1) of this regulation.

General application

NEW OIL TANKERS OF 20,000 TONS DEADWEIGHT AND ABOVE

condition, or, subject to the approval of the Chief Marine Surveyor, below the waterline-

(a) to enable such discharges below the waterline as are permitted by paragraph (6) of this regulation to be made; and

(b) where the discharge outlet is located above the departure ballast waterline but not above the waterline in the deepest ballast condition, if so located before 1st January 1981.

(3) In new oil tankers means shall be provided for stopping the discharge into the sea of ballast water or oil contaminated water from cargo tank areas, other than those discharges below the waterline permitted under paragraph (6) of this regulation, from a position on the upper deck or above, located so that the manifold in use referred to in paragraph (1) of this regulation and the discharge to the sea from the pipelines referred to in paragraph (2) of this regulation may be visually observed: provided that the means for stopping the discharge may be situated elsewhere than at the observation position if an effective communication system, such as a telephone or radio system, is provided between the observation position and the discharge control position.

(4) Every new oil tanker required to be provided with segregated ballast tanks or fitted with a crude oil washing system shall comply with the following requirements:

(a) it shall be equipped with oil piping so designed and installed such that oil retention in the lines is minimised;

(b) means shall be provided to drain all cargo pumps and all oil lines at the completion of cargo discharge where necessary by connection to a stripping device, so designed that the line and

STANDARD DIMENSIONS OF FLANGES FOR DISCHARGE CONNECTIONS

Description	Dimension
Outside diameter	215 mm
Inner diameter	According to the pipe outside diameter
Slots in flange	6 holes, 22 mm in diameter, equidistantly placed on a bolt circle of 183 mm diameter, slotted to the flange periphery, the slot width to be 22 mm
Flange thickness	20 mm
Bolts and nuts: quantity, diameter	6 each of 20 mm in diameter and of suitable length
The flange shall be designed to accept pipes up to a maximum diameter of 125 mm and shall be of steel or other equivalent material having a flat face. This flange, together with a gasket of oil proof material, shall be suitable for a service pressure of 6 kg/cm^2.	

Pumping, Piping and Discharge Arrangements of Oil Tankers

26.-(1) In every oil tanker, a discharge manifold for connection to reception facilities for the discharge of dirty ballast water or oil contaminated water shall be located on the open deck on both sides of the ship.

(2) In every oil tanker, pipelines for any discharge to the sea of ballast water or oil contaminated water from cargo tank areas which may be permitted under regulations 13 or 16 shall be led to the open deck or the ship's side above the waterline in the deepest ballast

18.-(1) Every new crude oil tanker of 20,000 tons deadweight and above and every new product carrier of 30,000 tons deadweight and above shall be provided with segregated ballast tanks and shall comply with paragraphs (2), (3) and (4), or paragraph (5) as appropriate, of this regulation.

(2) The capacity of the segregated ballast tanks shall be such that the ship may operate safely on ballast voyage without recourse to the use of cargo tanks for water ballast except as provided for in paragraph (3) or (4) of this regulation.

Provided that the capacity of the segregated ballast tanks shall be at least such that, in any ballast condition at any part of the voyage, including the condition consisting of lightweight plus segregated ballast only, the ship's draughts and trim can meet each of the following requirements:

(a) the moulded draught amidships (dm) in metres (without taking into account any ship's deformation) shall not be less than 2.0 + 0.02L;

(b) the draughts at the forward and after perpendiculars shall correspond to those determined by the draught amidships (dm) as specified in sub-paragraph (a) of this paragraph, in association with the trim by the stern of not greater than 0.015L; and

(c) in any case the draught at the after perpendicular shall not be less than that which is necessary to obtain full immersion of the propeller.

(3) In no case shall ballast water be carried in cargo tanks, except:

(a) on those voyages when weather conditions are so severe that, in

the opinion of the master, it is necessary to carry additional ballast water in cargo tanks for the safety of the ship;

(b) where the particular character of the operation of an oil tanker renders it necessary to carry ballast water in excess of the quantity which may be carried in segregated ballast tanks under paragraph (2) of this regulation, provided that the Chief Marine Surveyor has approved that condition of operation.

Any such additional ballast water shall be processed and discharged in accordance with the requirements of the regulations 13 and 15 and an entry of the discharge shall be made in Oil Record Book.

(4) In the case of new crude oil tankers, the additional ballast permitted by paragraph (3) of this regulation shall be carried in cargo tanks only if such tanks have been crude oil washed in accordance with regulation 21 before departure from an oil unloading port or terminal.

(5) Notwithstanding the provisions of paragraph (2) of this regulation the capacity of the segregated ballast tanks for oil tankers less than 150 metres in length shall be as may be determined by the Chief Marine Surveyor.

(6) Every new crude oil tanker of 20,000 tons deadweight and above shall be fitted with a cargo tank cleaning system using crude oil washing. This system shall fully comply with the requirements of regulation 21 within one year after the tanker is first engaged in the trade of carrying crude oil or by the end of the third voyage carrying crude oil suitable for crude oil washing, whichever occurs later. Unless such oil tanker carries crude oil which is not suitable for

is placed after 1st January, 1982, or in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction after 1st July 1982, oil shall not be carried in a forepeak tank or a tank forward of the collision bulkhead.

(5) All ships other than those subject to paragraph (4) of this regulation shall comply with the provisions of that paragraph, so far as it is reasonable and practicable to do so.

Tanks for oil residue (sludge)

25.-(1) Every ship of 400 GT and above shall be provided with a tank or tanks of adequate capacity, having regard to the type of machinery installed and length of voyage, to receive any oily residues (sludges) which cannot be dealt with otherwise in accordance with the requirements of these Regulations, such as those resulting from the purification of fuel and lubricating oils and oil leakages in the machinery spaces.

(2) In new ships, such tanks shall be designed and constructed so as to facilitate their cleaning and the discharge of residues to reception facilities. Existing ships shall comply with this requirement so far as it is reasonable and practicable to do so.

(3) Every ship to which this regulation applies shall be provided with piping to enable residues from machinery spaces and machinery space bilges to be pumped to a reception facility. This piping shall be led to the open deck and there fitted with a flange in accordance with the following dimensions:

oil tanker is operating with special ballast arrangements.

(2) In no case shall ballast be carried in cargo oil tanks except on those voyages when weather conditions are so severe that, in the opinion of the master, it is necessary to carry additional ballast water in cargo tanks for the safety of the ship. Such additional ballast water shall be discharged in compliance with regulation 13 and 15 and an entry of any discharge of such water shall be made in the Oil Record Book.

Segregation of oil water ballast and carriage of oil in forepeak tanks

24.-(1) Except as provided in paragraph (2) of this regulation, in new ships of 4,000 GT and above other than oil tankers, and in new oil tankers of 150 GT and above, no ballast water shall be carried in any oil fuel tank.

(2) Where abnormal conditions or the need to carry large quantities of oil fuel render it necessary for ships referred to in paragraph (1) of this regulation to carry ballast water which is not clean ballast water in any oil fuel tank, such ballast water shall be discharged to reception facilities or into the sea in compliance with regulation 12 using the equipment specified in regulation 14(2), and an entry of any such discharge shall be made in the Oil Record Book.

(3) All other ships shall comply with the requirements of paragraph (1) of this regulation so far as it is reasonable and practicable to do so.

(4) In a ship of 400 GT and above, for which the building contract

crude oil washing, it shall operate the system in accordance with regulation 21.

EXISTING CRUDE OIL TANKERS OF 40,000 TONS DEADWEIGHT AND ABOVE

(7) Subject to the provisions of paragraph (8) of this regulation and to the provisions of regulations 22 and 23, every existing crude oil tanker of 40,000 tons deadweight and above shall be provided with segregated ballast tanks and shall comply with the requirements of paragraphs (2) and (3) of this regulation.

(8) Subject to regulations 22 and 23, existing crude oil tankers of 40,000 tons deadweight and above may, in lieu of being provided with segregated ballast tanks, operate with a cargo tank cleaning procedure using crude oil washing in accordance with regulation 21 unless the crude oil tanker is intended to carry crude oil which is not suitable for crude oil washing.

EXISTING PRODUCT CARRIERS OF 40,000 TONS DEADWEIGHT AND ABOVE

(9) Subject to regulation 22, every existing product carrier of 40,000 tons deadweight and above shall be provided with segregated ballast tanks and shall comply with the requirements of paragraphs (2) and (3) of this regulation, or, alternatively, operate with dedicated clean ballast tanks in accordance with the provisions of regulation 20.

AN OIL TANKER DESCRIBED IN THE IOPP OR CIOPP CERTIFICATE AS A SEGREGATED BALLAST OIL TANKER

(10) Any oil tanker which is not required to be provided with segregated ballast tanks in accordance with paragraph (1), (7) or (9)

of this regulation may be described in the IOPP or CIOPP Certificate as a segregated ballast tanker if it complies with the requirements of paragraphs (2) and (3), or paragraph (5) as appropriate to this regulation.

Protective location of segregated ballast spaces

19.-(1) In every new crude oil tanker of 20,000 tons deadweight and above and every new product carrier of 30,000 tons deadweight and above, the segregated ballast tanks required to provide the capacity to comply with regulation 18 which are located within the cargo tank length shall be arranged, in accordance with the requirements of paragraphs (2), (3) and (4) of this regulation, to provide a measure of protection against oil outflow in the event of grounding or collision.

(2) Segregated ballast tanks and spaces other than oil tanks within the cargo tank length (L_t) shall be so arranged as to comply with the following requirement:-

$$\sum PA_C + \sum PA_S \geq J[L_t(B + 2D)]$$

where:

PA_C = the side shell area in square metres for each segregated ballast tank or space other than an oil tank based on projected moulded dimensions;

PA_S = the bottom shell area in square metres for each such tank or space based on projected moulded dimensions;

L_t = the length in metres between the forward and after extremities of the cargo tanks;

B = the maximum breadth of the ship in metres as defined in regulation 1(2);

authority appointed by the Convention Country;

(b) agreement shall have been reached between the Governor and the Governments of the Convention Country of Countries referred to in sub-paragraph (1)(a) or (1)(b) of this regulation concerning the use of an existing oil tanker for a specific trade;

(c) the adequacy of the reception facilities (in accordance with any Regulations relating to reception facilities) at the ports or terminals referred to above, shall have been approved for the purpose of this regulation by the Governments of the Convention Countries within which those ports or terminals are situated; and

(d) the IOPP Certificate shall have been endorsed to the effect that the oil tanker is solely engaged in such specific trade.

Existing Oil Tankers having Special Ballast Arrangements

23.-(1) Where an existing oil tanker of 40,000 deadweight tons and above is so constructed or operates in such a manner that it complies at all times with the draught and trim requirements set out in regulation 18(2) without recourse to the use of ballast water, it shall be deemed to comply with the segregated ballast tank requirements referred to in regulation 18(7), provided that all the following conditions are complied with:

(a) the operational procedures and ballast arrangements have been approved;

(b) when the draught and trim requirements are achieved through an operational procedure, agreement as to the use of that procedure has been reached between the Governor and the Governments of the Convention Countries concerned.

(c) the IOPP Certificate has been endorsed to the effect that the

3. TANKS FOR OIL RESIDUES (SLUDGE) (Regulation 17)

3.1 The ship is provided with oil residue (sludge) tanks with the total capacity of ..... m^3 |___|

3.2 Means for the disposal of oil residue in addition to the provision of sludge tanks ..... |___|
..... |___|

4. STANDARD DISCHARGE CONNECTION (Regulation 19)

4.1 The ship is provided with a pipeline for the discharge of residues from machinery bilges to reception facilities, fitted with a standard discharge connection in accordance with Regulation 19 |___|

5. EXEMPTION

5.1 Exemptions have been granted by the Administration from the requirements of Chapter II of Annex I of the Convention in accordance with Regulation 2(4)(a) on those items listed under paragraph(s) .....
..... of this Record.

6. EQUIVALENTS (Regulation 3)

6.1 Equivalents have been approved by the Administration for certain requirements of Annex I on those items listed under paragraph(s) .....
..... of this Record.

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at .....
(Place of issue of the Record)

(Official Stamp)

..... 19.... .....
(Signature of duly authorised officer issuing the Record)

actual partial or full load conditions consistent with the trim and strength of the ship as well as the specific gravities of the cargo. Such damage shall be assumed to have occurred at all conceivable locations along the length of the ship as follows:

(a) in tankers of more than 225 metres in length, anywhere in the ship's length;

(b) in tankers of more than 150 metres, but not exceeding 225 metres in length, anywhere in the ship's length except locations involving either after or forward bulkheads bounding the machinery space located aft. This machinery space shall be treated as a single floodable compartment;

(c) in tankers not exceeding 150 metres in length, anywhere in the ship's length between adjacent transverse bulkheads with the exception of the machinery space. Any tanker of 100 metres or less in length which cannot fulfil all the requirements of paragraph (3) of this regulation without materially impairing the operational qualities of the ship shall comply with such lesser requirements as the Chief Marine Surveyor may impose.

Ballast conditions where the tanker is not carrying oil in cargo tanks excluding any oil residues, shall not be taken into account.

(2) The following provisions regarding the extent and the character of the assumed damage shall apply:

(a) Side damage

(i)	Longitudinal extent(1):	$1/3\ L^{2/3}$ or 14.5 metres,whichever is less
(ii)	Transverse extent (inboard from the ship's side at right angle to the centreline at the	B/5 or 11.5 metres, whichever is the less

level of the summer load line)

(iii) Vertical extent — From the moulded line of the bottom shell plating at centreline, upwards without limit

(b) Bottom damage

	Position of Damage	
	For 0.3L from the forward perpendicular of the ship	Any other part of the ship
(i) Longitudinal extent	$1/3\ L^{2/3}$ or 14.5 metres, whichever is less	$1/3\ L^{2/3}$ or 5 metres, whichever is less
(ii) Transverse extent	B/6 or 10 metres, whichever is less	B/6 or 5 metres, whichever less
(iii) Vertical extent	B/15 or 6 metres, whichever is less, measured from the moulded line of the bottom shell plating at centre line	B/15 or 6 metres, whichever is less, measured from the moulded line of the bottom shell plating at centre line

(c) If any damage of a lesser extent than the maximum extent of damage specified in sub-paragraphs (a) and (b) of this paragraph would result in a more severe condition in relation to the ship's stability, such damage shall be assumed.

(d) Where the damage envisaged in sub-paragraph (1)(a) or (b) of this regulation would involve transverse watertight bulkheads, such bulkheads shall not be considered effective unless they are spaced at a distance at least equal to the longitudinal extent of the assumed damage specified in sub-paragraphs (a) and (b) of this paragraph. Where such bulkheads are spaced at a lesser

2.3.2 15 ppm alarm (Regulation 16(7)) |___|

2.3.3 Automatic stopping device for discharges in special areas (Regulation 10(3)(b)(vi)) |___|

2.3.4 Oil content meter (resolution A.444(XI)):

.1 with recording device |___|

.2 without recording device |___|

2.4 Approval standards:

2.4.1 The separating/filtering equipment:

.1 has been approved in accordance with resolution A.393(X) |___|

.2 has been approved in accordance with resolution A.233(VII) |___|

.3 has been approved in accordance with national standards not based upon resolution A.393(X) or A.233(VII) |___|

.4 has not been approved |___|

2.4.2 The process unit has been approved in accordance with resolution A.444(XI) |___|

2.4.3 The oil content meter has been approved in accordance with resolution A.393(X) |___|

2.5 Maximum throughput of the system is ..... m^3/h

2.6 Application:

2.6.1 The ship is not required to be fitted with the above equipment until 2nd October 1986 in accordance with Regulation 16(4) |___|

1.6 Major conversion (if applicable):

1.6.1 Date of conversion contract .....

1.6.2 Date on which conversion was commenced .....

1.6.3 Date of completion of conversion .....

1.7 Status of ship:

1.7.1 New ship in accordance with Regulation 1(6) |___|

1.7.2 Existing ship in accordance with Regulation 1(7) |___|

1.7.3 The ship has been accepted by the Administration as an "existing ship" under Regulation 1(7) due to unforeseen delay in delivery |___|

2. EQUIPMENT FOR THE CONTROL OF OIL DISCHARGE FROM MACHINERY SPACE BILGES AND OIL FUEL TANKS (Regulations 10 and 16)

2.1 Carriage of ballast water in oil fuel tanks: |___|

2.1.1 The ship may under normal conditions carry ballast water in oil fuel tanks |___|

2.1.2 The ship does not under normal conditions carry ballast water in oil fuel tanks |___|

2.2 Type of separating/filtering equipment fitted:

2.2.1 Equipment capable of producing effluent with oil content less than 100 ppm |___|

2.2.2 Equipment capable of producing effluent with oil content not exceeding 15 ppm |___|

2.3 Type of control system:

2.3.1 Discharge monitoring and control system (Regulation 16(5)):

.1 with automatic stopping device |___|

.2 with manual stopping device |___|

distance, one or more of these bulkheads within such extent of damage shall be assumed to be non-existent for the purpose of determining which compartments are flooded.

(e) Where the damage envisaged in sub-paragraph (1)(c) of this regulation occurs between adjacent transverse watertight bulkheads no main transverse bulkhead or transverse bulkhead bounding side tanks or double bottom tanks shall be assumed damaged unless:

(i) the spacing between the adjacent bulkheads is less than the longitudinal extent of the assumed damage specified in sub-pargaraphs (a) and (b) of this paragraph; or

(ii) there is a step or recess in the transverse bulkhead of more than 3.05 metres in length, located within the extent of penetration of the assumed damage. The step formed by the after peak bulkhead and after peak tank top shall not be regarded as a step for the purpose of this regulation.

(f) If pipes, ducts or tunnels are situated within the assumed extent of damage, arrangements shall be made so that progressive flooding cannot thereby extend to compartments other than those assumed to be floodable for each case of damage.

(3) Oil tankers shall be regarded as complying with the damage stability criteria if the following requirements are met:

(a) The final waterline, taking into account sinkage, heel and trim, shall be below the lower edge of any opening through which progressive flooding may take place. Such openings shall include air pipes and those openings which are closed by means of weathertight doors or hatch covers, but may exclude those openings which are closed by means of watertight manhole covers

and flush scuttles, small watertight cargo tank hatchcovers which maintain the high integrity of the deck, remotely operated watertight sliding doors, and side scuttles of the non-opening type.

(b) In the final stages of flooding, the angle of heel due to unsymmetrical flooding shall not exceed 25 degrees, provided that this angle may be increased up to 30 degrees if no deck edge immersion occurs as a result of such increase.

(c) The stability in the final stage of flooding shall be investigated and may be regarded as sufficient if the righting lever curve has a range of at least 20 degrees beyond the condition of equilibrium in association with a maximum residual righting lever of at least 0.1 metre within the 20 degree range; the area under the curve within this range shall not be less than 0.0175 metre radian. Unprotected openings shall not be immersed within this range unless the space concerned is assumed to be flooded. Within this range, the immersion of any of the openings listed in sub-paragraph (a) of this paragraph and other openings capable of being closed weathertight may be permitted.

(d) Equalisation arrangements requiring mechanical aids such as valves or cross-levelling pipes, if fitted, shall not be taken into account for the purpose of reducing an angle of heel or attaining the minimum range of residual stability to meet the requirements of sub-paragraphs (a), (b) and (c) of this paragraph and sufficient residual stability shall be maintained during all stages where equalisation is used. Spaces which are linked by ducts of large cross-sectional area may be considered to be as one.

(e) The Chief Marine Surveyor before approving the stability for the

SUPPLEMENT TO THE INTERNATIONAL OIL POLLUTION PREVENTION CERTIFICATE
(IOPP CERTIFICATE)

RECORD OF CONSTRUCTION AND EQUIPMENT FOR SHIPS OTHER THAN OIL TANKERS

in respect of the provisions Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (hereinafter referred to as "the Convention").

Notes:

1. This Record shall be permanently attached to the IOPP Certificate. The IOPP Certificate shall be available on board the ship at all times.

2. Entries in boxes shall be made by inserting either (Y) for the answers "yes" and "applicable" or (N) for the answers "no" and "not applicable" as appropriate.

3. Regulations mentioned in this Record refer to Regulations of Annex I of the Convention and resolutions refer to those adopted by the International Maritime Organisation.

1. PARTICULARS OF SHIP

1.1 Name of ship .....

1.2 Official number .....

1.3 Port of registry .....

1.4 Gross tonnage .....

1.5 Date of build:

1.5.1 Date of building contract .....

1.5.2 Date of which keel was laid or ship was at a similar stage of construction.....

1.5.3 Date of delivery .....

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that at a survey required by Regulation 4 of Annex I of the Convention the ship was found to comply with the relevant provisions of the Convention:

Annual survey: Signed .....
(Signature of duly authorised official conducting the survey)

(Official Stamp) Place .....

Date .....

Annual*/Intermediate* survey: Signed .....
(Signature of duly authorised official conducting the survey)

(Official Stamp) Place .....

Date .....

Annual*/Intermediate* survey: Signed .....
(Signature of duly authorised official conducting the survey)

(Official Stamp) Place .....

Date .....

Annual survey: Signed .....
(Signature of duly authorised official conducting the survey)

(Official Stamp) Place .....

Date .....

Annual survey: Signed .....
(Signature of duly authorised official conducting the survey)

(Official Stamp) Place .....

Date .....

*Delete as appropriate.

ship, shall be satisfied that the stability is sufficient during intermediate stages of flooding.

(4) The requirements of paragraph (1) of this regulation shall be deemed not to have been complied with unless compliance is confirmed by calculations which take into consideration the design characteristics of the ship, the arrangements, configuration and contents of the damaged compartments; and the distribution, specific gravitites and free surface effect of liquids. The calculations shall be based on the following:

(a) Account shall be taken of any empty or partially filled tank, the specific gravity of the cargo carried, and any outflow of liquids from damaged compartments.

(b) The permeabilities assumed for spaces flooded as a result of damage shall be as follows:

Spaces	Permeability
Appropriate to stores	0.60
Occupied as crew accommodation	0.95
Occupied by machinery	0.85
Voids	0.95
Intended for consumable liquids	0 to 0.95*
Intended for other liquids	0 to 0.95*

* The permeability of partially filled compartments shall be consistent with the amount of liquid carried in the compartment. Whenever damage penetrates a tank containing liquid, it shall be assumed that the contents are completely lost from that compartment and replaced by salt water up to the level of the final plane of equilibrium.

(c) The buoyancy of any superstructure directly above the side damage shall not be taken into account. The unflooded parts of superstructure beyond the extent of damage may be taken into account provided that they are separated from the damaged space

by watertight bulkheads and that the requirements of sub-paragraph (3)(a) of this regulation in respect of these intact spaces are complied with. Hinged watertight doors may be fitted in watertight bulkheads in the superstructure.

(d) The free surface effect shall be calculated at an angle of heel of 5 degrees or each individual compartment. The Chief Marine Surveyor may require, or allow, the free surface corrections to be calculated at any angle of heel greater than 5 degrees for partially filled tanks.

(e) In calculating the effect of free surfaces of consumable liquids it shall be assumed that, for each type of liquid at least one transverse pair of tanks or a centreline tank has a free surface and the tank, or combination of tanks, to be taken into account shall be those where the effect of the free surface is the greatest.

(5) The master of every new oil tanker and the person in charge of a new non-self-propelled oil tanker to which these Regulations apply shall be supplied by the owner with:

(a) information relative to loading and distribution of cargo necessary to ensure compliance with the provision of this regulation; and

(b) data on the ability of the ship to comply with the damage stability criteria prescribed by this regulation, including the effect of any lesser requirements that may have been imposed under sub-paragraph (1)(c) of this regulation.

Such information and data shall be supplied in an approved form.

APPENDIX II

In duplicate

INTERNATIONAL OIL POLLUTION PREVENTION CERTIFICATE AND SUPPLEMENT

Issued under the provisions of the

INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973 AS MODIFIED BY THE PROTOCOL OF 1978 RELATING THERETO UNDER THE AUTHORITY OF THE GOVERNMENT OF THE CAYMAN ISLANDS

Name of Ship	Official Number	Port of Registry	Gross Tonnage

Type of ship:
Ship, other than an oil tanker, or a ship with cargo tanks coming under Regulation 2(2) of Annex I of the Convention.

THIS IS TO CERTIFY:

1. That the ship has been surveyed in accordance with Regulation 4 of Annex I of the Convention; and

2. That the survey shows that the structure, equipment, systems, fittings, arrangement and material of the ship and the condition thereof are in all respects satisfactory and that the ship complies with the applicable requirements of Annex I of the Convention.

This Certificate is valid until ..... subject to surveys in accordance with Regulation 4 of Annex I of the Convention.

Issued at .....
(Place of issue of certificate)

(Official Stamp)

..... 19..... .....
(Signature of duly authorised official issuing the Certificate)

10. EQUIVALENTS (Regulation 3)

10.1 Equivalents have been approved by the Administration for certain requirements of Annex I on those items listed under paragraph(s)..... ..... of this Record.

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at .....

(Place of issue of the Record)

(Official Stamp)

..... 19..... .....

(Signature of duly authorised officer issuing the Record)

Requirements for Offshore Installations

30.-(1) Offshore installations, when engaged in the exploration, exploitation and associated offshore processing of sea bed mineral resources, shall comply with the requirements of these Regulations applicable to ships of 400 GT and above other than oil tankers, notwithstanding that the installations are not proceeding on a voyage, except that:-

(a) they shall be equipped as far as practicable with the installations required by regulations 14 and 25(1) and (2) of these Regulations;

(b) they shall keep a record of all operations involving oil or oily mixture discharges, in an approved form.

(2) Unless the discharge is one specified in regulation 11, any offshore installation when so engaged shall not discharge into any part of the sea:-

(a) outside special areas and 12 or more miles from the nearest land, any oil or oily mixtures with an oil content of 100 ppm or more;

(b) in any special area or within 12 miles of the nearest land, any oil or oily mixtures with an oil content of 15 ppm or more.

(3) For the purpose of this regulation:-

(a) "offshore installation" means any mobile or fixed drilling or production platform or any other platform used in connection with the exploration, exploitation or associated offshore processing of sea bed mineral resources;

(b) "oil or oily mixtures" means discharge associated with platform drainage and does not include production or displacement water

discharge.

PART 7-POWERS TO INSPECT, DENY ENTRY, DETENTION AND PENALTIES

Power to Inspect

31.-(1) A ship to which these Regulations apply shall be subject in any Cayman Islands port, to inspection by persons appointed by the Governor. Any such inspection shall be limited to verifying that there is on board a valid IOPP Certificate in the form prescribed by the Convention or CIOPP Certificate in a form prescribed in Schedule 1 hereto, unless there are clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of that certificate. In that case, or if the ship does not carry a valid certificate, the person making the inspection shall take such steps as he may consider necessary to ensure that the ship shall not sail until it can proceed to sea without presenting an unreasonable threat of harm to the marine environment. The Chief Marine Surveyor may in such a case permit the ship to leave the port or offshore terminal for the purposes of proceeding to the nearest appropriate repair yard.

(2) Upon receiving evidence that a particular ship has discharged oil or an oily mixture contrary to the provisions of these regulations the Chief Marine Surveyor shall cause the matter to be investigated and shall inform the State which has reported the contravention, as well as the Organisation, of the action taken.

(3) The Chief Marine Surveyor may also cause a ship other than a Cayman Islands ship to be inspected when she enters a Cayman Islands port if a request for an investigation is received from any State

8. EQUIVALENT ARRANGEMENTS FOR CHEMICAL TANKERS CARRYING OIL

8.1 As equivalent arrangements for the carriage of oil by a chemical tanker, the ship is fitted with the following equipment in lieu of slop tanks (paragraph 6.2 above) and oil/water interface detectors (paragraph 6.3 above):

8.1.1 oily-water separating equipment capable of producing effluent with oil content less than 100 ppm, with the capacity of ..... m^3/h |___|

8.1.2 a holding tank with the capacity of ..... m^3 |___|

8.1.3 a tank for collecting tank washings which is:

.1 a dedicated tank |___|

.2 a cargo tank designated as a collecting tank |___|

8.1.4 a permanently installed transfer pump for overboard discharge of effluent containing oil through the oily-water separating equipment |___|

8.2 The oily-water separating equipment has been approved under the term of resolution A.393(X) and is suitable for the full range of Annex I products |___|

8.3 The ship holds a valid Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk |___|

9. EXEMPTION

9.1 Exemptions have been granted by the Administration from the requirements of Chapters II and III of Annex I of the Convention in accordance with Regulation 2(4)(a) on those items listed under paragraph(s) .... of this Record.

6.4.2 The ship is exempted from the requirements of Regulation 15(1), (2) and (3) in accordance with Regulation 2(2) |___|

7. PUMPING, PIPING AND DISCHARGE ARRANGEMENTS (Regulation 18)

7.1 The overboard discharge outlets for segregated ballast are located:

7.1.1 above the waterline |___|

7.1.2 below the waterline |___|

7.2 The overboard discharge outlets, other than the discharge manifold, for clean ballast are located:*

7.2.1 above the waterline |___|

7.2.2 below the waterline |___|

7.3 The overboard discharge outlets, other than the discharge manifold, for dirty ballast are located:*

7.3.1 above the waterline |___|

7.3.2 below the waterline in conjunction with the part flow arrangements in compliance with Regulation 18(6)(e) |___|

7.3.3 below the waterline |___|

*Only those outlets which can be monitored are to be indicated.

7.4. Discharge of oil from cargo pumps and oil lines (Regulation 18(4) and (5)):

7.4.1 Means to drain all cargo pumps and oil lines at the completion of cargo discharge:

.1 drainings capable of being discharged to a cargo tank or slop tank |___|

.2 for discharge ashore a special small diameter line is provided |___|

which is a Party to the Convention together with sufficient evidence that the ship has discharged oil or an oily mixture in any place. The report of such investigation shall be sent to the State requesting it, the State in which the ship is registered and to the Chief Marine Surveyor.

(4) Any person appointed to make an investigation pursuant to this regulation shall have the powers of an inspector set out in section 72 of the Merchant Shipping (Applicable Conventions) Law 1987.

Power to deny entry or detain

32.-(1) If a harbour master has reason to believe that a ship which he believes proposes to enter the harbour does not comply with the requirements of these Regulations, he shall immediately report the matter to the Chief Marine Surveyor who, if he is satisfied that the ship presents an unreasonable threat of harm to the marine environment, may deny the entry of such ship to Cayman Islands ports. In the event of a ship being denied entry pursuant to this paragraph the Chief Marine Surveyor shall immediately inform the consul or diplomatic representative of the State whose flag the ship is entitled to fly.

(2) In any case where a ship to which these Regulations apply is suspected of a contravention of the requirements of these Regulations, the ship shall be liable to be detained and in the circumstances prescribed in regulation 9(1) and (6), shall be detained.

(3) Sections 74, 75 and 76 of the Merchant Shipping (Applicable Conventions) Law 1977 shall apply in respect of the detention of any

ship under the provisions of these Regulations as if the reference therein to "this Law" were a reference to "the Merchant Shipping (Prevention of Oil Pollution) Regulations 1988".

(4) If it appears that there was not reasonable cause for the detention of a ship under these Regulations, the Governor shall be liable to pay to the owner of the ship his costs of and incidental to the detention of the ship, and also compensation for any loss or damage sustained by him by reason of the detention.

Penalties

33.-(1) If any ship fails to comply with any requirement of these Regulations (other than regulations 12, 13 and 16) the owner and the master of the ship shall each be guilty of an offence and liable on summary conviction to a fine not exceeding ten thousand dollars.

(2) If any ship fails to comply with any requirement of regulations 12, 13 and 16, the owner and the master shall each be guilty of an offence and liable on summary conviction to a fine not exceeding one hundred thousand dollars.

(3) It shall be a defence for a person charged under this regulation to show that he took all reasonable precautions and exercised all due diligence to avoid the commission of the offence.

(4) Where an offence under this regulation is committed, or would have been committed save for the operation of paragraph (3), by any person due to the act or default of some other person, that other person shall be guilty of the offence and a person may be charged with

6.1.5 The ship has been supplied with an operations manual for the oil discharge monitoring and control system ☐

6.1.6 The ship is not required to be fitted with an oil discharge monitoring and control system, until 2nd October 1986 in accordance with Regulation 15(1) ☐

6.2 Slop tanks:

6.2.1 The ship is provided with ..... dedicated slop tank(s) with the total capacity of ..... m^3 which is .....% of the oil carrying capacity, in accordance with:

.1 Regulation 15(2)(c) ☐

.2 Regulation 15(2)(c)(i) ☐

.3 Regulation 15(2)(c)(ii) ☐

.4 Regulation 15(2)(c)(iii) ☐

6.2.2 Cargo tanks have been designated as slop tanks ☐

6.2.3 The ship is not required to be provided with slop tank arrangements until 2nd October 1986 in accordance with Regulation 15(1) ☐

6.3 Oil/water interface detectors:

6.3.1 The ship is provided with oil/water interface detectors approved under the terms of resolution MEPC.5(XIII) ☐

6.4 Exemptions from Regulation 15:

6.4.1 The ship is exempted from the requirements of Regulation 15(1), (2) and (3) in accordance with Regulation 15(7) ☐

5.7 Subdivision and stability (Regulation 25):

5.7.1 The ship is required to be constructed according to, and complies with, the requirements of Regulation 25 ☐

5.7.2 Information and data required under Regulation 25(5) in an approved form have been supplied to the ship ☐

6. RETENTION OF OIL ON BOARD (Regulation 15)

6.1 Oil discharge monitoring and control system:

6.1.1 The ship comes under category ..... oil tanker as defined in resolution A.496(XII) ☐

6.1.2 The system comprises:

.1 control unit ☐

.2 computing unit ☐

.3 calculating unit ☐

6.1.3 The system is:

.1 fitted with a starting interlock ☐

.2 fitted with automatic stopping device ☐

6.1.4 The oil content meter is approved under the terms of resolution A.393(X) suitable for:

.1 crude oil ☐

.2 black products ☐

.3 white products ☐

and convicted of an offence by virtue of this paragraph whether or not proceedings are taken against the first-mentioned person.

SCHEDULE 1 Regulation 7 (5)

Oil Pollution Prevention Certificates

1. CONTENTS

2. NOTES

1. Each of the oil pollution and prevention certificates listed above shall be supplemented by a Record of Construction and Equipment.

2. Any reference in this Schedule to a regulation means:-

(i) in the IOPP Certificate a regulation of that number in Annex I of the Convention;

(ii) in the CIOPP Certificate a regulation of that number in these Regulations.

3. Any reference in this Schedule to a Resolution means a reference to a Resolution of that number published by the Organisation.

4. In this Schedule:-

SBT means segregated ballast tanks;

PL means protective location;

COW means crude oil washing;

CBT means clean ballast tanks.

5.3.5 The ship has separate independent piping and pumping arrangements for ballasting the CBT ☐

5.4 Crude oil washing (COW):

5.4.1 The ship is equipped with a COW system in compliance with Regulation 13B ☐

5.4.2 The ship is equipped with a COW system in compliance with Regulation 13B except that the effectiveness of the system has not been confirmed in accordance with Regulation 13(6) and paragraph 4.2.10 of the Revised COW specifications (resolution A.446(XI)) ☐

5.4.3 The ship has been supplied with a valid Crude Oil Washing Operations and Equipment Manual, which is dated ..... ☐

5.4.4 The ship is not required to be but is equipped with COW in compliance with the safety aspects of Revised COW Specifications (resolution A.446(XI)) ☐

5.5 Exemption from Regulation 13:

5.5.1 The ship is solely engaged in trade between ..... in accordance with Regulation 13C and is therefore exempted from the requirements of Regulation 13 ☐

5.5.2 The ship is operating with special ballast arrangements in accordance with Regulation 13D and is therefore exempted from the requirements of Regulation 13 ☐

5.6 Limitation of size and arrangements of cargo tanks (Regulation 24):

5.6.1 The ship is required to be constructed according to, and complies with, the requirements of Regulation 24 ☐

5.6.2 The ship is required to be constructed according to, and complies with, the requirements of Regulation 24(4) (see Regulation 2(2)) ☐

5.2.3 SBT are distributed as follows:

Tank	Volume (m^3)	Tank	Volume (m^3)
		Total	

5.3 Dedicated clean ballast tanks (CBT):

5.3.1 The ship is provided with CBT in compliance with Regulation 13A, and may operate:

.1 as a product carrier ☐

.2 as a crude oil tanker until
2nd October 1985* ☐
2nd October 1987* ☐

* Delete as appropriate

5.3.2 CBT are distributed as follows:

Tank	Volume (m^3)	Tank	Volume (m^3)
		Total	

5.3.3 The ship has been supplied with a valid Dedicated Clean Ballast Tank Operation Manual, which is dated ..... ☐

5.3.4 The ship has common piping and pump arrangements for ballasting the CBT and handling cargo oil ☐

SUR
(OIL TANKER)

APPENDIX I

In duplicate

INTERNATIONAL OIL POLLUTION PREVENTION

CERTIFICATE AND SUPPLEMENT

Issued under the provisions of the

INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973 AS MODIFIED BY THE PROTOCOL OF 1978 RELATING THERETO UNDER THE AUTHORITY OF THE GOVERNMENT OF THE CAYMAN ISLANDS

Name of Ship	Official Number	Port of Registry	Gross Tonnage

Type of ship:
*Oil tanker
*Ship other than an oil tanker with cargo tanks coming under Regulation 2(2) of Annex I of the Convention

THIS IS TO CERTIFY:
1. That the ship has been surveyed in accordance with regulation 4 of Annex I of the Convention; and

2. That the survey shows that the structure, equipment, systems, fittings, arrangement and material of the ship and the condition thereof are in all respects satisfactory and that the ship complies with the applicable requirements of Annex I of the Convention.

This Certificate is valid until ..... subject to surveys in accordance with Regulation 4 of Annex I of the Convention.

Issued at .....
(Place of issue of certificate)

(Official Stamp)

..... 19..... .....
(Signature of duly authorised official issuing the Certificate)

*Delete as appropriate.

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that at a survey required by Regulation 4 of Annex I of the Convention the ship was found to comply with the relevant provisions of the Convention:

Annual survey: Signed.....
(Signature of duly authorised official conducting the survey)

(Official Stamp) Place .....

Date .....

Annual*/Intermediate* survey: Signed .....
(Signature of duly authorised official conducting the survey)

(Official Stamp) Place .....

Date .....

Annual*/Intermediate* survey: Signed .....
(Signature of duly authorised official conducting the survey)

(Official Stamp) Place .....

Date .....

Annual survey: Signed.....
(Signature of duly authorised official conducting the survey)

(Official Stamp) Place .....

Date .....

Annual Survey: Signed .....
(Signature of duly authorised official conducting the survey)

(Official Stamp) Place .....

Date .....

* Delete as appropriate.

3. TANKS FOR OIL RESIDUES (SLUDGE) (Regulation 17)

3.1 The ship is provided with oil residue (sludge) tanks with the total capacity of ..... m^3 |___|

3.2 Means for the disposal of oil residue in addition to the provision of sludge tanks ..... |___|
..... |___|

4. STANDARD DISCHARGE CONNECTION (Regulation 19)

4.1 The ship is provided with a pipeline for the discharge of residues from machinery bilges to reception facilities, fitted with a standard discharge connection in compliance with Regulation 19. |___|

5. CONSTRUCTION (Regulations 13, 24 and 25)

5.1 In accordance with the requirements of Regulation 13, the ship is: |___|

5.1.1 Required to be provided with SBT, PL and COW |___|

5.1.2 Required to be provided with SBT and PL |___|

5.1.3 Required to be provided with SBT |___|

5.1.4 Required to be provided with SBT, CBT or COW |___|

5.1.5 Required to be provided with SBT or CBT |___|

5.1.6 Not required to comply with the requirements of Regulation 13 |___|

5.2 Segregated ballast tanks (SBT):

5.2.1 The ship is provided with SBT in compliance with Regulation 13 |___|

5.2.2 The ship is provided with SBT which are arranged in protective locations (PL) in compliance with Regulation 13E |___|

2.3.2 15 ppm alarm (Regulation 16(7)) |___|

2.3.3 Automatic stopping device for discharges in special areas (Regulation 10(3)(b)(vi)) |___|

2.3.4 Oil content meter (resolution A.444(XI)):

.1 with recording device |___|

.2 without recording device |___|

2.4 Approval standards:

2.4.1 The separating/filtering system:

.1 has been approved in accordance with resolution A.393(X) |___|

.2 has been approved in accordance with resolution A.233(VII) |___|

.3 has been approved in accordance with National Standards not based upon resolution A.393(X) or A.233(VII) |___|

.4 has not been approved |___|

2.4.2 The process unit has been approved in accordance with resolution A.444(XI) |___|

2.4.3 The oil content meter has been approved in accordance with resolution A.393(X) |___|

2.5 Maximum throughput of the system is ..... m^3/h

2.6 Application:

2.6.1 The ship is not required to be fitted with the above equipment until 2nd October 1986 in accordance with Regulation 16(4) |___|

Cayman Islands

SUPPLEMENT TO THE INTERNATIONAL OIL POLLUTION PREVENTION CERTIFICATE
(IOPP CERTIFICATE)

RECORD OF CONSTRUCTION AND EQUIPMENT FOR OIL TANKERS
in respect of the provisions of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (hereinafter referred to as "the Convention").

Notes:
1. This Record shall be permanently attached to the IOPP Certificate. The IOPP Certificate shall be available on board the ship at all times.
2. Entries in boxes shall be made by inserting either (Y) for the answers "Yes" and "applicable" or (N) for the answers "no" and "not applicable" as appropriate.
3. Regulations mentioned in this Record refer to Regulations of Annex I of the Convention and resolutions referred to those adopted by the International Maritime Organisation.

1. PARTICULARS OF SHIP

1.1 Name of ship .....

1.2 Official number .....

1.3 Port of registry .....

1.4 Gross tonnage .....

1.5 Carrying capacity of ship .....(m^3)

1.6 Deadweight of ship .....(metric tons)(Regulation 1(22))

1.7 Length of ship .....(m) (Regulation 1(18))

1.8 Date of build:

1.8.1 Date of building contract .....

1.8.2 Date on which keel was laid or ship was at a similar stage of construction .....

1.8.3 Date of delivery .....

1.9 Major conversion (if applicable):

1.9.1 Date of conversion contract .....

1.9.2 Date on which conversion was commenced .....

1.9.3 Date of completion of conversion .....

1.10 Status of ship:

1.10.1 New ship in accordance with Regulation 1(6) |___|

1.10.2 Existing ship in accordance with Regulation 1(7) |___|

1.10.3 New oil tanker in accordance with regulation 1(26) |___|

1.10.4 Existing oil tanker in accordance with Regulation 1(27) |___|

1.10.5 The ship has been accepted by the Administration as an "existing ship" under Regulation 1(7) due to unforeseen delay in delivery |___|

1.10.6 The ship has been accepted by the Administration as an "existing oil tanker" under Regulation 1(27) due to unforeseen delay in delivery |___|

1.10.7 The ship is not required to comply with the provisions of Regulation 24 due to the unforeseen delay in delivery |___|

1.11 Type of ship:

1.11.1 Crude oil tanker |___|

1.11.2 Product carrier |___|

1.11.3 Crude oil/product carrier |___|

1.11.4 Combination carrier |___|

1.11.5 Ship, other than an oil tanker, with cargo tanks coming under Regulation 2(2) of Annex I of the Convention |___|

1.11.6 Oil tanker dedicated to the carriage of products referred to in Regulation 15(7) |___|

1.11.7 The ship, being designated as a "crude oil tanker" operating with COW, is also designated as a "product carrier" operating with CBT, for which a separate IOPP Certificate has also been issued |___|

1.11.8 The ship being designated as a "product carrier" operating with CBT, is also designated as a "crude oil tanker" operating with COW, for which a separate IOPP Certificate has also been issued |___|

1.11.9 Chemical tanker carrying oil |___|

2. EQUIPMENT FOR THE CONTROL OF OIL DISCHARGE FROM MACHINERY SPACE BILGES AND OIL FUEL TANKS (Regulations 10 and 16)

2.1 Carriage of ballast water in oil fuel tanks:

2.1.1 The ship may under normal conditions carry ballast water in oil fuel tanks |___|

2.1.2 The ship does not under normal conditions carry ballast water in oil fuel tanks |___|

2.2 Type of separating/filtering equipment fitted:

2.2.1 Equipment capable of producing effluent with oil content less than 100 ppm |___|

2.2.2 Equipment capable of producing effluent with oil content not exceeding 15 ppm |___|

2.3 Type of control system:

2.3.1 Discharge monitoring and control system (Regulation 16(5)):

.1 with automatic stopping device |___|

.2 with manual stopping device |___|

.2 To reception facility (identify port).

67. Was there any indication of oil contamination of the ballast water before or during discharge into the sea?

68. Was the discharge monitored by an oil content meter?

69. Time and position of ship when valves separating dedicated clean ballast tanks from the cargo and stripping lines were closed on completion of deballasting.

(M) CONDITION OF OIL DISCHARGE MONITORING AND CONTROL SYSTEM

70. Time of system failure.

71. Time when system has been made operational.

72. Reasons for failure.

(N) ACCIDENTAL OR OTHER EXCEPTIONAL DISCHARGES OF OIL

73. Time of occurrence.

74. Port or ship's position at time of occurrence.

75. Approximate quantity and type of oil.

76. Circumstances of discharge or escape, the reasons therefor and general remarks.

(O) ADDITIONAL OPERATIONAL PROCEDURES AND GENERAL REMARKS

TANKERS ENGAGED IN SPECIFIC TRADES

(P) LOADING OF BALLAST WATER

77. Identity of tank(s) ballasted.

SUR
(OIL TANKER)

APPENDIX III
In duplicate

CAYMAN ISLANDS OIL POLLUTION PREVENTION
CERTIFICATE AND SUPPLEMENT
ISSUED BY THE GOVERNMENT OF THE CAYMAN ISLANDS

Name of Ship	Official Number	Port of Registry	Gross Tonnage

Type of Ship:

*Oil Tanker
*Ship other than an oil tanker with cargo tanks coming under Regulation 2(4) of THE MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS 1988

THIS IS TO CERTIFY:

1. That the ship has been surveyed in accordance with Regulation 4 of THE MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS 1988; and

2. That the survey shows that the structure, equipment, systems, fittings, arrangement and material of the ship and the condition thereof are in all respects satisfactory and that the ship complies with the applicable requirements of THE MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS 1988.

This Certificate is valid until .....

Issued at .....
(Place of issue of certificate)

..... 19.... .....

(Signature of duly authorised officer of the Government of the Cayman Islands issuing the Certificate)

*Delete as appropriate.

SUPPLEMENT TO THE CAYMAN ISLANDS OIL POLLUTION PREVENTION CERTIFICATE (CIOPP CERTIFICATE)

RECORD OF CONSTRUCTION AND EQUIPMENT FOR OIL TANKERS in respect of the provisions of the MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS 1988

Notes:
1. This Record shall be permanently attached to the CIOPP Certificate. The CIOPP Certificate shall be available on board the ship at all times.

2. Entries in boxes shall be made by inserting either (Y) for the answers "yes" and "applicable" or (N) for the answers "no" and "not applicable" as appropriate.

3. Regulations mentioned in this Record refer to Regulations of the MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS 1988.

4. Resolutions mentioned in this Record refer to those adopted by the International Maritime Organisation.

1. PARTICULARS OF SHIP

1.1 Name of ship .....

1.2 Official number .....

1.3 Port of registry .....

1.4 Gross tonnage .....

1.5 Carrying capacity of ship .....(m^3)

1.6 Deadweight of ship .....(metric tons) (Regulation 1(2))

1.7 Length of ship .....(m) (Regulation 1(2)

1.8 Date of build:

1.8.1 Date of building contract .....

1.8.2 Date on which keel was laid or ship was at a similar stage of construction .....
.....

1.8.3 Date of delivery .....

1.9 Major conversion (if applicable):

1.9.1 Date of conversion contract .....

53. Was a regular check kept on the effluent and the surface of the water in the locality of the discharge:

54. Confirm that all applicable valves in the ship's piping system have been closed on completion of discharge from the slop tanks.

(J) DISPOSAL OF RESIDUES AND OILY MIXTURES NOT OTHERWISE DEALT WITH

55. Identity of tank(s).

56. Quantity disposed of from each tank.

57. Method of disposal:

.1 To reception facilities (identify port);
.2 Mixed with cargo;
.3 Transferred to another tank(s) (identify tank(s));
.4 Other method (state which).

(K) DISCHARGE OF CLEAN BALLAST CONTAINED IN CARGO TANKS

58. Position of ship at start of discharge of clean ballast.

59. Identity of tank(s) discharged.

60. Was (were) the tank(s) empty on completion?

61. Position of ship on completion if different from 58.

62. Was a regular check kept on the effluent and the surface of the water in the locality of the discharge?

(L) DISCHARGE OF BALLAST FROM DEDICATED CLEAN BALLAST TANKS (CBT TANKERS ONLY)

63. Identity of tank(s) discharged.

64. Time and position of ship at start of discharge of clean ballast into the sea.

65. Time and position of ship on completion of discharge into the sea.

66. Quantity discharged:

.1 Into the sea; or

(H) DISCHARGE OF DIRTY BALLAST

32. Identity of tank(s).
33. Position of ship at start of discharge into the sea.
34. Position of ship on completion of discharge into the sea.
35. Quantity discharged into the sea.
36. Ship's speed(s) during discharge.
37. Was the discharge monitoring and control system in operation during the discharge?
38. Was a regular check kept on the effluent and the surface of the water in locality of the discharge?
39. Quantity of oily water transferred to slop tanks (identify slop tank(s)).
40. Discharged to shore reception facilities (identify port if applicable).

(I) DISCHARGE OF WATER FROM SLOP TANKS INTO THE SEA.

41. Identity of slop tank(s).
42. Time of settling from last entry of residues, or
43. Time of settling from last discharge.
44. Time and position of ship at start of discharge.
45. Ullage of total contents at start of discharge.
46. Ullage of oil/water interface at start of discharge.
47. Bulk quantity discharged and rate of discharge.
48. Final quantity discharged and rate of discharge.
49. Time and position of ship on completion of discharge.
50. Was the discharge monitoring and control system in operation during the discharge?
51. Ullage of oil/water interface on completion of discharge.
52. Ship's speed(s) during discharge.

1.9.2 Date on which conversion was commenced .....
.....

1.9.3 Date of completion of conversion .....

1.10 Status of ship:

1.10.1 New ship in accordance with Regulation 1(2) ☐

1.10.2 Existing ship in accordance with Regulation 1(2) ☐

1.10.3 New oil tanker in accordance with Regulation 17(1) ☐

1.10.4 Existing oil tanker in accordance with Regulation 17(2) ☐

1.10.5 The ship has been accepted as an "existing ship" under Regulation 1(2) due to unforeseen delay in delivery ☐

1.10.6 The ship has been accepted as an "existing oil tanker" under Regulation 17(2) due to unforeseen delay in delivery. ☐

1.10.7 The ship is not required to comply with the provisions of Regulation 28 due to the unforeseen delay in delivery ☐

1.11 Type of ship:

1.11.1 Crude oil tanker ☐

1.11.2 Product carrier ☐

1.11.3 Crude oil/product carrier ☐

1.11.4 Combination carrier ☐

1.11.5 Ship, other than an oil tanker, with cargo tanks coming under Regulation 2(4) ☐

1.11.6 Oil tanker dedicated to the carriage of products referred to in Regulation 15(6) |___|

1.11.7 The ship, being designated as a "crude oil tanker" operating with COW, is also designated as a "product carrier" operating with CBT, for which a separate CIOPP Certificate has also been issued |___|

1.11.8 The ship, being designated as a "product carrier" operating with CBT, is also designated as a "crude oil tanker" operating with COW, for which a separate CIOPP Certificate has also been issued |___|

1.11.9 Chemical tanker carrying oil |___|

2. EQUIPMENT FOR THE CONTROL OF OIL DISCHARGE FROM MACHINERY SPACE BILGES AND OIL FUEL TANKS (Regulations 14 and 16)

2.1 Carriage of ballast water in oil fuel tanks:

2.1.1 The ship may under normal conditions carry ballast water in oil fuel tanks |___|

2.1.2 The ship does not under normal conditions carry ballast water in oil fuel tanks |___|

2.2 Type of separating/filtering equipment fitted:

2.2.1 Equipment capable of producing effluent with oil content less than 100 ppm |___|

2.2.2 Equipment capable of producing effluent with oil content not exceeding 15 ppm |___|

2.3 Type of control system:

2.3.1 Discharge monitoring and control system (Regulation 14(5)):

.1 with automatic stopping device |___|

.2 with manual stopping device |___|

(E) BALLASTING OF CARGO TANKS

18. Identity of tank(s) ballasted.

19. Position of ship at start of ballasting.

(F) BALLASTING OF DEDICATED CLEAN BALLAST TANKS (CBT TANKERS ONLY)

20. Identity of tank(s) ballasted.

21. Position of ship when water intended for flushing, or port ballast was taken to dedicated clean ballast tank(s).

22. Position of ship when pump(s) and lines were flushed to slop tank.

23. Quantity of oily water resulting from line flushing transferred to slop tanks (identify slop tank(s)).

24. Position of ship when additional ballast water was taken to dedicated clean ballast tank(s).

25. Time and position of ship when valves separating the dedicated clean ballast tanks from cargo and stripping lines were closed.

26. Quantity of clean ballast taken on board.

(G) CLEANING OF CARGO TANKS

27. Identity of tank(s) cleaned.

28. Port or ship's position.

29. Duration of cleaning.

30. Method of cleaning.[4]

31. Tank washings transferred to:

.1 Reception facilities;

.2 Slop tank(s) or cargo tank(s) designated as slop tank(s) (identify tank(s)).

LIST OF ITEMS TO BE RECORDED

(A) LOADING OF OIL CARGO

1. Place of loading
2. Type of oil loaded and identity of tank(s)
3. Total quantity of oil loaded

(B) INTERNAL TRANSFER OF OIL CARGO DURING VOYAGE

4. Identity of tank(s):

   .1 From:
   .2 To:

5. Was (Were) tank(s) in 4(1) emptied?

(C) UNLOADING OF OIL CARGO

6. Place of unloading.
7. Identity of tank(s) unloaded.
8. Was (Were) tank(s) emptied?

(D) CRUDE OIL WASHING (COW TANKERS ONLY)

(To be completed for each tank being crude oil washed)

9. Port where crude oil washing was carried out or ship's position if carried out between two discharge ports.
10. Identity of tank(s) washed.[1]
11. Number of machines in use.
12. Time of start of washing.
13. Washing pattern employed.[2]
14. Washing line pressure.
15. Time completed or stopped washing.
16. State method of establishing what tank(s) was (were) dry.
17. Remarks.[3]

2.3.2 15 ppm alarm (Regulation 14(7)) |__|

2.3.3 Automatic stopping device for discharges in special areas (Regulation 16(3)(b)(vi)) |__|

2.3.4 Oil content meter (resolution A.444(XI)):

.1 with recording device |__|

.2 without recording device |__|

2.4 Approval standards:

2.4.1 The separating/filtering system:

.1 has been approved in accordance with resolution A.393(X) |__|

.2 has been approved in accordance with resolution A.233(VII) |__|

.3 has been approved in accordance with National Standards not based upon resolution A.393(X) or A.233(VII) |__|

.4 has not been approved |__|

2.4.2 The process unit has been approved in accordance with resolution A.444(X) |__|

2.4.3 The oil content meter has been approved in accordance with resolution A.393(X) |__|

2.5 Maximum throughput of the system is ..... m^3/h

2.6 Application:

2.6.1 The ship is not required to be fitted with the above equipment until 2nd October 1986 in accordance with Regulation 14(4) |__|

3. TANKS FOR OIL RESIDUES (SLUDGE) (Regulation 25(1) and (2))

3.1 The ship is provided with oil residue (sludge) tanks with the total capacity of .....m^3 |__|

3.2 Means for the disposal of oil residue in addition to the provision of sludge tanks .... |__|__|

4. STANDARD DISCHARGE CONNECTION (Regulation 25(3))

4.1 The ship is provided with a pipeline for the discharge of residues from machinery bilges to reception facilities, fitted with a standard discharge connection in compliance with Regulation 25(3) |__|__|

5. CONSTRUCTION (Regulations 18, 28 and 29)

5.1 In accordance with the requirements of Regulation 18, the ship is:

5.1.1 Required to be provided with SBT, PL and COW |__|__|

5.1.2 Required to be provided with SBT and PL |__|__|

5.1.3 Required to be provided with SBT |__|__|

5.1.4 Required to be provided with SBT, CBT, or COW |__|__|

5.1.5 Required to be provided with SBT or CBT |__|__|

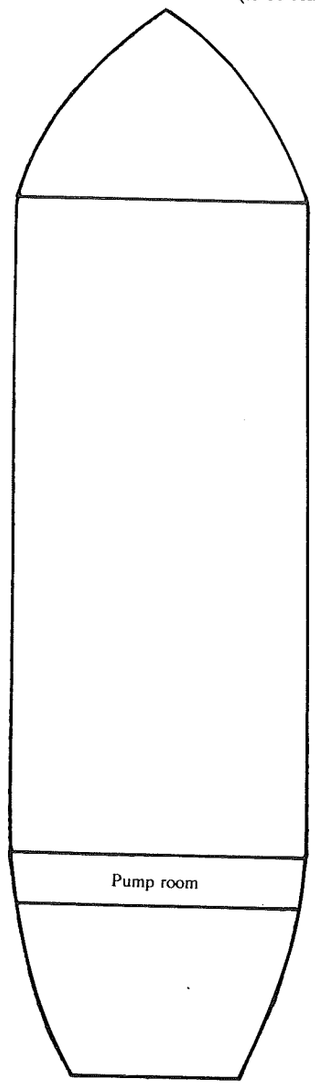
5.1.6 Not required to comply with the requirement of Regulation 18 |__|__|

5.2 Segregated ballast tanks (SBT):

5.2.1 The ship is provided with SBT in compliance with Regulation 18 |__|__|

5.2.2 The ship is provided with SBT which are arranged in protective locations (PL) in compliance with Regulation 19 |__|__|

PLAN VIEW OF CARGO AND SLOP TANKS
(to be completed on board)



Identification of the tanks	Capacity (m^3)
Depth of slop tanks(s) (m):	

OIL RECORD BOOK (PART II)

PART II-CARGO/BALLAST OPERATIONS

INTRODUCTION

PART II of the Oil Record Book is required to cargo/ballast operations for every oil tanker of 150 tons gross and above.

The following pages list items which are, when appropriate, to be recorded in the Oil Record Book in accordance with regulation 10 of the Merchant Shipping (Prevention of Oil Pollution)(Cayman Islands) Regulation 1988. The items have been grouped into operational sections, each of which is denoted by a letter.

When making entries in the Oil Record Book, the date, operational code and item numbers shall be inserted in the appropriate columns and the required particulars shall be recorded chronologically in blank spaces.

Each completed operation shall be signed for and dated by the officer or officers in charge. Each completed page shall be countersigned by the master of the ship.

In respect of the oil tankers engaged in specific trades in accordance with regulation 22 of the Merchant Shipping (Prevention of Oil Pollution) (Cayman Islands) Regulations 1988, the appropriate entry in the Oil Record Book shall be endorsed by the competent Port State Authority.

5.2.3 SBT are distributed as follows:

Tank	Volume (m^3)	Tank	Volume (m^3)
		Total	

5.3 Dedicated clean ballast tanks (CBT):

5.3.1 The ship is provided with CBT in compliance with Regulation 20, and may operate as a product carrier ☐

5.3.2 CBT are distributed as follows:

Tank	Volume (m^3)	Tank	Volume (m^3)
		Total	

5.3.3 The ship has been supplied with a valid Dedicated Clean Ballast Tank Operation Manual, which is dated ..... ☐

5.3.4 The ship has common piping and pump arrangements for ballasting the CBT and handling cargo oil ☐

5.3.5 The ship has separate independent piping and pumping arrangements for ballasting the CBT ☐

5.4 Crude oil washing (COW):

5.4.1 The ship is equipped with a COW system in compliance with Regulation 21 ☐

5.4.2 The ship is equipped with a COW System in compliance with Regulation 21 except that the effectiveness of the system has not been confirmed in accordance with Regulation 18(6) and paragraph 4.2.10 of the Revised COW specifications (resolution A.446(XI)) |___|

5.4.3 The ship has been supplied with a valid Crude Oil Washing Operations and Equipment Manual, which is dated ..... |___|

5.4.4 The ship is not required to be but is equipped with COW in compliance with the safety aspects of Revised COW Specifications (resolution A.446(XI)) |___|

5.5 Exemption from Regulation 18:

5.5.1 The ship is solely engaged in trade between ..... in accordance with Regulation 22 and is therefore exempted from the requirements of Regulation 18 |___|

5.5.2 The ship is operating with special ballast arrangements in accordance with Regulation 23 and is therefore exempted from the requirements of Regulation 18 |___|

5.6 Limitation of size and arrangements of cargo tanks (Regulation 28) (See Regulation 2(4)):

5.6.1 The ship is required to be constructed according to, and complies with, the requirements of Regulation 28 |___|

5.6.2 The ship is required to be constructed according to, and complies with, the requirements of Regulation 28(4) |___|

5.7 Subdivision and stability (Regulation 29):

5.7.1 The ship is required to be constructed according to, and complies with, the requirements of Regulation 29 |___|

5.7.2 Information and data required under Regulation 29(5) have been supplied to the ship |___|

APPENDIX II

OIL RECORD BOOK (PART II)

CARGO/BALLAST OPERATIONS

Name of ship .....

Official Number .....

Gross tonnage .....

Period From ..... to .....

MACHINERY SPACE OPERATIONS

Date	Code (letter)	Item (number)	Record of operations/signature of officer in charge

Signature of Master .....

6. RETENTION OF OIL ON BOARD (Regulation 15)

6.1 Oil discharge monitoring and control system: ☐

6.1.1 The ship comes under category ..... oil tanker as defined in resolution A.496(XII)

6.1.2 The system comprises:

.1 control unit ☐

.2 computing unit ☐

.3 calculating unit ☐

6.1.3 The system is:

.1 fitted with a starting interlock ☐

.2 fitted with automatic stopping device ☐

6.1.4 the oil content meter is approved under the terms of resolution A.393(X) suitable for:

.1 crude oil ☐

.2 black products ☐

.3 white products ☐

6.1.5 The ship has been supplied with an operations manual for the oil discharge monitoring and control system ☐

6.2 Slop tanks:

6.2.1 The ship is provided with ..... dedicated slop tank(s) with the total capacity of ..... m^3 which is .....% of the oil carrying capacity, in accordance with:

.1 Regulation 15(2)(c) |___|

.2 Regulation 15(2)(c)(i) |___|

.3 Regulation 15(2)(c)(ii) |___|

6.2.2 Cargo tanks have been designated as slop tanks |___|

6.2.3 The ship is not required to be provided with slop tank arrangements until 2nd October 1986 in accordance with Regulation 15(1) |___|

6.3 Oil/water interface detectors:

6.3.1 The ship is provided with oil/water interface detectors approved under the terms of resolution MEPC.5(XIII) |___|

6.4 Exemption from Regulation 15:

6.4.1 the ship is exempted from the requirements of regulation 15(1), (2) and (3) in accordance with regulation 15(6) |___|

6.4.2 the ship is exempted from the requirements of regulation 15(1), (2) and (3) in accordance with regulation 2(4) |___|

7. PUMPING, PIPING AND DISCHARGE ARRANGEMENTS (Regulation 26)

7.1 The overboard discharge outlets for segregated ballast are located:

.4 To slop or collecting tank (identify tank).

(E) AUTOMATIC DISCHARGE OVERBOARD OR DISPOSAL OTHERWISE OF BILGE WATER WHICH HAS ACCUMULATED IN MACHINERY SPACES.

16. Time when the system has been put into automatic mode of operation for discharge overboard.

17. Time when the system has been put into automatic mode of operation for transfer of bilge water to collecting (slop) tank (identify tank).

18. Time when the system has been put to manual operation.

19. Method of discharge overboard:

.1 Through 100 ppm equipment;

.2 Through 15 ppm equipment.

(F) CONDITION OF OIL DISCHARGE MONITORING AND CONTROL SYSTEM

20. Time of system failure.

21. Time when system has been made operational.

22. Reasons for failure.

(G) ACCIDENTAL OR OTHER EXCEPTIONAL DISCHARGES OF OIL

23. Time of occurrence.

24. Place or position of ship at time of occurrence.

25. Approximate quantity and type of oil.

26. Circumstances of discharge or escape, the reasons therefor and general remarks.

(H) ADDITIONAL OPERATIONAL PROCEDURES AND GENERAL REMARKS

(B) DISCHARGE OF DIRTY BALLAST OR CLEANING WATER FROM OIL FUEL TANKS REFERRED TO UNDER SECTION (A)

5. Identity of tank(s).

6. Position of ship at start of discharge.

7. Position of ship on completion of discharge.

8. Ship's speed(s) during discharge.

9. Method of discharge:

.1 Through 100 ppm equipment;

.2 Through 15 ppm equipment;

.3 To reception facilities.

10. Quantity discharged.

(C) DISPOSAL OF OIL RESIDUES (SLUDGE)

11. Quantity of residue retained on board for disposal.

12. Methods of disposal of residue:

.1 To reception facilities (identify port);

.2 Mixed with bunkers;

.3 Transferred to another (other) tank(s) (identify tank(s));

.4 Other method (state which).

(D) NON-AUTOMATIC DISCHARGE OVERBOARD OR DISPOSAL OTHERWISE OF BILGE WATER WHICH HAS ACCUMULATED IN MACHINERY SPACES

13. Quantity discharged.

14. Time of discharge.

15. Method of discharge or disposal:

.1 Through 100 ppm equipment;

.2 Through 15 ppm equipment;

.3 To reception facilities (identify port);

7.1.1 above the waterline ☐

7.1.2 below the waterline ☐

7.2 The overboard discharge outlets, other than the discharge manifold, for clean ballast are located:*

7.2.1 above the waterline ☐

7.2.2 below the waterline ☐

7.3. The overboard discharge outlets, other than the discharge manifold, for dirty ballast are located:*

7.3.1 above the waterline ☐

7.3.2 below the waterline in conjunction with the part flow arrangements in compliance with Regulation 26(6)(e) ☐

7.3.3 below the waterline ☐

7.4 Discharge of oil from cargo pumps and oil lines (Regulation 26(4) and (5)):

7.4.1 Means to drain all cargo pumps and oil lines at the completion of cargo discharge:

.1 drainings capable of being discharged to a cargo tank or slop tank ☐

.2 for discharge ashore a special small diameter line is provided ☐

8. EQUIVALENT ARRANGEMENTS FOR CHEMICAL TANKERS CARRYING OIL

8.1 As equivalent arrangements for the carriage of oil by a chemical tanker, the ship is fitted with the following equipment in lieu of slop tanks (paragraph 6.2 above) and oil/water interface detectors (paragraph 6.3 above):

8.1.1 oily-water separating equipment capable of producing effluent with oil content less than 100 ppm, with the capacity of ..... m^3/h |___|

8.1.2 a holding tank with the capacity of ..... m^3 |___|

8.1.3 a tank for collecting tank washings which is

.1 a dedicated tank |___|

.2 a cargo tank designated as a collecting tank |___|

8.1.4 as permanently installed transfer pump for overboard discharge of effluent containing oil through the oily-water separating equipment |___|

8.2 The oily-water separating equipment has been approved under the terms of resolution A.393(X) and is suitable for the full range of Annex I products |___|

8.3 The ship holds a valid Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk |___|

9. EXEMPTION

9.1 Exemptions have been granted by the Secretary of State from the requirements of the Merchant Shipping (Prevention of Oil Pollution) Regulations 1988 in accordance with Regulation 2(3) on those items listed under paragraph(s) .... of this Record

10. EQUIVALENTS

10.1 Equivalents have been approved by the Secretary of State from certain requirements of the Merchant Shipping (Prevention of Oil Pollution) Regulations 1988 in accordance with Regulation 3 on those items listed under paragraph(s) .... of this Record

OIL RECORD BOOK (PART I)

PART I - MACHINERY SPACE OPERATIONS

INTRODUCTION

Part I of the Oil Record Book is required to record machinery space operations for every ship of 400 tons gross tonnage and above, other than oil tankers, and every oil tanker of 150 tons gross tonnage and above.

The following pages list items which are, when appropriate, to be recorded in the Oil Record Book in accordance with regulation 10 of the Merchant Shipping (Prevention of Oil Pollution) (Cayman Islands) Regulations 1988. The items have been grouped into operational sections each of which is denoted by a letter code.

When making entries in the Oil Record Book, the date, operational code and item number shall be inserted in the appropriate columns and the required particulars shall be recorded chronologically in the blank space.

Each completed operation shall be signed for and dated by the officer or officers in charge. Each completed page shall be signed by the master of the ship.

LIST OF ITEMS TO BE RECORDED

(A) BALLASTING OR CLEANING OF OIL FUEL TANKS

1. Identity of tank(s) ballasted
2. Whether cleaned since they last contained oil and, if not, type of oil previously carried.
3. Position of ship at start of cleaning.
4. Position of ship at start of ballasting.

APPENDIX I

OIL RECORD BOOK (PART I)

MACHINERY SPACE OPERATIONS

Name of ship .....

Official Number .....

Gross tonnage .....

Period From ..... to .....

THIS IS TO CERTIFY that this Record is correct in all respects

Issued at .....
(Place of issue of the Record)

..... 19.... .....
(Signature of authorised officer of the Government of the Cayman Islands issuing the Record)

* Only those outlets which can be monitored are to be indicated.

SUR
(SHIP OTHER THAN OIL TANKER)

APPENDIX IV
In duplicate

CAYMAN ISLANDS OIL POLLUTION PREVENTION
CERTIFICATE AND SUPPLEMENT
ISSUED BY THE GOVERNMENT OF THE CAYMAN ISLANDS

Name of Ship	Official Number	Port of Registry	Gross Tonnage

Type of ship:

Ship, other than an oil tanker, or a ship with cargo tanks coming under Regulation 2(4) of the Merchant Shipping (Prevention of Oil Pollution) Regulations 1988.

THIS IS TO CERTIFY:

1. That the ship has been surveyed in accordance with Regulation 4 of THE MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS 1988, and

2. That the survey shows that the structure, equipment, systems, fittings, arrangement and material of the ship and the condition thereof are in all respects satisfactory and that the ship complies with the applicable requirements of THE MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS 1988.

This Certificate is valid until _____

Issued at _____
(Place of issue of certificate)

_____ 19____ _____
(Signature of duly authorised officer of the Government of the Cayman Islands issuing the Certificate)

SCHEDULE 2 Regulation 10(1)

OIL RECORD BOOKS

1. CONTENTS

APPENDIX I OIL RECORD BOOK (PART I)-ALL SHIPS-(MACHINERY SPACE OPERATIONS)

APPENDIX II OIL RECORD BOOK (PART II)-OIL TANKERS- (CARGO/BALLAST OPERATIONS)

2. NOTE

Any reference in this Schedule to a regulation means a regulation of that number in Annex I of the Convention.

4. STANDARD DISCHARGE CONNECTION (Regulation 25(3))

4.1 The ship is provided with a pipeline for the discharge of residues from machinery bilges to reception facilites, fitted with a standard discharge connection in accordance with Regulation 25(3) ☐

5. EXEMPTION

5.1 Exemptions have been granted by the Secretary of State from the Requirements of the Merchant Shipping (Prevention of Oil Pollution) (Cayman Islands) Regulations 1988 in accordance with regulation with 2(3) on those items listed under paragraph(s) ..... of this Record

6. EQUIVALENTS

6.1 Equivalents have been approved by the Secretary of State from certain requirements of the Merchant Shipping (Prevention of Oil Pollution) (Cayman Islands) Regulations 1988 in accordance with Regulation 3 on those items listed under paragraph(s) .... of this Record.

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at .....
(Place of issue of the Record)

..... 19... .....
(Signature of duly authorised officer of the Government of the Cayman Islands issuing the Record)

Cayman Islands

SUPPLEMENT TO THE CAYMAN ISLANDS OIL POLLUTION PREVENTION CERTIFICATE
(CIOPP CERTIFICATE)

RECORD OF CONSTRUCTION AND EQUIPMENT FOR SHIPS OTHER THAN OIL TANKERS
in respect of the provisions of the MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS 1988.

Notes:
1. This Record shall be permanently attached to the CIOPP Certificate. The CIOPP Certificate shall be available on board the ship at all times.
2. Entries in boxes shall be made by inserting either (Y) for the answers "yes" and "applicable" or (N) for the answers "no" and "not applicable" as appropriate.
3. Regulations mentioned in this Record refer to Regulations of the MERCHANT SHIPPING (PREVENTION OF OIL POLLUTION) (CAYMAN ISLANDS) REGULATIONS 1988.
4. Resolutions mentioned in this Record refer to those adopted by the International Maritime Organisation.

1. PARTICULARS OF SHIP

1.1 Name of ship .....

1.2 Official number .....

1.3 Port of registry .....

1.4 Gross tonnage .....

1.5 Date of Build:

1.5.1 Date of building contract .....

1.5.2 Date of which keel was laid or ship was at a similar stage of construction .....
.....

1.5.3 Date of delivery .....

1.6 Major conversion (if applicable): _____.

1.6.1 Date of conversion contracted .....

1.6.2 Date on which conversion was commenced .....

1.6.3 Date of completion of conversion .....

1.7 Status of ship:

1.7.1 New ship in accordance with Regulation 1(2)

1.7.2 Existing ship in accordance with Regulation 1(2)

1.7.3 The ship has been accepted as an "existing ship" under Regulation 1(2) due to unforseen delay in delivery |___|

2. EQUIPMENT FOR THE CONTROL OF OIL DISCHARGE FROM MACHINERY SPACE BILGES AND OIL FUEL TANKS (Regulations 14 and 16)

2.1 Carriage of ballast water in oil fuel tanks:

2.1.1 The ship may under normal conditions carry ballast water in oil fuel tanks |___|

2.1.2 The ship does not under normal conditions carry ballast water in oil fuel tanks |___|

2.2 Type of separating/filtering equipment fitted:

2.2.1 Equipment capable of producing effluent with oil content less than 100 ppm |___|

2.2.2 Equipment capable of producing effluent with oil content not exceeding 15 ppm |___|

2.3 Type of control system:

2.3.1 Discharge monitoring and control system (Regulation 14(5)):

.1 with automatic stopping device |___|

.2 with manual stopping device |___|

2.3.2 15 ppm alarm (Regulation 14(7)) |___|

2.3.3 Automatic stopping device for discharges in special areas (Regulation 16(3)(b)(vi)) |___|

2.3.4 Oil content meter (resolution A.444(XI)):

.1 with recording device |___|

.2 without recording device |___|

2.4 Approval standards:

2.4.1 The separating/filtering equipment:

.1 has been approved in accordance with resolution A.393(X) |___|

.2 has been approved in accordance with resolution A.233(VII) |___|

.3 has been approved in accordance with national standards not based upon resolution A.393(X) or A.233(VII) |___|

.4 has not been approved |___|

2.4.2 The process unit has been approved in accordance with resolution A.444(XI) |___|

2.4.3 The oil content meter has been approved in accordance with resolution A.393(X) |___|

2.5 Maximum throughput of the system is ..... m^3/h

2.6 Application:

2.6.1 The ship is not required to be fitted with the above equipment until 2nd October 1986 in accordance with Regulation 14(4) |___|

3. TANKS FOR OIL RESIDUES (SLUDGE) Regulation 25(1) and (2))

3.1 The ship is provided with oil residues (sludge) tanks with the total capacity of ..... m^3 |___|

3.2 Means for the disposal of oil residue in addition to the provision of sludge tanks ..... |___|

NOTE 1: Single beam and non-scanning spectrophotometers can be used for this test. Follow manufacturer's instructions and measure the absorbance directly at or near 2,930 cm^{-1}.

4.7.4 Construct a straight baseline under the hydrocarbon bank as illustrated in Figure 4. If the scan is recorded on absorbance paper, read the absorbance of the peak maximum at 2,930 cm^{-1} and subtract the absorbance of the baseline at that point, if the scan is recorded on transmittance paper, the net absorbance is:

$$\log_{10} \frac{\%T \text{ (baseline)}}{\%T \text{ (peak maximum)}}$$

4.7.5 Prepare a calibration plot of net absorbance vs. mg/100ml oil using the response of the standards.
NOTE 2: The oil concentration may be plotted as per cent of stock standard. When this procedure is used, the concentration of the stock standard must be used in the calculations (4.8.2).

4.7.6 If the net absorbance of a sample exceeds 0.8 on the linear range of the instrument as determined by the calibration plot, prepare a dilution of the sample by pipetting an appropriate volume of the extract into a volumetric flask and diluting to volume. If the absorbance is less than 0.1, more accurate results can be obtained by using a longer path-length cell.

4.8 **Calculations**

4.8.1 Use the calibration plot to calculate the mg of oil in each 100 ml of sample extract or dilution.

78. Position of ship when ballasted.
79. Total quantity of ballast loaded in cubic metres.
80. Remarks.

(Q) RE-ALLOCATION OF BALLAST WATER WITHIN THE SHIP

81. Reasons for re-allocation

(R) BALLAST WATER DISCHARGE TO RECEPTION FACILITY

82. Port(s) where ballast water was discharged.
83. Name or designation of reception facility.
84. Total quantity of ballast water discharged in cubic metres.
85. Date, signature and stamp of port authority official.

---------- Footnotes ----------

1. When an individual tank has more machines than can be operated simultaneously, as described in the Operations and Equipment Manual, then the section being crude oil washed should be identified, e.g. No. 2 centre, forward section.

2. In accordance with the Operations and Equipment Manual, enter whether single-stage or multi-stage method of washing is employed. If multi-stage method is used, give the vertical arc covered by the machines and the number of times that arc is covered for that particular stage of the programme.

3. If the programmes given in the Operations and Equipment Manual are not followed, then the reasons must be given under Remarks.

4. Hand hosing, machine washing and/or chemical cleaning. Where chemically cleaned, the chemical concerned and amount used should be stated.

CARGO/BALLAST OPERATIONS

Date	Code (letter)	Item (number)	Record of operations/signature of officer in charge

Signature of Master ....

4.6.3 Add 50 ml carbon tetrachloride to the sample bottle. Cap tightly and thoroughly shake the bottle to rinse the inside and cap. Transfer the solvent into the separatory funnel and extract by shaking vigorously for 2 minutes. Allow the layers to separate.

4.6.4 Drain the solvent layer through a funnel containing solvent-moistened filter paper into a 100 ml volumetric flask.

4.6.5 Repeat steps 4.6.3 and 4.6.4 with an additional 50 ml portion of fresh solvent: combine all solvent in the volumetric flask.

4.6.6 Rinse the tip of the separatory funnel, filter paper and funnel with small portions of carbon tetrachloride and collect the rinsings in the volumetric flash. Adjust the extract volume up to 100 ml and stopper the flask. Mix well.

4.6.7 Drain the water layer into a 1,000 ml graduated cylinder and estimate the sample volume to the nearest 5 ml.

4.7 Infra-red Spectroscopy

4.7.1 Prepare the infra-red spectrophotometer according to manufacturer's instructions.

4.7.2 Rinse a cell with two volumes of the solution to be measured, then completely fill the cell with solution. Place a matched cell containing carbon tetrachloride in the reference beam.

4.7.3 Scan samples and standards from 3,200 cm^{-1} to 2,700 cm^{-1}.

4.5.2 Sodium chloride, NaCl reagent grade.

4.5.3 Carbon tetrachloride, CCl_4 reagent grade.

4.5.4 Oil reference: Oil collected from the source at the same time the sample was collected.

4.5.5 Stock reference standard (3 mg/ml): Accurately weigh about 0.30 g of reference oil (paragraph 4.5.4) into a tared 100 ml volumetric flask and dilute to volume with carbon tetrachloride.

4.5.6 Calibration standards: Prepare a series of dilutions by pipetting volumes of stock reference standard into 100 ml volumetric flasks and diluting to volume with carbon tetrachloride. A convenient series of volumes is 5, 10, 15, 20 and 25 ml of stock solution. Calculate the exact concentrations of the dilutions in mg/100 ml solution from the weighting above (4.5.5).

4.6. Extraction

4.6.1 If the sample was not acidified at time of collection, add 5 ml hydrochloric acid (paragraph 4.5.1) to the sample bottle. After mixing the sample, check the pH by touching pH-sensitive paper to the cap to ensure that the pH is 2 or lower. Add more acid if necessary.

4.6.2 Pour the sample into a separatory funnel and add 5 g of sodium chloride.

(Regulation 14(6),(7) and 20(3))

SCHEDULE 3

PERFORMANCE AND TEST SPECIFICATIONS FOR OILY-WATER SEPARATING EQUIPMENT AND OIL CONTENT METERS

PART I. GENERAL

In this Schedule:

"filtering equipment" means filters or any combination of separators and filters which are designed to produce effluent containing not more than 15 ppm of oil;

"separating equipment" means either separators or filters, or any combination of these which are designed to produce effluent containing not more than 100 ppm of oil.

1.1 Contents

The specifications set out in this schedule are in three parts as follows:

PART II. SPECIFICATION FOR OIL-WATER SEPARATING AND FILTERING EQUIPMENT

This specification includes basic constructional requirements and test procedures for oily-water separators, filters and necessary ancillary equipment for shipboard use. The tests are designed for equipment dealing with the effluent from machinery space bilges and from tanks which have been used alternately as fuel tanks and water ballast tanks. Filtering equipment should be designed to produce effluent containing not more than 15 ppm of oil. Separating equipment should be designed to produce effluent containing not more than 100 ppm of oil.

PART III. SPECIFICATION FOR OIL CONTENT METERS

During the discharge of effluent there is a need for an instrument to measure continuously the oil content of the effluent in the line. The aim of this specification is to lay down the most important features of the design and the method of testing such oil content meters (hereinafter called "the meter").

PART IV. METHOD FOR THE DETERMINATION OF OIL CONTENT

1.2 **General Provisions**

1.2.1 Apparatus which in every particular fulfills the requirements of these specifications may be approved for fitting on board ships. The approval shall take the form of a "Certificate of Type Test" specifying the main particulars of the apparatus and any limiting conditions on its usage necessary to ensure its proper performance. The certificate shall specify the maximum throughput for which the equipment has been approved. The certificate shall be issued in the form shown in the Attachment hereto. A copy of the certificate shall be available on board for inspection.

1.2.2 Where a range of separating or filtering equipment of the same design, but of different capacity requires certification in accordance with this specification and where the largest capacity in the range does not exceed 50 cubic metres/hour, tests in two capacities within the range may be accepted in lieu of tests on every size, provided that the two tests actually performed are from the lowest quarter and the highest quarter of the range.

4.3 **Sampling and Storage**

4.3.1 A representative sample of 1 litre volume is collected in a narrow-neck glass bottle with a pressure-sealing cap. Unless the sample is extracted on the day of collection, it shall be preserved with the addition of 5 ml hydrochloric acid (HCl) (4.5.1).

4.3.2 Because losses of oily matter will occur on sampling equipment, the collection of a composite sample is impractical. Individual portions collected at prescribed time intervals shall be analysed separately to obtain the average concentration over an extended period.

4.4 **Apparatus**

4.4.1 Separatory funnel, 1,000 ml volume, with Teflon stopcock.

4.4.2 Infra-red spectrophotometer.

4.4.3 Cells, 5 mm path-length, sodium chloride or infra-red-grade quartz with a minimum of 80% transmittance at 2930 cm . The 5 mm path-length is recommended as being convenient for monitoring levels normally encountered. Longer path-lengths may be used.

4.4.4 Filter paper, medium grade, 12.5 cm.

4.5 **Reagents**

4.5.1 Hydrochloric acid, HCl 1:1. Mix equal amounts of concentrated HCl and distilled water.

3.3.2 The arrangement on board ship for the extraction of samples from the discharge lines to the meter shall give a truly representative sample of the effluent. Sampling points shall be arranged in all discharge pipes which have to be monitored for compliance with these Regulations.

3.3.3 Oil content meters required by these Regulations shall be so designed and constructed that any operation carried out on them is automatically registered by the meters.

PART IV. METHOD FOR THE DETERMINATION OF OIL CONTENT

4.1 **Scope and Application**

4.1.1 The method includes the measurement of most light oil fractions, although some loss of volatile components will occur during the extractions.

4.1.2 The method has a nominal working range from 2 to 80 mg/1. The lower level of detection can be improved to 0.1 mg/1 by using longer path-length cells. The upper limit of the method can be extended at least to 1,00 mg/1 by preparing dilutions of the sample extract.

4.2 **Summary of Method**

The sample is acidified to a low pH and extracted with two volumes of carbon tetrachloride. The oil content is determined by comparison of the infra-red absorbances of the sample extract against known concentrations of the appropriate reference oil. Other suitable non-infra-red active solvents may be used.

PART II. SPECIFICATION FOR OILY-WATER SEPARATING AND FILTERING EQUIPMENT

2.1 **Technical Specification**

2.1.1 This specification relates primarily to separators and filters of low to medium capacity. Separating equipment shall be capable of producing an effluent containing not more than 100 ppm of oil irrespective of the oil content (from 0 to 100 per cent) of the feed supplied to it. Filtering equipment shall be capable of reducing the oil content in the effluent to not more than 15 ppm.

2.1.2 The equipment shall be strongly constructed and suitable for shipboard use and its intended location on the ship.

2.1.3 The satisfactory functioning of the equipment shall not be affected by the movements and vibrations on board ship. In particular, electrical and electronic alarm and control arrangements shall be tested to show that they are capable of continued operation under vibration conditions as follows:

(i) from 2 Hz–13.2 Hz with an amplitude of ± 1 mm; and
(ii) from 13.2 Hz–80 Hz with an acceleration amplitude of ± 0.7 g.

Additionally, the equipment shall be capable of reliable operation at angles up to 22.5 degrees in any plane from the normal operational position.

2.1.4 The equipment shall, if intended to be fitted in hazardous areas, comply with the relevant safety regulations for such spaces. Any electrical equipment which is part of the equipment shall be placed in a non-hazardous area unless it is certified

as safe for use in a hazardous area. Any moving parts which are fitted in hazardous areas shall be arranged so as to avoid the formation of static electricity.

2.1.5 The equipment shall be so designed that it functions automatically. Provision shall be made for emergency manual control.

2.1.6 Changing the feed to the separating equipment from oily water to oil, or from oil and/or water to air shall not result in the discharge overboard of any mixture containing more than 100 ppm of oil. In the case of filtering equipment the oil content in the discharge overboard shall not be more than 15 ppm of oil under the same conditions.

2.1.7 The system shall require the minimum of adjustment to bring it into operation. In the case of equipment used for engine room bilges, there shall be no need for any adjustment to valves and other equipment to bring the system into operation and, when fitted in unattended machinery spaces, the system shall be capable of operating for at least 24 hours of normal duty without attention.

2.1.8 All working parts of the equipment which are liable to wear or to damage shall be easily accessible for maintenance.

2.2 **Test Specification**

2.2.1 These test standards deal with separating or filtering equipment of low or medium capacity.

A Distance A, not greater than 400mm.
B Distance B, sufficient to insert sampling bottle.
C Dimension C, straight length should not be less than 60mm.
D Dimension D, pipe thickness should not be greater than 2mm.
E Detail E, chisel-edged chamfer (30°).

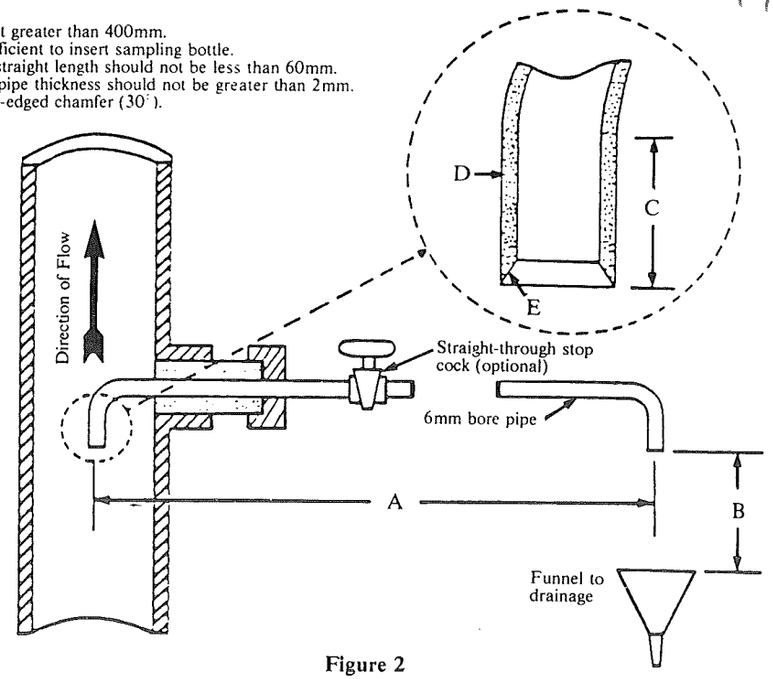


Figure 2

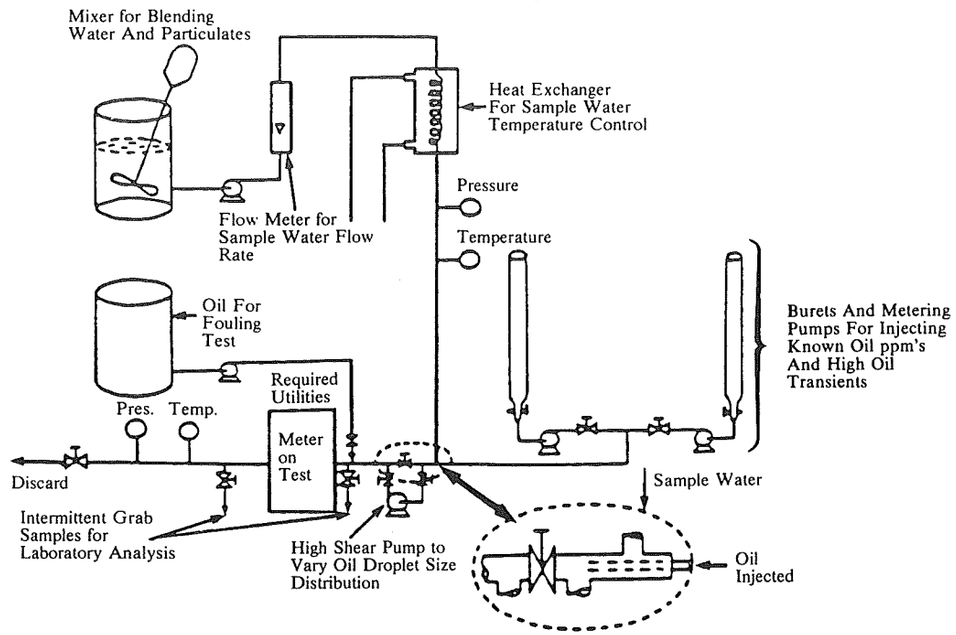


Figure 3

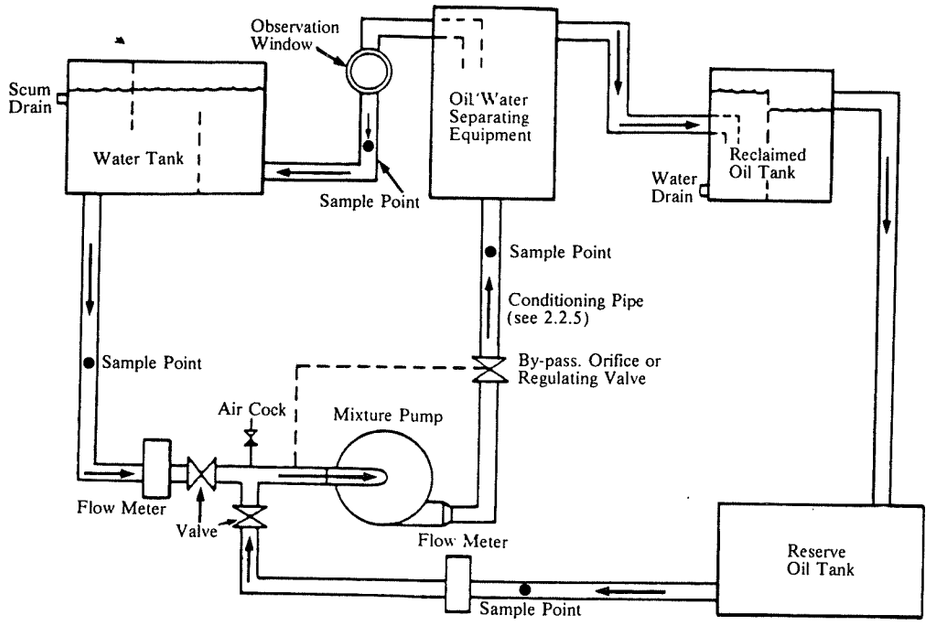


Figure 1a

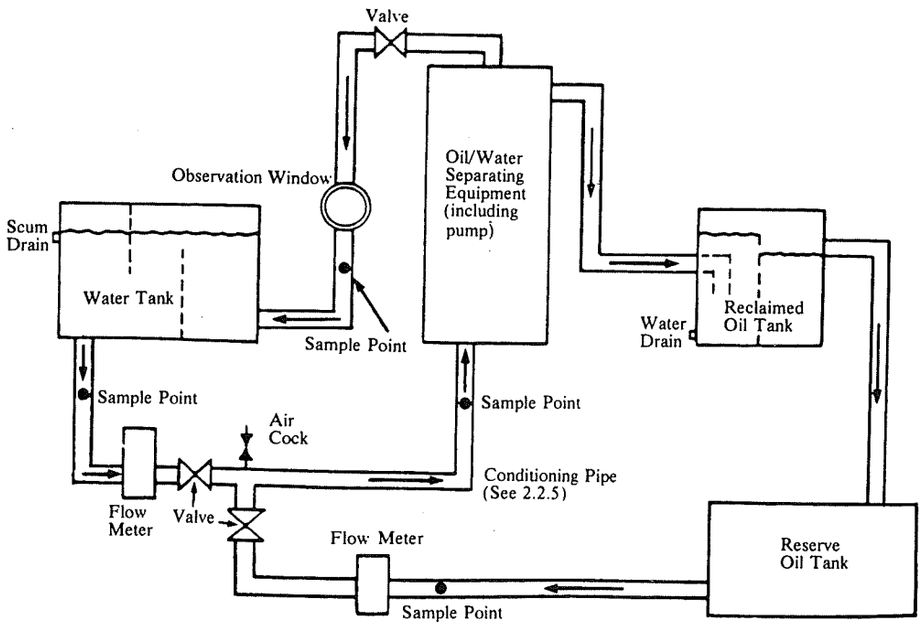


Figure 1b

2.2.2 The oily-water mixture, with which the system has in practice to deal, depends on:

(i) the position of the oil/water interface, with respect to the suction point, in the space being pumped;

(ii) the type of pump used;

(iii) the type and degree of closure of any control valve in the circuit; and

(iv) the general size and configuration of the system.

The test rig shown in figure 1 shall be so constructed as to include the following:

(i) either a separating or filtering equipment or a combination of these; and

(ii) the mixture pump, valves, pipes, etc.

The pipework shall be designed for a maximum liquid velocity of 3 m/s.

2.2.3 The tests shall be carried out with a supply rate equal to the maximum throughput for which the equipment is designed.

2.2.4 Tests shall be performed using two grades of oil as specified in this paragraph. The tests shall be carried out using a fuel oil of a relative density of about 0.94 at 15 degrees C and of a viscosity not less than 220 centistokes (about 900 seconds Redwood No. 1) at 37.8 degrees C (100 degrees F). In addition, the tests described in 2.2.10 and 2.2.11 shall be carried out using a light distillate fuel oil having a relative density of about 0.83 at 15 degrees C.

2.2.5 If the design of the equipment includes an integral feed pump it

shall be tested with that pump supplying oil and water at its rated capacity. If the equipment is to be fed by the ship's bilge pumps then it shall be tested with a centrifugal pump operating at not less than 1,000 rpm supplying the required quantity of oil and water. The bilge pump shall have a delivery capacity of not less than 1.5 times the rated capacity of the equipment at the delivery pressure required for the test. The variation in oil/water ratio can be obtained by manipulating valves on the oil and water pipes to the pump suction, and the flow rate of oil and water or the oil content of the supply to the equipment shall be monitored. If a centrifugal pump is used, the excess pump capacity can be dissipated by a by-pass to the suction side, by a throttle valve or by a standard orifice plate on the discharge side. In all cases the piping arrangements immediately prior to the equipment shall be such that the influent to the equipment will have a Reynolds Number of not less than 10,000 as calculated in fresh water, a liquid velocity of not less than 1 m/s and the length of the supply pipe from the point of oil injection to the equipment shall have a length of not less than 20 times its diameter. A sampling point and a thermometer pocket shall be provided near the inlet and a sampling point and observation window shall be provided on the outlet pipe of the equipment. Figure 1 gives diagrammatic representations of two possible test rigs (though the water and oil from the equipment need not be returned to the supply tanks). Where the water and oil are recirculated during the test, additional sampling points shall be fitted in the water and oil lines to the mixture pump in order to check the quality of the water and oil being supplied to the feed pump.

presentation of the test arrangements shall be provided and the following data shall be reported in the International Metric System of Units:

(i) Types and properties of oils used in the tests.

(ii) Concentration of oil samples tested.

(iii) Details of contaminants tested, and

(iv) Results of tests and analysis of samples.

3.3 **Installation Requirements**

3.3.1 The layout of the shipboard installation shall be so arranged that the overall response time between an alteration in the mixture being pumped and the alteration in the meter reading shall be as short as possible and in any case not more than 40 seconds, in order that remedial action may be taken before the oil content of the mixture being discharged exceeds the permissible limit.

cent of the design figures.

3.2.16 The meter shall be calibrated and zeroed. A mixture of 100 ppm Arabian light crude oil and water shall be passed through the meter for eight hours and any calibration drift noted. The meter shall then be run on oil-free water and any zero drift noted.

3.2.17 The meter shall be shut down and de-energized for one week. It shall then be turned on and started according to the manufacturer's instructions. After warm-up and calibration procedures, the meter shall be run one hour on a 100 ppm Arabian light crude oil sample and one hour on oil-free water alternately for eight hours. Any zero or span drift shall be noted. The total elapsed time to perform the manufacturer's suggested warm-up and calibration procedures shall be noted.

3.2.18 For a meter designed only to give an alarm at 15 ppm of oil, the tests detailed in paragraphs 3.2.5, 3.2.14, 3.2.15, 3.2.16 and 3.2.17 shall be performed except that an oil concentration of 15 ppm shall be used whenever concentrations up to 100 ppm are specified, and the oil used shall be light distillate fuel oil. A calibration curve is not required for such meters, and the response time is to be taken as the time for the meter to give an alarm at 15 ppm oil concentration after the supply to the meter is changed from clean water into oily water having more than 15 ppm of oil.

3.2.19 A specification of the instrument concerned and a diagrammatic

The sample shall enter the sampling pipe at stream velocity, the sampling arrangement shall be as shown in Figure 2 and, if a cock is fitted, free flow shall be effected for at least 1 minute before any sample is taken. The sampling points shall be in pipes running vertically.

2.2.6 The tests shall be carried out with clean water having a relative density at 15 degrees C not more than 0.085 greater than the relative density of the heavier fuel oil detailed in 2.2.4.

2.2.7 In equipment depending essentially on gravity, the feed to the system shall be maintained at a temperature not greater than 25 degrees C, and heating and cooling coils should be provided where necessary. In equipment depending on other forms of separation where the effect of temperature on separation efficiency is not established, tests shall be carried out over a range of temperatures between 10 degrees C and 30 degrees C or at a temperature in this range where it has been determined that separation efficiency is at its worst.

2.2.8 In equipment where it is necessary to heat water up to a given temperature and to supply heat to maintain that temperature, the tests shall be carried out at that temperature.

2.2.9 To ensure that the equipment commences the test with the oil section full of oil and with the supply line coated with oil, the equipment shall first be fed with water and while in the operating condition, be then fed with oil for not less than 5

minutes.

2.2.10 The equipment shall be fed with a mixture of between 5,000 and 10,000 ppm of oil in water until steady conditions have been established. Steady conditions are assumed to be established when a quantity of the mixture not less than twice the volume of the equipment has been pumped through the system. The test shall then proceed for 30 minutes during which time samples shall be taken for analysis at the points of mixture inlet and the water outlet at 10 minutes and 20 minutes from the start of this period. At the end of this test, an air cock shall be opened on the suction side of the pump and, if necessary, the oil and water valves shall be slowly closed together, and a sample taken at the water discharge as the flow ceases (this point can be checked from the observation window).

2.2.11 A test identical to that described in 2.2.10 above, including the opening of the air cock, shall be carried out with a mixture of approximately 25 per cent oil and 75 per cent water.

2.2.12 The equipment shall be fed with only oil sufficient to operate the automatic oil discharge valve. During this period the observation window shall be checked for any oil discharge. After the operation of the oil discharge valve, the test shall continue for 5 minutes to check the sufficiency of the oil discharge system.

2.2.13 The equipment shall be fed with water for 15 minutes and during this period two samples shall be taken at the water outlet, the

temperature and this fact noted. Any effect of water temperature on meter reading will be noted.

3.2.14 The meter shall be run on a 100 ppm Arabian light crude oil sample. Sample pressure or flow shall be adjusted from one-half normal, normal and twice normal.

Any effect of these changes on meter reading shall be noted.

(This test may require modification for meters with flow or pressure regulators or meters designed to discharge into an ambient pressure sump.)

The meter shall be run on a 100 ppm Arabian light crude oil sample. The water and oil injection pumps shall then be shut off. No other changes shall be made. The meter shall be left turned on. After 8 hours, the water and oil shall be turned on set at 100 ppm. The readings before and after the shut down and any meter damage shall be noted. If the meter is fitted with a low flow shut off, this test can determine its proper functioning.

3.2.15 The meter shall be run on a 100 ppm Arabian light crude oil sample. Supply voltage will be raised to 110 per cent of design for one hour and lowered to 90 per cent of design for one hour. Any effect on meter performance shall be noted.

If the meter requires any utilities besides electricity, it shall be tested with these utilities at 110 per cent and 90 per

Particle size in micrometres	Percentage of total weight
0- 5	39±2
5-10	18±3
10-20	16±3
20-40	18±3
40-80	9±3

During these tests any shift in the meter reading shall be noted.

3.2.11 The meter shall be run on a 100 ppm Arabian light crude oil sample if the design of the equipment includes a high shear pump. The pump shall be run at various speeds and turned off to provide a range of oil particle sizes to the meter. Any effect of particle size on the meter reading shall be noted.

3.2.12 If the meter is intended only for monitoring bilge water, the oils listed in paragraphs 3.2.6 and 3.2.7 shall be substituted by the oils identified in paragraph 2.2.4 under Part II of this Schedule. The tests indicated in paragraphs 3.2.5, 3.2.6, 3.2.8, 3.2.9, 3.2.10, 3.2.14, 3.2.15, 3.2.16 and 3.2.17 shall be carried out using the heavy fuel oil. Test 3.2.6 shall be repeated using the light distillate fuel oil. The oil content used in paragraph 3.2.10 shall be 80 ppm and the contaminates shall be as listed except that the non-soluble suspended solids shall be 20 ppm. The temperature range for the test shall be that given in paragraph 2.2.7.

3.2.13 The meter shall be run on a 100 ppm Arabian light crude oil sample. Water temperature shall be run at 10 degrees C and 65 degrees C. If the specification lists a maximum temperature less than 65 degrees C, the meter shall run at that maximum

first one to be immediately after the water is introduced.

2.2.14 A test lasting a minimum of 3 hours shall be carried out to check that the equipment will operate continuously and automatically. In this test the feed to the equipment shall vary progressively from water to oily mixture with approximately 25 per cent oil content and back to water every 15 minutes, and any automatic device which is fitted shall operate satisfactorily. The whole test sequence shall be performed as a continuous programme. At the end of the test, while the equipment is being fed with 25 per cent oil, a water effluent sample shall be taken for analysis.

2.2.15 Sampling arrangement shall be as shown in Figure 2 so that the sample taken will represent the fluid issuing from the water outlet of the equipment.

2.2.16 Flasks containing samples shall be sealed and labelled in the presence of a representative of the Secretary of State for Transport of the United Kingdom and arrangements shall be made for analysis as soon as possible and in any case within 7 days at approved laboratories.

2.2.17 The oil content of the samples shall be determined by the method described in Part IV of this specification.

2.2.18 When accurate and reliable oil content meters are fitted at inlet and outlet of the equipment, one sample only from these points need be taken during each test provided that the sample

analysis is within ± 10 per cent of the meter readings at that instant.

2.2.19 In the test report, the following data shall be provided in the International Metric System of Units:

(i) Properties of the oils:
- relative density at 15 degrees C
- viscosity (centistokes at 37.8 degrees C)
- flashpoint
- ash
- water content (total);

(ii) Properties of the water:
- relative density at 15 degrees C with details of any solid matter present;

(iii) Temperature at the inlet to the equipment;

(iv) The method used in analysis of all samples taken and the results thereof together with meter readings where appropriate;

(v) A diagram of the test rig; and

(vi) A diagram of the sampling arrangement.

2.3 **Installation Requirements**

2.3.1 For inspection on board a ship, a sampling point shall be provided in a vertical section of the water effluent piping as close as is practicable to the equipment outlet.

2.3.2 Means shall be taken to ensure that the rated capacity of the equipment is not exceeded by:

(i) connecting to it only pumps of a capacity equal to, or

water tests:

(i) First detectable response.

(ii) 100 ppm.

(iii) Off scale on the highest range.

(iv) Back on scale on the highest range.

(v) Return to 100 ppm.

(vi) Zero reading or lowest stable reading.

The meter shall be capable of being cleared with clean water flushing in the shortest practicable time.

If it is necessary to dismantle or flush the meter after the fouling tests for it to return to a zero reading, this fact and the time required to clean and re-calibrate the meter shall be noted.

After successful completion of both fouling tests, a 100 ppm mixture of Arabian light crude oil shall be introduced to calibrate the meter and any calibration shift noted.

3.2.10 The meter shall be run on a 500 ppm Arabian light crude oil sample using:

(i) Fresh Water (if sea-water is used for the test programme).

(ii) Very Salt Water - 6 per cent common salt with tap water.

(iii) With the same water as used for the test, a mixture containing the contaminants in the concentrations given below.

Non-soluble suspended solids - about 100 ppm air cleaner test dust to the following specifications:

turned off, and the following response times shall be recorded:

(i) Time for the maximum reading to drop detectably.

(ii) Time to read 37 ppm (response time).

(iii) Time to read 10 ppm.

(iv) Time to read zero or to stabilise at minimum ppm.

The "Response Time" of the meter is the average of the response time recorded to read 63 ppm and the response time recorded to read 37 ppm.

3.2.9 Two tests shall be performed to determine the effect of oil fouling on calibration shift, one with a 10 per cent oil concentration, and the other only with oil. Both tests shall use Arabian light crude oil.

For the 10 per cent oil concentration test, the meter shall be run on oil-free water. The high capacity oil sample pump, set to give 10 per cent oil in water, shall be turned on for one minute and then turned off.

For the other test on oil the meter shall initially be run on oil-free water. The water shall then be turned off, and oil shall be turned on for one minute. The oil shall then be turned off and the oil-free water flow resumed.

Care must be taken in the design of the test equipment to be sure that the results are not degraded by fouling of the sample piping external to the meter.

The following response times shall be noted for both the oil and

less than, that of the equipment; or

(ii) permanently restricting the influent to the equipment when larger pumps are connected to it.

2.3.3 In any case, equipment shall not be supplied from a pump which has a capacity more than 1.5 items the rated capacity of the equipment.

2.3.4 The equipment shall be fitted with a permanently attached plate giving any operational or installation limits considered necessary by the manufacturer or the Chief Marine Surveyor.

PART III. SPECIFICATION FOR OIL CONTENT METERS

3.1 Technical Specification

3.1.1 This specification relates to oil content meters for measuring a range of oil content and in addition relates to oil content meter alarms for 15 ppm. A meter may, however, be tested for one or several specified applications, and the approval shall clearly indicate the accepted application(s).

3.1.2 The meter shall be a robust and practical instrument suitable for shipboard installation and operation. It shall withstand normal stresses due to the ship's motion (rolling and pitching) and its operation must not be affected by such motion. It shall be designed and fitted so that the vibration normally occuring on board will not affect its operation. Unless it can be shown to be unnecessary the meter and any associated equipment, particularly electrical and electronic alarm and control arrangements, shall be tested to show that it is capable of

continued operation under vibration conditions as follows:

(i) from 2 Hz–13.2 Hz with an amplitude of ±1 mm; and

(ii) from 13.2 Hz–80 Hz with an acceleration amplitude of ±0.7 g.

Additionally, the equipment shall be capable of reliable operation at angles up to 22.5 degrees in any plane from the normal operational position.

3.1.3 The meter shall resist corrosion in conditions of the marine environment.

3.1.4 The meter shall if intended to be fitted in hazardous areas comply with the relevant safety regulations for such spaces. Any electrical equipment which is part of the meter shall be placed in a non-hazardous area, unless certified as safe for use in a hazardous area. Any moving parts which are fitted in hazardous areas shall be arranged so as to avoid the formation of static electricity.

3.1.5 The meter shall not contain or use any substance of a dangerous nature, unless adequate arrangements, acceptable to the Secretary of State for Transport of the United Kingdom are provided to eliminate any hazard introduced thereby.

3.1.6 The accuracy of meters designed to monitor a wide range of oil content shall be such that any reading is within ±10 ppm or ±20 per cent of the actual oil content of the sample being tested, whichever is the greater. The accuracy shall be maintained within the above limits despite the presence of contaminants other than oil, such as entrained rust, mud and sand. When a

Bachaquero 17 Crude	Density - Very High Viscosity - Very High Pour Point - Low Producing Country- Venezuela General Description - Asphaltic
Minas Crude	Density - Medium Viscosity - High Pour Point - Very High Producing Country - Indonesia General Description - Paraffinic
Residual Fuel	Bunker C or No. 6 Fuel Oil

NOTE: Other oils covering the range of properties shown may be substituted if those shown are unobtainable.

Following each test, the meter shall be run on oil-free water and the zero recorded. If it is necessary to re-zero, calibrate or clean the meter between tests, this fact and the time required to calibrate or clean the meter shall be noted.

3.2.7 If the meter is considered suitable for products, it shall also be tested against the following petroleum products in a manner similar to the tests in 3.2.6:

Leaded Regular Grade Automotive Gasoline
Unleaded Automotive Gasoline
Kerosene
Light Diesel or No. 2 Fuel Oil.

3.2.8 The oil content meter shall be run on oil-free water and zeroed. The oil injection pump set to 100 ppm of Arabian light crude oil, shall be turned on. The following response times shall be recorded:

(i) Time for first detectable reading.

(ii) Time to read 63 ppm (response time).

(iii) Time to read 90 ppm.

(iv) Time to read 100 ppm or to stabilise at maximum ppm.

Following this upscale test, the oil injection pump shall be

this specification the oil and contaminant metering pumps shall be adjusted to deliver a nearly continuous quantity of oil. If oil injection becomes intermittent at low concentrations, the oil may be premixed with water to provide continuous flow if absolutely necessary.

3.2.5 The oil content meter shall be calibrated and zeroed according to the manufacturer's instructions. It then shall be tested with Arabian light crude oil at the following concentrations in ppm: 0, 15, 50, 100, etc. up to full scale of the meter's highest range. A complete calibration curve shall be constructed. Each concentration test shall last for 15 minutes. Following each concentration test the meter shall be run on oil-free water for 15 minutes and the reading noted. If it proves necessary to re-zero or re-calibrate the meter during this test, this fact shall be noted.

3.2.6 Using the calibration from the previous test, the oil content meter shall be tested at 15 ppm, 100 ppm and 90 per cent of the maximum full scale with the following oils:

Type of oil	**Categories Represented**
Sahara Blend	Density - Low Viscosity - Low Pour Point - Very Low Producing Country - Algeria General Description - Mixed Base
Arabian Light Crude	Density - Medium Viscosity - Medium Pour Point - Low Producing Country - Saudi Arabia General Description - Mixed Base
Nigerian Medium Crude	Density - High Viscosity - Medium Pour Point - Low Producing Country - Nigeria General Description - Naphthenic

vessel is fitted with filtering equipment in accordance with Regulations 14(2)(b) and 14(7) of these Regulations an alarm is to be provided which will indicate when the oil content of the effluent exceeds 15 ppm. The accuracy of the alarm shall be ±5 ppm. The alarm arrangement shall be tested in accordance with paragraph 3.2.18 of this specification.

3.1.7 The meter and the alarm shall be designed so that they function within the above limits when the power supply is varied by 10 per cent from the value for which the meter was designed.

3.1.8 The reading should not be affected by the type of oil. If it is, the design shall be such that it will not be necessary to calibrate the meter on board ship, except that pre-set alterations in the calibration in accordance with instructions drawn up at the time of manufacture are permitted.

In the latter case, means shall be provided to check that the correct calibration has been selected for the oil in question. The accuracy of the readings shall at all times remain within the limit specified in paragraph 3.1.6.

3.1.9 The response time of the meter, that is, the time which elapses between an alteration in the sample being supplied to the meter and the meter showing the correct response, shall not exceed 20 seconds.

3.1.10 The meter may have several scales as appropriate for its intended use.

3.1.11 The meter shall be fitted with an alarm device which can be set to operate automatically at any pre-stated value either to alert the crew of the ship or to operate control valves. This alarm shall operate automatically if at any time the meter should fail to function.

3.1.12 Means shall be provided aboard ship to check on instrument drift and to confirm the accuracy and repeatability of the instrument reading.

3.1.13 When a recording device is fitted to a meter which has more than one scale, the recording device shall indicate the scale which is in use.

3.2 **Test Specification**

3.2.1 For a meter designed to measure a range of oil content, the reading shall remain within ±10 ppm or ±20 per cent whichever is the greater of the true oil content of the sample entering the meter during each test, and testing shall be performed in accordance with the procedures detailed in paragraph 3.2.4 to 3.2.17. For a meter designed only to give an alarm at 15 ppm, the accuracy shall be within ±5 ppm and testing shall be performed in accordance with the procedures in paragraph 3.2.18.

3.2.2 The sampling arrangement shall be such that a representative homogeneous sample is obtained under all conditions of operation and under all operational proportions of oil content. The sample shall be obtained at the open discharge outlet from the meter, but when this is impracticable the sampling arrangements

shown in Figure 2 shall be used. Special care shall be taken in collecting and preserving the sample to ensure validity of the resultant findings.

3.2.3 During the tests the response time of the meter shall be checked and it should be noted whether the alarms operate adequately when a pre-stated threshold is exceeded.

3.2.4 A diagrammatic arrangement of a test facility for evaluating the performance of oil content meters is given in Figure 3. The accuracy of the oil content meter shall be determined by comparing its readings against a known flow of oil injected into a known flow of water. The grab samples taken shall be analysed in a laboratory by the method described in Part IV of this Schedule. The results of the laboratory analysis shall be used for correlation and to indicate sampling and test equipment variability. The water flow rate shall be adjusted so that the entire oil-water flow passes through the oil content meter, except the intermittent grab sample stream. Special care shall be given to keep, continuously, a constant oil content in the water that flows into the meter.

The oil injection point shall be immediately up-stream of the oil content meter inlet to minimise time lags caused by the sample system. Wherever Arabian light crude oil is specified in particular tests, a similar crude oil may be substituted, provided that the oil selected is used throughout the tests.

During the contaminates test required by paragraph 3.2.10 of

effluent discharge including associated piping, if fitted, shall be of corrosion-resistant and oil-resistant material of adequate strength.

6.3.6 The design of the flow metering arrangements shall have regard to the safety requirements of the space in which it is located.

6.3.7 In ships fitted with a computing unit the flow rate may be determined from the pump characteristics and the data manually inserted into the unit.

6.3.8 In ships fitted with a calculating unit the flow rate may be manually inserted into the unit. The flow rate shall be estimated from the best available source e.g. pump characteristics, speed of pump(s), ullages or knowledge of pumping rates for particular tanks on the ship.

6.3.9 In oil tankers where the gravitational discharge of ballast water from the cargo tanks in accordance with regulation 26(6)(d) is permitted means, such as calibration curves, shall be provided to estimate the flow rate of discharge.

6.4 **Vessel's speed indicating system**

6.4.1 The automatic speed signal required for the control unit shall be obtained from the vessel's speed indicating device by means of a repeater signal. This information shall be readily available in a form that can be accepted by a processor. The speed information used may be either speed over the ground or speed through the water depending upon the speed measuring

4.8.2 Calculate the oil content in the sample using the formula:

$$\text{mg/l oil} = \frac{R \times D \times 1000}{V}$$

where:

R = mg of oil in 100 ml solution (determined from calibration plot)

D = extract dilution factor, if used (4.7.6)

V = volume of sample, in millilitres (4.6.7)

4.8.3 Report results to two significant figures for levels below 100 mg/l

NOTE 3: For quality control, a reagent blank shall be carried through each step of the procedure.

4.8.4 For purposes of comparison to meter records, the results shall also be presented in parts per million (volume/volume) with due allowance for the relative density of the oil.

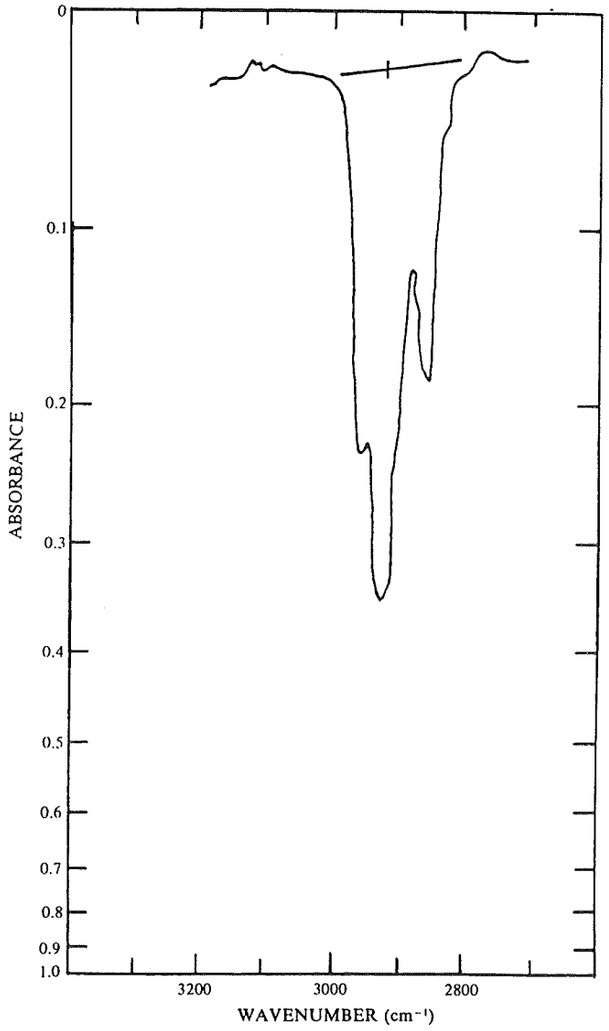


Figure 4
Spectrum illustrating baseline construction

shall have regard to the safety requirements of the space in which the pump is located;

.8 the flushing arrangements shall be such that where necessary they can be utilised for stabilising the oil content meter and correcting for zero settings; and

.9 sample water when returned to the slop tank shall not be allowed to free fall into the tank.

6.3 **Flow rate indicating system**

6.3.1 A flow meter for measuring the rate of discharge shall be installed in a vertical section of a discharge line or in any other section of discharge line as appropriate, so as to be always filled with the liquid.

6.3.2 A flow meter shall employ an operating principle which is suitable for shipboard use and, where relevant, can be used in large diameter pipes.

6.3.3 A flow meter shall be suitable for the full range of flow rates that may be encountered during normal operation. Alternatively, arrangements such as the use of two flow meters of different ranges or a restriction of the operational flow rate range may be employed to meet this requirement.

6.3.4 The flow meter, as installed, shall have an accuracy of +15 per cent, or better, of the instantaneous rate throughout the operating range.

6.3.5 Any component part of the flow meter in contact with the

in the sample line;

.3 sampling probes shall be arranged for easy withdrawal and shall be mounted as far as practicable at an accessible location in a vertical section of the discharge line. If a sampling point has to be made in a horizontal section then suitable arrangements shall be made to obtain representative samples. Sampling probes shall normally penetrate inside the discharge pipe to a distance of one quarter the diameter of that pipe;

.4 means shall be provided for cleaning the probes and piping system by the provision of permanent clean water flushing arrangements or some other equivalent method, especially in the case of probes mounted in a cargo line. The design of the probes and piping shall be such as to minimise their clogging by oil, oily residue and other matter;

.5 the velocity of the fluid in the piping shall be such that, taking into consideration the length of the piping, the overall response time shall be as short as possible between an alteration in the mixture being pumped and the alteration in the meter reading and in any case not more than 40 seconds;

.6 the location of sampling probes in relation to any point of flow diversion to a slop tank shall be selected with regard to the need for sampling the oily water during the recirculation mode;

.7 the arrangements for driving the sampling pump or any other pumps such as those provided for washing windows

ATTACHMENT

Forms for Certificates of Type Test for Oily-Water Separating Equipment and Oil Content Meters.

Contents:-

FORM "A"

UNITED KINGDOM OF GREAT BRITAIN
AND
NORTHERN IRELAND

CERTIFICATE OF TYPE TEST FOR OILY-WATER SEPARATING AND FILTERING EQUIPMENT

This is to certify that the equipment listed has been examined and tested in accordance with the requirements of the specification contained in Part II of the Annex to the Recommendation contained in IMO Resolution No. A.393(X). The system tested comprised the following components and this certificate is valid for such a system.

*System manufactured by..... including

*Separator manufactured by .....

to Drawing Nos.....

*Coalescer manufactured by.....

to Drawing Nos.....

*Filter manufactured by.....

to Drawing Nos.....

Control equipment manufactured by.....

to Drawing Nos.....

Maximum throughput of system.....m^3/h.....

Measured oil content of effluent less than... 15 ppm*.... 100 ppm*....

If integral feed pump is not fitted state method proposed for ensuring maximum throughput of system is not exceeded.

A copy of this certificate shall be carried aboard a vessel fitted with this equipment at all times.

Limiting Conditions imposed

Test data and results attached as Appendix

Signed.....
Administration of the United Kingdom of Great Britain and Northern Ireland

Official Stamp

Dated this...day of..19...

*Delete as appropriate

6.1.6 The control section of an oil discharge monitoring and control system shall be capable of operating satisfactorily under the following environmental conditions:

.1 Ambient air temperature	0 degrees C to 55 degrees C in enclosed spaces; -25 degrees C to 55 degrees C on open decks
.2 Vibration:	2.0 to 13.2 Hz, with displacement amplitude of +1.0 mm; 13.2 to 80.0 Hz with an acceleration amplitude of +0.7g
.3 Voltage variations for alternating current:	permanent variation of +10%
.4 Inclination:	inclination at angles of up to 22.5 degrees in any plane from the normal operational position

6.2 **Sampling system**

6.2.1 Sampling points shall be so located that relevant samples can be obtained from those outlets that are used for operational discharges in accordance with paragraph 6.1.1. The sampling probes located in the overboard discharge lines and the piping system connecting the sampling probes to the oil content meter shall meet the following requirements:

.1 the piping and probe shall be of corrosion-resistant and oil-resistant material, of adequate strength, properly jointed and supported;

.2 the system shall have a stop valve fitted adjacent to each probe, except that where the probe is mounted in a cargo line, that is to the midship cargo manifold arrangement, two stop valves shall be fitted, in series

Schedule 3 hereto and to take into account the range of cargoes carried;

.2 a flow rate system to indicate the quantity of effluent being discharged in a unit of time (see also paragraphs 6.3.7 and 6.3.8);

.3 a vessel speed indicating device; to give the vessel's speed in knots (see also paragraphs 6.4.2 and 6.4.3);

.4 a sampling system, to convey a representative sample of the effluent to the oil content meter;

.5 a control section which includes:

.1 a processor, which accepts signals of oil content, flow rate and the vessel's speed and converts them into litres per mile and the total quantity of oil discharged (see also paragraph 6.5.3);

.2 a transmitting device to provide alarms and, where required command signals to the discharge control arrangements;

.3 a recording device to provide, where required, a continuous record of the effluent discharged;

.4 a manual override system to be used in the event of failure of the monitoring and control system; and

.5 where required a transmitting device to provide signals to a starting interlock preventing the discharge of effluent before the oil content meter is fully operative.

6.1.5 The electrical components of the system installed in a hazardous area of a vessel shall meet the appropriate safety requirements provided for these areas.

APPENDIX

Test data and results of tests conducted on oily-water separating and filtering equipment in accordance with Parts II and IV of the Annex to the Recommendation contained in IMO Resolution No. A. 393(X).

System manufactured by .....including

*Separator manufactured by.....

*Coalescer manufactured by.....

*Filter manufactured by.....

Control equipment manufactured by.....

Maximum throughput of system.....m^3/h

Test location .....

Method of sample analysis

Samples analysed at.....

Details of test pump (if integral pump is not fitted)

Type

Capacity (m^3/h)

Speed rpm

Vibration tests to paragraph 2.1.3 satisfactory

Equipment is capable of reliable operation at angles of up to 22.5 degrees in any plane from normal operational position

*Delete as appropriate

Test Oil (A)	
Relative density	at 15 degrees C
Viscosity	Centistokes at 37.8 degrees C
Flash point	degrees C
Ash content	%
Water content at start of test	%
Test Oil (B)	
Relative density	at 15 degrees C
Viscosity	Centistokes at 37.8 degrees C
Flash point	degrees C
Ash content	%
Water content at start of test	%
Test Water	
Relative density	at 15 degrees C
Solid matter present	
Test temperatures	
Ambient	degrees C
Test oil (A)	degrees C
Test oil (B)	degrees C
Test water	degrees C

Diagram of test rig attached
Diagram of sampling arrangement attached

Specifications:

.1 Except where manual operation of the system is permitted the system shall be so designed that no ballast discharge can take place unless the monitor is in the normal operating mode and the relevant sampling point has been connected to the monitor.

.2 Preferably the system should have a minimum number of discharge outlets and sampling points so arranged that discharge can take place via only one sampling point at a time.

.3 Where it is intended that more than one line shall be used for simultaneous discharge purposes, one oil content meter, together with a flow meter, shall be installed per discharge line. These instruments shall be connected to a common processing unit.

.4 In order to avoid alarms due to short term high oil concentration signals (spikes) causing indications of high instantaneous rates of discharge, the short term high ppm signal may be suppressed for a maximum of 10 seconds by employing a delay relay. Alternatively, the instantaneous rate of discharge may be the average during the preceding 20 seconds or less as computed from instantaneous ppm values produced by the oil content meter with intervals of a maximum 5 seconds.

6.1.4 The system shall comprise the following:

.1 an oil content meter to measure the oil content of the effluent in parts per million. This meter shall be approved in accordance with the provisions contained in

required.

5.5 The Appendix to this Schedule is a summary, in tabular form, of the above implementation requirements.

6 TECHNICAL SPECIFICATIONS

6.1 Oil discharge monitoring and control system

6.1.1 The oil discharge monitoring and control system shall be so fitted that it can effectively monitor and control the discharge of any effluent into the sea through those overboard discharge outlets permitted by regulation 26(2) which in the opinion of the Chief Marine Surveyor are necessary to fulfil the operational requirements of the tanker. The system may additionally cover:

.1 the gravitational discharge of ballast water from cargo tanks; and

.2 the midship cargo manifold arrangement when used to meet the requirements of regulation 26.

6.1.2 Dirty ballast water or oil contaminated water shall not be discharged into the sea through outlets which are not controlled by the monitoring and control system.

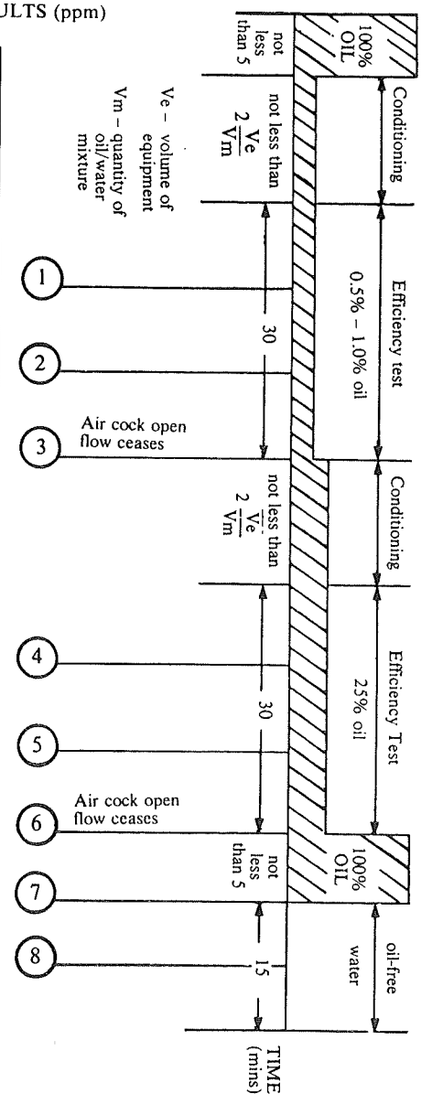
6.1.3 The system shall function effectively, according to the criteria shown below, under all environmental conditions which vessels are normally assumed to encounter, and shall be designed and constructed to withstand the environmental conditions as specified in paragraph 6.1.6 of these Guidelines and

TEST RESULTS (ppm)

Test oil (A)		Test oil (B)	
Influent	Effluent	Influent	Effluent

Test sample (9) .....

(taken at end of final oil phase auto test, paragraph 2.2.14)



Signed ..... *Date* ..... Official Stamp

FORM "B"

UNITED KINGDOM OF GREAT BRITAIN
AND
NORTHERN IRELAND

CERTIFICATE OF TYPE TEST FOR OIL CONTENT METERS

This is to certify that the system comprising the equipment listed has been examined and tested in accordance with the requirements of the specification contained in Part III of the Annex to the Recommendation contained in IMO Resolution No. A.393(X). This certificate is valid only for such a system.

*System manufactured by.....including

Oil content meter manufactured by.....

to Drawing Nos.....

*Recording device manufactured by.....

to Drawing Nos.....

*Alarm manufactured by.....

to Drawing Nos.....

*Meter supply pump manufactured by.....

to Drawing Nos.....

*Homogeniser (Mixer) manufactured by.....

to Drawing Nos.....

Control system manufactured by.....

to Drawing Nos.....

The system is acceptable for the following application

*Crude oils	*Bilge or fuel tank ballast water monitor
*"Black" products	*15 ppm bilge or fuel tank ballast alarm
*"White" products	*Other products, or applications, listed below

A copy of this test certificate shall be carried aboard a vessel fitted with this equipment at all times.

Test data and results attached as Appendix

Signed .....
Administration of the United Kingdom of
Great Britain and Northern Ireland

Official Stamp

Dated this.....day of.....19...

*Delete as appropriate

unit as defined under paragraph 4.3.

.3 No automatic devices are required to activate overboard discharge valve closure neither is a starting interlock required.

5.4.6 Category V(a)

.1 An oil tanker is in this category when it is of 150 gross tonnage and above but less than 20,000 tons deadweight and is an "existing ship" as defined in regulation 1(2) of these Regulations and the oil discharge monitoring and control system was installed between 2nd October 1984 and 2nd October 1986.

.2 This category of ship shall be fitted with a calculating unit as defined under paragraph 4.4.

.3 No automatic devices are required to activate overboard discharge valve closure, neither is a starting interlock require.

5.4.7 Category V(b)

.1 An oil tanker is in this category when it is of 150 gross tonnage and above but less than 20,000 tons deadweight and is an "existing ship" as defined in regulation 1(2) of these Regulations and the oil discharge monitoring and control system was installed before 2nd October 1984.

.2 This category of ship shall be fitted with a calculating unit as defined under paragraph 4.4. However, the total quantity of oil discharge may be computed manually.

.3 No automatic devices are required to activate overboard discharge valve closure, neither is a starting interlock

required.

5.4.4. Category IV(a)

.1 An oil tanker is in this category when it is of 20,000 tons deadweight and above and is an "existing ship" as defined in regulation 1(2) of these Regulations and the oil discharge monitoring and control system was installed between 2nd October 1984 and 2nd October 1986.

.2 This category of ship shall be fitted with a computing unit as defined under paragraph 4.3.

.3 The system shall also be fitted with a starting interlock but need not be fitted with a discharge valve control preventing the discharge of effluent before the oil content meter is fully operative but no automatic devices are required to activate overboard discharge closure.

.4 For oil tankers within this category up to and including 100,000 tons deadweight, where the overboard discharge has local manual control or where control is provided by means of extension rods, the Chief Marine Surveyor may grant exemption from the requirement to fit a starting interlock system.

5.4.5 Category IV(b)

.1 An oil tanker is in this category when it is of 20,000 tons deadweight and above and is an "existing ship" as defined in regulation 1(2) of these Regulations and the oil discharge monitoring and control system was installed before 2nd October, 1984.

.2 This category of ship shall be fitted with a computing

APPENDIX

Test data and results of tests conducted on oil content meters in accordance with Parts III and IV of the Annex to the Recommendation contained in IMO Resolution No. A.393(X).

Oil content monitoring system submitted by.....

Test location.....

Method of sample analysis

Samples analysed by.....

Vibration tests to paragraph 3.1.2 satisfactory

Equipment is capable of reliable operation at angles of up to 22.5 degrees in any plane from normal operational position

CALIBRATION	READINGS (ppm)			REMARKS
	Indicated	Measured	Grab Sample	
0				
15				
50				
100				
200				
500				
1000				
2000				TEST WATER TEMPERATURE DEGREES C
				RE-ZERO YES/NO*
				RE-CALIBRATE YES/NO*
OIL TYPE RESPONSE TESTS Sahara Blend				
15				
100				
90% M.F.S.V.=				
RECORDED ZERO				
				RE-ZERO YES/NO*
				TIME MINS
				RE-CALIBRATE YES/NO*
				TIME MINS
				CLEAN YES/NO*
				TIME MINS
Arabian Light Crude				
15				
100				
90% M.F.S.V.=				
RECORDED ZERO				
				RE-ZERO YES/NO*
				TIME MINS
				RE-CALIBRATE YES/NO*
				TIME MINS
M.F.S.V.=MAXIMUM FULL SCALE VALUE				CLEAN YES/NO*
				TIME MINS

*Delete as appropriate

regulation 1(2) of these Regulations and the oil discharge monitoring and control system was installed on or after 1st June, 1982.

.2 This category of ship shall be fitted with a control unit as defined under paragraph 4.2.

5.4.2 Category II

.1 An oil tanker is in this category when it is of 4,000 tons deadweight and above and is a "new ship" as defined in regulation 1(2) of these Regulations and the oil discharge monitoring and control system was installed before 1st June, 1982.

.2 This category of ship shall be fitted with a computing unit as defined under paragraph 4.3.

.3 The system shall also be fitted with a starting interlock and a discharge valve control preventing the discharge of effluent before the oil content meter is fully operative; in addition the system shall be fitted with automatic devices to activate overboard discharge valve closure.

5.4.3 Category III

.1 An oil tanker is in this category when it is of 150 gross tonnage and above, but less than 4,000 tons deadweight and is a "new ship" as defined in regulation 1(2) of these Regulations.

.2 This category of ship shall be fitted with a computing unit as defined under paragraph 4.3.

.3 No automatic devices are required to activate overboard discharge valve closure, neither is a starting interlock

monitoring and control system is fully operational when use of this system is required by these Regulations.

4.6 The "discharge valve control" is an automatic device which initiates the sequence to stop the overboard discharge.

5 **IMPLEMENTATION REQUIREMENTS**

5.1 The implementation scheme set out below provides different requirements for oil discharge monitoring and control systems depending on size and building date of the oil tanker. The scheme also allows for different requirements, depending on the installation date of the system.

5.2 Under the implementation scheme contained in paragraph 5.4 oil tankers of 150 gross registered tonnage and above have been arranged into five categories. Each category of oil tanker shall be fitted with an oil discharge monitoring and control system as set out below.

5.3 The implementation scheme set out in paragraph 5.4 gives details, with reference to paragraph 4, of the minimum equipment required to comply with this scheme. Where equipment of a higher category than required is fitted the requirements of paragraph 5.4 shall be deemed to be complied with.

5.4 **Implementation scheme**

5.4.1 Category I

.1 An oil tanker is in this category when it is of 4,000 tons deadweight and above and is a "new ship" as defined in

	READINGS (ppm)			
	Indicated	Measured	Grab Sample	REMARKS
Nigerian Medium Crude				
15	-------	-------	-------	
100	-------	-------	-------	
90% M.F.S.V.=	-------	-------	-------	
RECORDED ZERO	-------			
				RE-ZERO YES/NO*
				TIME MINS
				RE-CALIBRATE YES/NO*
				TIME MINS
				CLEAN YES/NO*
				TIME MINS
Bachaquero 17 Crude				
15	-------	-------	-------	
100	-------	-------	-------	
90% M.F.S.V.=	-------	-------	-------	
RECORDED ZERO	-------			
				RE-ZERO YES/NO*
				TIME MINS
				RE-CALIBRATE YES/NO*
				TIME MINS
				CLEAN YES/NO*
				TIME MINS
Minas Crude				
15	-------	-------	-------	
100	-------	-------	-------	
90% M.F.S.V.=	-------	-------	-------	
RECORDED ZERO	-------			
				RE-ZERO YES/NO*
				TIME MINS
				RE-CALIBRATE YES/NO*
				TIME MINS
				CLEAN YES/NO*
				TIME MINS

*Delete as appropriate

	READINGS (ppm)			
	Indicated	Measured	Grab Sample	REMARKS
Residual Fuel				
15	-------	-------	-------	
100	-------	-------	-------	
90% M.F.S.V.=	-------	-------	-------	
RECORDED ZERO	-------			
				RE-ZERO YES/NO*
				TIME MINS
				RE-CALIBRATE YES/NO*
				TIME MINS
				CLEAN YES/NO*
				TIME MINS
Leaded Regular Grade Automotive Gasoline				
15	-------	-------	-------	
100	-------	-------	-------	
90% M.F.S.V.=	-------	-------	-------	
RECORDED ZERO	-------			
				RE-ZERO YES/NO*
				TIME MINS
				RE-CALIBRATE YES/NO*
				TIME MINS
				CLEAN YES/NO*
				TIME MINS
Unleaded Auto-motive Gasoline				
15	-------	-------	-------	
100	-------	-------	-------	
90% M.F.S.V.=	-------	-------	-------	
RECORDED ZERO	-------			
				RE-ZERO YES/NO*
				TIME MINS
				RE-CALIBRATE YES/NO*
				TIME MINS
				CLEAN YES/NO*
				TIME MINS

*Delete as appropriate

4.3.4 The unit shall meet the specifications contained in the relevant paragraphs of section 6.

4.4 **Calculating unit**

4.4.1 "Calculating unit" means a calculating unit which receives automatic signals of:

.1 oil content
.2 flow rate of discharge;
.3 ship's speed.

The flow rate and ship's speed may be manually inserted into the unit.

4.4.2 The unit shall make an automatic recording of:

.1 oil content, unless the oil content meter is provided with a recorder.

4.4.3 The unit shall display:

.1 instantaneous rate of discharge of oil;
.2 total quantity of oil discharged, unless permitted to be calculated manually.

4.4.4 The time and date, instantaneous rate of discharge of oil and the total quantity of oil discharged, unless permitted to be calculated manually.

4.4.5 The unit need not be fitted with a starting interlock nor discharge valve control capability.

4.4.6 The unit shall meet the specifications contained in the relevant paragraphs of section 6.

4.5 "Starting interlock" is an automatic device which prevents the initiation of the opening of the discharge valve before the

4.2.2 The unit shall make automatic recordings of:

.1 instantaneous rate of discharge of oil;
.2 total quantity of oil discharged;
.3 date and time (GMT);
.4 discharge valve position (open or closed);
.5 alarm condition;
.6 failure (ie no flow, fault etc); and
.7 override action (ie manual override, flushing, calibration etc)

4.2.3 The unit shall be fitted with a starting interlock and discharge valve control capability. The unit shall meet the specifications contained in the relevant paragraphs of section 6.

4.3 **Computing unit.**

4.3.1 "Computing unit" means a computing unit which receives automatic signals of:

.1 oil content;
.2 date and time (GMT);
.3 discharge valve activation;
.4 flow rate of discharge; and
.5 ship's speed in knots.

The flow rate and ship's speed may be manually inserted into the unit.

4.3.2 The unit shall make automatic recordings of:

.1 instantaneous rate of discharge of oil;
.2 total quantity of oil discharged;
.3 date and time (GMT);
.4 discharge valve position (open and closed);
.5 alarm condition;
.6 failure (ie no flow, fault etc);
.7 override action;
.8 manual input (ie speed, flow); and
.9 oil content if the flow rate has been manually inserted.

4.3.3 Unless explicitly stated in paragraph 5 the unit need not be fitted with a starting interlock or discharge valve control capability.

	READINGS (ppm)			
	Indicated	Measured	Grab Sample	REMARKS
Kerosene				
15	-------	-------	-------	
100	-------	-------	-------	
90% M.F.S.V.=	-------	-------	-------	
RECORDED ZERO	-------			
				RE-ZERO YES/NO*
				TIME MINS
				RE-CALIBRATE YES/NO*
				TIME MINS
				CLEAN YES/NO*
				TIME MINS
Light Diesel Fuel				
15	-------	-------	-------	
100	-------	-------	-------	
90% M.F.S.V.=	-------	-------	-------	
RECORDED ZERO	-------			
				RE-ZERO YES/NO*
				TIME MINS
				RE-CALIBRATE YES/NO*
				TIME MINS
				CLEAN YES/NO*
				TIME MINS

NOTE: If alternative oils, covering the same range of properties of the crude oils listed, are used, these should be substituted where applicable

*Delete as appropriate

RESPONSE TIMES

		seconds
First detectable reading		_____
	63 ppm	_____(1)
	90 ppm	_____
maximum reading or maximum reading if not 100 ppm _____	100 ppm	_____
	ppm	
First detectable drop		_____
	37 ppm	_____(2)
	10 ppm	_____
minimum reading or minimum reading if not zero _____	zero	_____
	ppm	
RESPONSE TIME= (1) + (2) / 2	=	_____

OIL FOULING AND CALIBRATION SHIFT

10% oil concentration test

First detectable response		_____
	100 ppm	_____
Off scale on highest range		_____
On scale on highest range		_____
	100 ppm	_____
minimum reading	ppm	_____

Further cleaning required YES/NO*
(State extent)

Time_____Mins

100% oil concentration test

		seconds
First detectable response		_____
	100 ppm	_____
Off scale on highest range		_____
On scale on highest range		_____
	100 ppm	_____
Minimum reading	ppm	_____

and shall be such as will ensure that any discharge of oily mixture is automatically stopped when the instantaneous rate of discharge of oil exceeds 60 litres per mile. In existing oil tankers the stopping of the discharge may be performed manually and the rate of discharge may be estimated from the pump characteristics.

2.3 A test and performance specification for the basic oil content meter indicating oil content in ppm, is specified in Schedule 3 hereto.

3 APPLICATION

3.1 An oil discharge monitoring and control system of an approved design shall be fitted in every oil tanker of 150 gross registered tonnage and above.

4 DEFINITIONS

In this Schedule:

4.1 "Oil discharge monitoring and control system" means an oil discharge monitoring and control system covering any one of the units referred to in paragraph 4.2, 4.3, and 4.4.

4.2 "Control unit".

4.2.1 "Control unit" means a control unit which receives automatic signals of:

.1 oil content;
.2 flow rate of discharge;
.3 Ship's speed in knots;
.4 date and time (GMT); and
.5 discharge valve position (open or closed).

Regulation 15(3)

SCHEDULE 4

GUIDELINES AND SPECIFICATIONS FOR OIL DISCHARGE MONITORING AND CONTROL SYSTEMS FOR OIL TANKERS

1 PURPOSE

1.1 The purpose of these Guidelines and Specifications is:

.1 to provide a uniform interpretation of the requirements of regulation 15(3)(a) of these Regulations; and

.2 to assist in determining appropriate design, construction and operational parameters for oil discharge monitoring and control systems when such systems are fitted in ships.

2 BACKGROUND

2.1 The requirements relating to oil content monitoring of oil tanker ballast and tank washing water are contained in regulations 15(3)(a) of these Regulations which stipulate that oil tankers of 150 gross registered tonnage and above shall be equipped with an approved oil discharge monitoring and control system and that the system shall record continuously:

.1 the discharge of oil in litres per mile and total quantity of oil discharged; or

.2 in lieu of the total quantity of oil discharged, the oil content of the effluent and rate of discharge.

In both cases the record shall be "identifiable as to the time and date" and shall be kept for at least three years.

2.2 Regulation 15 also provides that the system shall come into operation when there is any discharge of effluent into the sea

Further cleaning required (State Extent) YES/NO*

Time _____ Mins

Calibration shift _____ (%) (ppm)*

CONTAMINANTS TEST

Meter reading shift — Fresh Water _____(%)(ppm)*

Very Salt Water _____(%)(ppm)*

Non Soluble Suspended Solids _____(%)(ppm)*

OIL PARTICLE SIZE TEST

Meter reading shift _____(%)(ppm)*

TEMPERATURE TEST

Calibration test water temperature _____degrees C

Meter reading shift at 10 degrees C _____(%)(ppm)*

Meter reading shift at 65 degrees C _____(%)(ppm)*

SAMPLE PRESSURE OR FLOW TEST

Meter reading shift at 50% normal _____(%)(ppm)*

Meter reading shift at 200% normal _____(%)(ppm)*

Deviations from this test should be if necessary

Meter reading before shut off _____(%)(ppm)*

Meter reading after start up (minimum dry period 8 hours) _____(%)(ppm)*

Damage to meter as follows

UTILITIES SUPPLY VARIATION TEST

110% voltage effects _____

90% voltage effects _____

110% air pressure effects _____

---

*Delete as appropriate

90% air pressure effects _____

110% hydraulic effects _____

90% hydraulic effects _____

OTHER COMMENTS

CALIBRATION AND ZERO TEST

Calibration drift _____(%)(ppm)*

Zero drift _____(%)(ppm)*

SHUT DOWN AND DE-ENERGISATION TEST

Span drift _____(%)(ppm)*

Zero drift _____(%)(ppm)*

Time for warm up and calibration _____Mins

Specification of instrument attached

Test arrangement diagram attached

Oil type response curves attached

Signed Date Official Stamp

---

*Delete as appropriate

15 per cent of the area of the tank's sides.

(c) For existing crude oil tankers, the Chief Marine Surveyor may permit the percentages required in (a) and (b) above to be exceeded for tanks having complicated internal structural members provided that the percentages calculated over all the cargo tanks do not exceed 10 per cent for horizontal areas and 15 percent for vertical areas.

In some installations it may be necessary to consider the fitting of more than one type of tank washing machine in order to effect adequate coverage.

4.2.9 At the design stage the following minimum procedures shall be used to determine the area of the tank surface covered by direct impingement:

(a) Using suitable structural plans, lines are set out from the tips of each machine to those parts of the tank within the range of the jets.

(b) Where the configuration of the tanks is considered by the Secretary of State to be complicated, a pinpoint of light simulating the tip of the tank washing machine in a scale model of the tank shall be used.

4.2.10 (a) To confirm the cleanliness of the tank and to verify the design in respect of the number and location of the tank washing machines, a visual inspection shall be made by entry to the tanks after a crude oil wash but prior to any water rinse which may be specified in the Operations and Equipment Manual. The bottom of the tank to be inspected may, however, be flushed with water and stripped in order to remove any heel of crude oil

equipment installed on board.

6.4.2. In ships where a computing unit is required the vessel's speed may be manually inserted into the unit. This data shall be obtained from the ship's log or from an indicating device which transmits signals which need not be in a form which can be accepted by a computer system.

6.4.3 The vessel's speed on ships required to install a calculating unit may be obtained from the ship's log or from the navigation charts and shall be estimated from the most reliable source.

6.5 **Processor and transmitting device**

6.5.1 The processor shall receive, at time intervals not exceeding 5 seconds, signals from the oil content meter, the flow rate measuring system and the vessel's speed indicator and automatically compute the following:

.1 instantaneous rate of discharge of oil in litres/mile; and

.2 total quantity of oil discharged per voyage in m or litres.

6.5.2 When the rates of discharge calculated by the processor exceed the limits imposed by regulation 13(2)(d) and (e) the transmitting device shall provide alarms and, in new ships, it shall also provide command signals to the discharge valve control which will cause the discharge of effluent into the sea to stop.

6.5.3 In existing ships fitted with a calculating unit where the unit

is installed on 2nd October 1984 the total quantity of oil discharged may be computed manually.

6.6 **Recording Devices**

6.6.1 Control Unit

.1 he recording device for a control unit shall include a digital printer or an analogue recorder or a combination of both or a recorded visible display. The record shall be identifiable as to time and date and shall be kept for at least 3 years.

.2 The data to be automatically recorded shall include at least the following items:

.1 instantaneous rate of discharge of oil (litres per mile);

.2 the total quantity of oil discharged (litres);

.3 time and date (GMT);

.4 the discharge valve position (open or closed);

.5 alarm condition;

.6 failure (ie no flow, fault, etc); and

.7 override action (ie manual override, flushing, calibrating, etc).

6.6.2 Computing Unit

.1 The recording device for a computing unit shall include a digital printer or an analogue recorder or a combination of both or a recorded visible display. The record shall be identifiable as to time and date and shall be kept for at least 3 years. Manual input information shall be identifiable on the record.

integral with the tank cleaning machine, sufficient drive units shall be provided to ensure that no drive unit need be moved more than twice from its original position during cargo discharge to accomplish the washing programme as specified in the Operations and Equipment Manual.

4.2.6 The number and location of the tank washing machines shall be to the satisfaction of the Chief Marine Surveyor.

4.2.7 The location of the machines is dependent upon characteristics detailed in paragraph 4.2.2 and upon the configuration of the internal structure of the tank.

4.2.8 The number and location of the machines in each cargo tank shall be such that all horizontal and vertical areas are washed by direct impingement or effectively by deflection or splashing of the impinging jet. In assessing an acceptable degree of jet deflection and splashing, particular attention shall be paid to the washing of upward facing horizontal areas and the following parameters shall be used:

(a) For horizontal areas of a tank bottom and the upper surfaces of a tank's stringers and other large primary structural members, the total areas shielded from direct impingement by deck or bottom transverses, main girders, stringers or similar large primary structural members shall not exceed 10 per cent of the total horizontal area of tank bottom, the upper surface of stringers, and other large primary structural members.

(b) For vertical areas of the sides of a tank, the total area of the tank's sides shielded from direct impingement by deck or bottom transverses, main girders, stringers or similar large primary structural members shall not exceed

without undue movement of the supply piping. These anchors should normally be situated at the ends furthest from the entry of the crude oil supply to the supply piping. If tank washing machines are used to anchor the ends of branch pipes then special arrangements shall be made to anchor these sections when the machines are removed for any reason.

4.2 **Tank washing machines**

4.2.1 The tank washing machines for crude oil washing shall be permanently mounted and shall be of an approved design.

4.2.2 The performance characteristic of a tank washing machine is governed by nozzle diameter, working pressure and the movement pattern and timing. Each tank cleaning machine fitted shall have a characteristic such that the sections of the cargo tank covered by that machine will be effectively cleaned within the time specified in the Operations and Equipment Manual.

4.2.3 Tank washing machines shall be mounted in each cargo tank and the method of support shall be to the satisfaction of the Secretary of State. Where the tank washing machines are positioned well below the deck level to cater for protuberances in the tank, consideration may need to be given to additional support for the machine and its supply piping.

4.2.4 Each machine shall be capable of being isolated by means of stop valves in the supply line. If a deck mounted tank washing machine is removed for any reason, provision shall be made to blank off the supply line to the machine of the period the machine is removed. Similarly, provision shall be made to close the tank opening with a plate or equivalent means.

4.2.5 Where the drive units for the tank cleaning machines are not

.2 The data to be automatically recorded shall include at least the following items:

.1 instantaneous rate of discharge of oil (litres per mile);

.2 the total quantity of oil discharged (litres);

.3 time and date (GMT);

.4 manual input information;

.5 the valve position (open or closed);

.6 alarm condition;

.7 failure (ie no flow, fault, etc);

.8 override action (ie manual override, flushing, calibration, etc); and

.9 oil content if flow rate is manually inserted.

6.6.3 Calculating Unit

.1 An automatic recording device is not required for a calculating unit, but, where fitted, the recording device shall include a digital printer or an analogue recorder or a combination of both or a recorded acceptable visible display. The record shall be identifiable as to time and date, which may be entered manually, and shall be kept for at least 3 years.

.2 The data to be automatically recorded on the above-mentioned recording device shall include at least the following item:

.1 oil content in ppm, unless the oil content meter is provided with a recorder.

6.6.4 Recording for digital printers

Occasions of recordings. Data required by paragraphs 6.6.1.2, 6.6.2.2 and 6.6.3.2 of these Specifications shall be printed out with the following minimum frequency:

.1 when the discharge is started;

.2 when the discharge is stopped;

.3 at intervals of not more than every 10 minutes;

.4 when an alarm condition is developed;

.5 when normal conditions are restored;

.6 at the change of valve order or valve position;

.7 when introducing input data;

.8 at not more than every 10 litre/mile change in computed rate of discharge, unless an equivalent trend indicating arrangement is provided;

.9 when selecting zero setting or calibration mode; and

.10 on manual command.

6.6.5 Recording for analogue recorders

Data required by paragraphs 6.6.1.2, 6.6.2.2 and 6.6.3.2 of these Specifications shall be continuously recorded in such a way as would satisfy the following requirements:

.1 the chart speed shall be indicated. If the speed is controllable, the recorded shall be provided with a marker to identify the speed of the chart paper; and

.2 means shall be provided to enable the chart paper to be interpreted as to time, date and readings after it has been removed from the recorder.

6.7 **Data display**

6.7.1 The current data shall be visibly displayed.

oil. Alternatively, hydrant valves shall be isolated from the crude oil washing system by spade blanks.

4.1.5 All connections for pressure gauges or other instrumentation shall be provided with isolating valves adjacent to the lines unless the fitting is of the sealed type.

4.1.6 No part of the crude oil washing system shall enter the machinery spaces. Where the tank washing system is fitted with a steam heater for use when water washing, the heater must be effectively isolated during crude oil washing by double shut-off valves or by clearly identifiable blanks.

4.1.7 Where combined crude oil-water washing supply piping is provided the piping shall be so designed that it can be drained so far as is practicable of crude oil, before water washing is commenced, into spaces designated in the Operations and Equipment Manual. These spaces may be the slop tank or other cargo spaces.

4.1.8 The piping system shall be of such diameter that the greatest number of tank cleaning machines required, as specified in the Operations and Equipment Manual, can be operated simultaneously at the designed pressure and throughput. The arrangement of the piping shall be such that the required number of tank cleaning machines to each cargo compartment specified in the Operations and Equipment Manual can be operated simultaneously.

4.1.9 The piping system shall be tested to one and one half times the working pressure after it has been installed on the ship.

4.1.10 The crude oil washing supply piping shall be anchored (firmly attached) to the ship's structure at appropriate locations, and means shall be provided to permit freedom of movement elsewhere to accommodate thermal expansion and flexing of the ship. The anchoring shall be such that any hydraulic shock can be absorbed

(a) The removal of the equipment, if necessary, when carrying cargoes other than crude oil, provided that, when reinstated, the system is as originally fitted and tested for oil tightness;

(b) the use of flexible hose pipes to connect the crude oil washing system to tank washing machines if it is necessary to locate these machines in a cargo tank hatch cover. Such flexible hose pipes shall be provided with flanged connection and be manufactured and tested in accordance with standards acceptable to the Chief Marine Surveyor and be consistent with the duties which they are required to perform. The length of these hoses shall be no greater than necessary to connect the tank washing machines to an adjacent point just outside the hatch coaming. These hoses shall be removed to suitable prepared and protected stowage when not in use and be pressure tested by an authority acceptable to the Chief Marine Surveyor at intervals of not more than two and a half years.

4.1.3 Provisions shall be made to prevent overpressure in the tank washing supply piping. Any relief device fitted to prevent overpressure shall discharge into the suction side of the supply pump. Alternative methods to the satisfaction of the Chief Marine Surveyor may be accepted provided an equivalent degree of safety and environmental protection is provided.

4.1.4 Where hydrant valves are fitted for water washing purposes on tank washing lines all such valves shall be of adequate strength and provision shall be made for such connections to be blanked off by blank flanges when the washing lines may contain crude

6.7.2 The recording device and data display shall be located in a position easily accessible to the person in charge of the operation of discharging the effluent overboard.

6.8 **Manually operated alternatives**

6.8.1 The alternative means and information for use in case of any one failure in the system shall be as follows:

.1 oil content meter: visual observation of the surface of the water.

.2 sampling pump: visual observation of the surface of the water;

.3 flow meter: pump characteristics, etc;

.4 vessel's speed indicating device: main engine rpm etc;

.5 processor: manual calculation and manual recording; and

.6 discharge valve control: manual operation of pumps and valves.

6.9 **Alarm conditions resulting in the stopping of discharge.**

6.9.1 Audio-visual alarms shall be initiated for any of the following conditions:

.1 whenever the instantaneous rate of discharge of oil exceeds 60 litres per mile;

.2 when the total quantity of oil discharged reaches the allowable limit prescribed by the provisions of the relevant Regulations;

.3 failure of the system's operation, such as:

.1 power failure;

.2 loss of sample;

.3 failure of the measuring or recording system, and

effective capacity of the system.

6.10 **Location of alarm indicator**

6.10.1 The alarm indicator of the system shall be installed in the cargo control room where provided and/or other places where it will attract immediate attention and action.

7 **EQUIPMENT, OPERATION AND MAINTENANCE MANUALS**

7.1 The owner shall ensure that approved equipment, operational and/or maintenance manuals for the various items comprising the oil discharge monitoring and control systems are on board the vessel. These manuals shall cover the oil content meter, control, computing or calculating unit, flow meter and ship's speed indicator, where required.

connection with tank cleaning after crude oil washing and is not intended to be construed as limiting the amount of water needed in the process.

3.2 **Initial survey**

The initial survey referred to in regulation 4 of these Regulations shall include a complete inspection of the crude oil washing equipment and arrangements and shall include, except for the cases specified in paragraph 4.2.11, an examination of the tanks after they have been crude oil washed and the additional tests as specified in paragraph 4.2.10 to ensure that the washing system efficiency is in accordance with these Specifications.

4. **DESIGN CRITERIA**

4.1 **Piping**

4.1.1 The crude oil washing pipes and all valves incorporated in the supply piping system shall be of steel or other equivalent material and shall be of adequate strength having regard to the pressure to which they may be subjected, and shall be properly jointed and supported.

4.1.2 The crude oil washing system shall consist of permanent pipework and shall be independent of the fire mains and of any system other than that for tank washing, except that sections of the ship's cargo system may be incorporated into the crude oil washing system provided that they meet the requirements applicable to crude oil pipework. Notwithstanding the above requirements, in combination carriers the arrangement may allow:

1. PURPOSE

The purpose of these Specifications is to provide specific design criteria, operational requirements and control and enforcement procedures for the crude oil washing of cargo tanks of crude oil carriers as described in section 2.

2. APPLICATION

2.1 These Specifications apply to:

(a) Existing crude oil tankers of 40,000 tons deadweight and above in accordance with regulation 18(8) of these Regulations; and

(b) New crude oil tankers of 20,000 tons deadweight and above in accordance with regulation 18(6) of these Regulations with the modifications specified in Appendix I.

Compliance of these ships with these Specifications shall be shown on the IOPP or CIOPP Certificate.

2.2 If a crude oil that is not suitable for crude oil washing is intended to be carried as cargo in a ship that is provided with only a crude oil washing system, that ship must comply with segregated ballast tank requirements in accordance with regulation 18(7).

3. GENERAL PROVISIONS

3.1 Definitions

For the purpose of these Specifications:

3.1.1 "Arrival ballast" means clean ballast as defined in regulation 1(2) of these Regulations.

3.1.2 "Departure ballast" means ballast other than arrival ballast.

APPENDIX

OIL DISCHARGE MONITORING AND CONTROL SYSTEM FOR OIL TANKERS – SUMMARY OF IMPLEMENTATION REQUIREMENTS

Feature	CATEGORY TYPE						
	I	II	III	IV(a)	IV(b)	V(a)	V(b)
Applicability	New ≥4K	New ≥4K	New <4K	Existing ≥20K		Existing <20K	
Compliance	Late	Early	Late or early	Late	Early	Late	Early
Input information							
Ppm	A	A	A	A	A	A	A
Flow rate	A	M	M	M	M	E	E
Speed	A	M	M	M	M	E	E
Time and date	A	A	A	A	A	M	M
Starting interlock	A	A		A*			
Discharge valve control	A	A					
Output information							
l/mile	A	A	A	A	A	A M*	A M*
Total quantity	A	A	A	A	A	A M*	M*
Time and date	A	A	A	A	A	M*	M*
Ppm		A	A	A	A	A	A
System format	Control unit	Computing unit				Calculating unit	

Key to Table:

NEW	—New oil tanker according to regulation 1(2) of these Regulations
EXISTING	—Existing tanker according to regulation 1(2) of these Regulations
K	—1,000 tons deadweight
EARLY-NEW	-Before 1st June 1982
EARLY-EXISTING	—Before 2nd October 1984
LATE-NEW	—On or after 1st June 1982
LATE-EXISTING	—Between 2nd October 1984 and 2nd October 1986
A	—Automatic function
M	—Manually inserted data from installed source
E	—Manually inserted data estimated from best available source
A*	—Automatic function, but waivers may be granted for oil tankers ≤100K where the overboard discharge valve control system is manual
M*	—Manual recording

CONTROL UNIT	—The complete control system as required by regulation 15(3)*(a)* of these Regulations
COMPUTING UNIT	—Computer with manual input of speed and flow rate. Automatic input of ppm and a built-in clock. The output information is automatically recorded.
CALCULATING UNIT	—A calculating device capable of converting ppm, speed and flow rate information to l/mile (and total quantity) available for use during the discharge operation. An automatic recording is not required.
	—Information presented on permanent record.

Regulation 15(3)(e)

SCHEDULE 5

SPECIFICATION FOR OIL/WATER INTERFACE DETECTORS

Any reference in this Schedule to a Resolution means a reference to a Resolution of that number published by the Organisation.

1. **SCOPE**

1.1 The instrument shall be capable of providing a rapid and accurate determination of the oil/water interface in slop tanks or other tanks where the separation of oil and water is effected and from which it is intended to discharge effluent direct to the sea.

2. **GENERAL REQUIREMENTS**

2.1 Interface detectors may be permanently installed or portable.

2.2 Interface detectors carried on board shall be capable of detecting the vertical position of the interface at any level in the tank.

2.3 Interface detectors need not indicate the interface position continuously.

2.4 If permanently installed equipment based on stationary sensors only is provided the information obtained about the interface shall be at least equivalent to that obtainable from portable equipment when used in a normal operating pattern.

Regulation 21(2) and (4)

SCHEDULE 7

SPECIFICATIONS FOR THE DESIGN, OPERATION AND CONTROL OF CRUDE OIL WASHING SYSTEMS

Any reference in this Schedule to a Resolution means a reference to a Resolution of that number published by the Organisation.

INDEX OF SECTIONS

Pumping is then resumed at a moderate speed with throttling of the output at the pump's delivery side.

7.4 Water shall first be drawn from individual dedicated clean ballast tanks to clear branch pipes.

2.5 The position of permanently installed equipment or the position of the access openings for portable equipment shall be selected with due regard to the internal structure of the tank and reasonable ship movement.

2.6 The control and display unit of a permanently installed system shall be located in the cargo control room or similar space.

2.7 Permanently installed equipment inside the tank shall be able to withstand the impact from the jets of tank cleaning equipment.

2.8 Permanently installed and portable equipment shall be arranged and used with due regard to relevant operational safety precautions.

3. **TECHNICAL SPECIFICATIONS**

3.1 This specification relates to detectors, both portable and permanently installed, capable of detecting interfaces of liquids having a wide range of density differences. A detector, however, may be tested for one or several specified applications, eg interface between oils as defined in regulation 1(2) of these Regulations and salt water, brackish water or fresh water. The certificate in the form in the Attachment hereto shall clearly state the accepted applications and any relevant limitations.

3.2 The detector and its associated depth measuring equipment shall be practical, reliable and constructed of materials suitable for use in the marine environment.

3.3 It shall comply with the relevant statutory requirements for use in hazardous areas on oil tankers and shall not interfere with radio communication.

3.4 The accuracy of the detector indication shall be such that it will indicate within + 25 mm the actual position of a sharply defined interface between oil and water.

3.5 The detector shall respond promptly and in a distinctive manner to changes between oil and water.

3.6 The instrument shall be capable of being checked on board for correct working.

4. TEST SPECIFICATION

4.1 The interface detector shall be set up and used according to the manufacturer's operating instructions.

4.2 The test facility shall consist of a container whereby the obtained oil/water interface can be made clearly visible. The depths of the oil and water layers shall each be at least sufficient to immerse completely the detector probe.

4.3 The accuracy of the detector shall be determined by comparing its indication against the position of the known interface between the oil and water.

4.4 The following oils, or their equivalents, shall each be used in combination with fresh water (density 1.000), brackish water

.3 after cargo has been discharged completely.

5.3 When clean ballast is to be taken on board the pumps and piping serving the dedicated clean ballast tanks are to be flushed.

5.4 Upon completion of ballasting all the valves to the dedicated clean ballast tanks shall be closed.

6. **After departure from the final discharge port**

6.1 Dedicated clean ballast tanks may be topped up using clean pumps and piping.

6.2 The slop tank contents are to be processed in accordance with load-on-top procedures.

6.3 The surface of the CBT ballast is to be periodically inspected for the presence of oil, and the causes of any contaminations carefully investigated.

6.4 After cargo tank cleaning operations the pumps and pipelines to be used for clean ballast shall be flushed.

7. **Pump and pipe flushing**

7.1 The pipe flushing water must never be passed into dedicated clean ballast tanks.

7.2 Water for flushing pipelines may be drawn from the sea and from the dedicated clean ballast tanks and this will be determined by the configuration of the tanker's piping system.

7.3 When flushing from dedicated clean ballast tanks it is essential that the line has first been thoroughly drained of oil. Flushing should normally start from the tank farthest from the pump. After the line has been primed and suction established, the pumping shall be stopped and the valves closed for a period to allow the oil to separate from the pipe walls.

3.2 The valves to the slop tanks shall be closed before pumping clean ballast overboard.

3.3 The valves to the dedicated clean ballast shall be closed after discharging ballast.

3.4 During the loaded passage the dedicated clean ballast tanks shall be periodically checked for any hydrocarbon gas content and if any gas is detected the tank shall be ventilated until safe for entry and inspected for leakage in bulkheads and piping.

4. Prior to arrival at the final discharge port

4.1 The dedicated clean ballast tanks may be ballasted through clean pumps and piping with sufficient ballast to clear port draught requirements.

4.2 The required amount of water for flushing the piping may be taken into the dedicated clean ballast tanks overdeck or through clean cargo piping.

5. In final discharge port

5.1 The cargo discharge and ballasting sequence must be compatible with the operational requirements of dedicated clean ballast tanks.

5.2 Clean ballast may be taken on board:

.1 before the cargo is discharged;

.2 during the discharge of cargo either simultaneously or by interrupting the discharge provided that there is an effective two-valve separation between the cargo and the clean ballast system or the cargo tanks are served by individual pumps; and

(density 1.012) and salt water (density 1.025) at ambient temperature:

Leaded Automotive Gasoline - (Regular Grade)
Light Diesel Oil - (No. 2 fuel)
Arabian Light Crude Oil - (Medium density and viscosity)
Residual Fuel - (Bunker C or No. 6 fuel)

4.5 Each test whereby the properties of either the oil or water has been changed shall begin by establishing the position of the interface after sufficient time has been allowed for the oil to settle. Following each test, the detector shall be cleaned.

4.6 If oil contamination has an effect on the accuracy or the responding time of the detector, it shall be stated in the test report.

4.7 The effect of temperature on the detector shall be tested with Arabian Light Crude Oil, or equivalent, in combination with salt water, (density 1.025) both at ambient temperature and at 50 degrees C. Any effect of temperature on the responding time shall be stated in the test report.

4.8 The satisfactory functioning of the permanently installed detector shall not be affected by the movements and vibrations experienced on board ship. In particular, electrical or electronic detectors shall be tested to show that they are at least capable of continued operation under vibration conditions as follows:

.1 from 2 Hz-13.2 Hz with an amplitude of +1 mm; and
.2 from 13.2Hz-80Hz with an acceleration amplitude of +0.7 g.

Additionally the equipment shall be capable of reliable operation at angles up to 22.5 degrees in any plane from the

normal operational position.

4.9 The following information shall be included with the test report:

.1 the manufacturer's specification and operating instructions;
.2 a diagrammatic description of the test rig;
.3 types of oils used;
.4 densities of water used;
.5 details of all tests performed.

.2 during the loading of cargo either simultaneously or by interrupting the loading provided that there is an effective two-valve separation between the cargo and the clean ballast system, or the cargo tanks are served by individual pumps.

2.2 Until sufficient clean ballast has been discharged the piping and pumping arrangement servicing the dedicated clean ballast tanks must be kept clean.

2.3 Upon completion of ballast discharge all valves to the dedicated clean ballast tanks shall be shut, the clean ballast piping shall then be drained and may be utilised for the loading of cargo.

2.4 The tanker shall be loaded taking into account the requirements of a discharge sequence compatible with the operational procedures for dedicated clean ballast tanks with particular reference to trim and stress levels if the cargo is to be unloaded at two or more discharge ports.

2.5 Slop tanks shall be loaded with cargo that will be discharged well before any ballasting operation has to be carried out. If pipe flushing is required during the loaded passage sufficient ullage must be left in the slop tanks to accommodate the necessary flushing water.

2.6 At the completion of loading all valves to the cargo tanks shall be closed.

3. After departure from the loading port

3.1 If any clean ballast is to be discharged overboard the pumps and piping serving the dedicated clean ballast tanks shall be flushed into the slop tanks.

.8 additional precautions against oil pollution.

7. **DOCUMENTS**

7.1 The IOPP or CIOPP Certificate and the valid Dedicated Clean Ballast Tank Operation Manual shall at all times be available on board the tanker.

APPENDIX

DEDICATED CLEAN BALLAST TANK OPERATION PROCEDURES

1. Prior to arrival at the loading port

1.1 The pumping and piping designated for clean ballast operation shall be properly cleaned to permit the discharge of clean ballast in the loading port.

1.2 The valves to the slop tanks and the cargo tanks which are connected to the clean system shall be closed.

1.3 An inspection of the surface of the dedicated clean ballast shall be made before discharge to ensure that there is no contamination with oil.

1.4 Discharge clean ballast until sufficient quantity remains for safe berthing and for flushing lines if necessary.

1.5 If no further ballast discharge is anticipated in the loading port shut all valves to the clean ballast tanks and drain the clean ballast piping.

2. **In the loading port**

2.1 After the tanker has been safely berthed ballast may be discharged:

.1 before the is cargo loaded; and

ATTACHMENT

UNITED KINGDOM OF GREAT BRITAIN
AND
NORTHERN IRELAND

CERTIFICATE OF TYPE TEST FOR OIL/WATER INTERFACE DETECTORS FOR USE IN SLOP TANKS AND OTHER TANKS

This is to certify that the equipment listed has been examined and tested in accordance with the requirements of the Specifications for Oil/Water Interface Detectors contained in IMO resolution MEPC. 5(XIII). The system tested comprised the following components and this Certificate is valid only for such a system.

Type or Model .....

Portable or permanently installed .....

System manufactured by ..... including

Detector manufactured by .....

to Drawing Nos. .....

Control equipment manufactured by .....

to Drawings Nos. .....

A copy of this Certificate shall be carried aboard a vessel fitted with this equipment at all times.

An operation and maintenance manual shall be supplied with each system.

Limiting Conditions imposed

Test data and results attached as Appendix

Signed.....

(Official Stamp)

Administration of the United Kingdom of Great Britain and Northern Ireland

Dated this.....day of.....19....

APPENDIX

Test data and results of tests conducted on oil/water interface detector in accordance with specifications contained in IMO resolution MEPC. 5(XIII).

Oil/water interface detector submitted by .....

Test location .....

Vibration tests in paragraph 4.8 satisfactory* .....

Equipment is capable of reliable operation at angles of up to 22·5° in any plane from normal operational position* .....

Equipment is suitable for use in hazardous areas of oil tankers .....

*When applicable.

ACCURACY TEST AND RESPONSE TIMES

WATER / OIL	Fresh Water (Density 1,000)			Brackish Water (Density 1,012)			Salt Water (Density 1,025)		
	Readings (mm)		Response Times	Readings (mm)		Response Times	Readings (mm)		Response Times
	Measured	Indicated	(secs)	Measured	Indicated	(secs)	Measured	Indicated	(secs)
Leaded Regular Grade Automotive Gasoline									
Light Diesel Oil (No. 2 Fuel Oil)									
Arabian Light Crude Oil									
Residual Fuel Oil (Bunker C or No. 6 Fuel)									

NOTE; If alternative oils, covering the same range of properties as the oils listed, are used these should be substituted where applicable.

TEMPERATURE TEST

Ambient test water temperature ..... °C

Detector reading shift at 50°C ..... mm

Detector reading shift at 50°C ..... secs

CONTAMINATION TEST

Oil contamination effect on accuracy ..... mm

Oil contamination effect on response time ..... secs

Official Stamp

Signed .....
Administration of the United Kingdom of Great Britain and Northern Ireland

Dated this ..... day of .....19.....

6. **DEDICATED CLEAN BALLAST TANK OPERATION MANUAL**

6.1 The Dedicated Clean Ballast tank operation Manual specified in regulation 20(4) of these Regulations shall contain the following:

.1 the complete text of the "Specifications for Oil Tankers with Dedicated Clean Ballast Tanks" as set out in this Schedule;

.2 the drawings of the dedicated clean ballast tanks system;

.3 the description of the system connected to the dedicated clean ballast tanks including the identity of the dedicated clean ballast tanks and of the slop tank which may be any designated cargo tank;

.4 the dedicated clean ballast tanks operation procedures containing specific operational procedures for valve operations, line cleaning and for loading and discharging dedicated clean ballast when conducted as follows:

.1 prior to arrival and at the loading port;

.2 after departure from the loading port;

.3 prior to arrival at the final discharge port;

.4 in final discharge port; and

.5 after departure from the final discharge port.

In Appendix 1 to these Specification Dedicated Clean Ballast Tank Operation Procedures are set out which apply generally to all tankers operating under the CBT concept;

.5 the checklists for ballasting and de-ballasting dedicated clean ballast tanks;

.6 the carriage of additional ballast;

.7 compliance procedures for regulation 13 of these Regulations; and

would allow the piping to run full of water during the flushing before vortexing starts to admit air into the piping. Any alternative methods to the retention of clean ballast required by this paragraph shall be to the satisfaction of the Chief Marine Surveyor.

5.4 After the loading, discharging or transferring of the dedicated clean ballast the valves specified in paragraph 4.2.2 shall be shut and the piping system drained.

5.5 The overboard discharge through which the dedicated clean ballast is discharged shall be monitored by an oil content meter.

5.6 The simultaneous discharge of the dedicated clean ballast whilst loading cargo or the simultaneous ballasting of the dedicated clean ballast while discharging cargo shall not be undertaken except where there is an effective two-valve separation between the dedicated clean ballast tank system and the cargo system or when cargo tanks are served by individual pumps.

5.7 Ballast water shall not be allowed to free fall into ballast tanks into which hydrocarbon gases have leaked. The Dedicated Clean Ballast Tank Operation Manual shall provide either for such tanks to be freed before ballasting or for alternative tanks to be used to obviate the danger posed by splashing and free fall water in tanks containing hydrocarbon gases within the explosive range.

SCHEDULE 6 Regulation 20(2) and (4)

SPECIFICATION FOR OIL TANKERS WITH DEDICATED CLEAN BALLAST TANKS

1. **PURPOSE**

1.1 The purpose of these Specifications is to provide specific criteria, operational requirements and control and enforcement procedures for those oil tankers operating with Dedicated Clean Ballast Tanks as specified in Section 2 of these Specifications.

2. **APPLICATION**

2.1 Under the these Regulations these specifications apply to existing product carriers of 40,000 tons deadweight and above.

2.2 Compliance by such ships with these Specifications shall be shown on the IOPP or CIOPP Certificate.

3. **INITIAL SURVEY**

3.1 The initial survey referred to in regulation 4 of these Regulations shall include the verification of:

.1 the selection of ballast tanks and pumping and piping arrangements; and

.2 the Dedicated Clean Ballast Tank Operation Manual, specifying detailed operational procedures and including a checklist of such procedures.

3.2 The IOPP or CIOPP Certificate shall indicate which tanks are approved solely for the carriage of dedicated clean ballast. It shall also state that the master has been provided with a valid

Dedicated Clean Ballast Tank Operation Manual showing operational procedures.

4. **ON BOARD ARRANGEMENTS**

4.1 **Dedicated clean ballast tanks**

4.1.1 The dedicated clean ballast tanks shall have sufficient capacity to enable the tanker to meet the requirements of regulation 18(2) of these Regulations.

4.1.2 The selection of the dedicated clean ballast tanks shall be such that the hull stresses in the ballast and loaded conditions are to the satisfaction of the Chief Marine Surveyor.

4.1.3 The dedicated clean ballast shall, in order to prevent accidental pollution, be carried in wing tanks; provided that the Governor or such person as he may authorise for the purpose may permit the use of centre tanks where it can be shown that significant advantage can be obtained in respect of hull stresses, tank volume or pumping and piping arrangements.

4.1.4 Tanks shall be selected so as to require a minimum of involvement of the cargo piping and pumping system.

4.2 **Pumping and piping arrangements**

4.2.1 The piping system for conyeying the dedicated clean ballast shall be such that it can be flushed to a slop tank with water, and shall be so arranged that oily water does not enter any dedicated clean ballast tank when the piping system is flushed.

4.2.2 The piping system of each dedicated clean ballast tank shall have at least two valves that isolate that tank from the piping systems serving the cargo tank.

4.2.3 The dedicated clean ballast tanks shall be connected to the least practicable number of cargo pumps.

4.2.4 The discharge of dedicated clean ballast to the sea shall be monitored by an oil content meter of a design approved in accordance with Schedule 3 and sufficient sample points shall be provided in the discharge piping of pumps serving dedicated clean ballast tanks to permit supervision of the oil content in the ballast water being discharged.

5. **OPERATIONAL PROCEDURES**

5.1 The pumps and piping system conveying dedicated clean ballast shall be flushed with water before clean ballast is loaded, discharged or transferred.

5.2 The water for flushing shall be pumped from a sea chest or dedicated clean ballast tank through the pump and piping system of the dedicated clean ballast tank and then to a slop tank.

5.3 If sections of the piping system for dedicated clean ballast are so arranged that they can only be flushed with water from the dedicated clean ballast tanks then the minimum quantity of flushing water to be provided in such tanks at all times shall be the greater of either 10 times the volume of the piping to be flushed or sufficient to provide that level in the tank which

EXPLANATORY NOTE

(This Note is not part of the Regulations.)

These Regulations give effect to the International Convention for the Prevention of Pollution from ships 1973, including Annex I to the Convention (Regulations for the Prevention of Pollution by Oil), (but no other Annex), as amended by the Protocol of 1978 to that Convention and as amended by the Amendments adopted by the Marine Environmental Protection Committee of the IMO at its 20th session on 7th September 1984 and contained in resolution MEPC 14(20).

Except as otherwise expressly provided, the Regulations apply to Cayman Islands ships including Government ships (but not warships) wherever they may be and to other ships while they are within the Cayman Islands territorial waters. The Regulations also apply to submersible craft and offshore installations, but there is power to grant exemptions to new types of ship where compliance would be unreasonable or impracticable (regulation 2(5)).

Cayman Islands oil tankers of 150 GT and above and other Cayman Islands ships of 400 GT and above are subject to survey every five years (regulation 4(1)), in addition to annual and intermediate surveys (regulations 5 and 6). All such ships must carry an Oil Pollution Prevention Certificate (regulation 7(7) and an Oil Record Book (regulation 10). The procedure to be followed whenever an accident occurs to a ship or a defect is discovered, or when corrective action is necessary, is prescribed (regulation 8 and 9).

Any discharge of oil from ships into the sea must comply with the requirements of Part 3 of the Regulations and the technical requirements for the segregation of cargo oil and ballast water are specified in Part 4. Constructional requirements for minimising oil pollution from oil tankers due to side and bottom damage are specified in Part 5. Part 6 makes particular provision for offshore installations.

Under Part 7 there is power to inspect ships to see whether there has been a discharge of harmful substances contrary to the Regulations (regulation 32); and the Chief Marine Surveyor may in specified circumstances, deny entry to a Cayman Islands port to a ship and may detain a ship (regulation 33).

If a ship fails to comply with specified regulations regarding the discharge of oil or oil mixture, the owner and the master are each guilty of an offence punishable, on summary conviction, by a fine not exceeding One hundred thousand dollars. If a ship fails to comply with other requirements of these Regulations, the owner and the master are each guilty of an offence punishable on summary conviction, by a fine not exceeding two thousand dollars.

remaining on the tank bottom before gas freeing for entry. This inspection shall ensure that the tank is essentially free of oil clingage and deposits. If the flushing procedure is adopted, a similar but unflushed tank must be used for the test specified in (b) below.

(b) To verify the effectiveness of the stripping and drainage arrangements, a measurement shall be made of the amount of oil floating on the top of the departure ballast. The ratio of the volume of oil on top of the total departure ballast water to the volume of tanks that contain this water shall not exceed 0.00085. This test shall be carried out after crude oil washing and stripping in a tank similar in all relevant respects to the tank examined in accordance with sub-paragraph (a) above, which has not been subjected to a water rinse or to the intervening water flushing permitted by the sub-paragraph(a).

(c) To verify the design, installation and operation of the system, the arrival ballast, after a typical ballast voyage before which the arrival ballast tanks have been crude oil washed and during which the tanks have been water rinsed in accordance with the programme set out in the Operations and Equipment Manual, shall be totally discharged to the loading port harbour through an approved oil monitoring system and the oil content of the effluent in this test shall not exceed 15 ppm.

4.2.11 Where the Chief Marine Surveyor is satisfied that ships are similar in all relevant respects, the requirements of paragraph 4.2.10 need only be applied to one such ship. Furthermore,

where a ship has a series of tanks that are similar in all relevant respects then, for that series of tanks, the requirements of paragraph 4.2.10(a) need be applied to only one tank of that series.

4.2.12 The design of the deck mounted tank washing machines shall be such that means are provided external to the cargo tanks which, when crude oil washing is in progress, would indicate the rotation and arc of the movement of the machine. Where the deck mounted machine is of the non-programmable, dual nozzle type, alternative methods to the satisfaction of the Chief Marine Surveyor may be accepted, provided an equivalent degree of verification is attained.

4.2.13 Where submerged machines are required, they shall be non-programmable and, in order to comply with the requirements of paragraph 4.2.8, it shall be possible to verify their rotation by one of the following methods:

(a) by indicators external to the tank;

(b) by checking the characteristic sound pattern of the machine, in which case the operation of the machine shall be verified towards the end of each wash cycle. Where two or more submerged machines are installed on the same supply line, valves shall be provided and arranged so that operation of each machine can be verified independently of the other machines on the same supply line;

(c) by gas freeing the tank and checking the operation of the machine with water during ballast voyages. In this case the check shall take place after a maximum of six usages of the machine but the interval between checks shall not

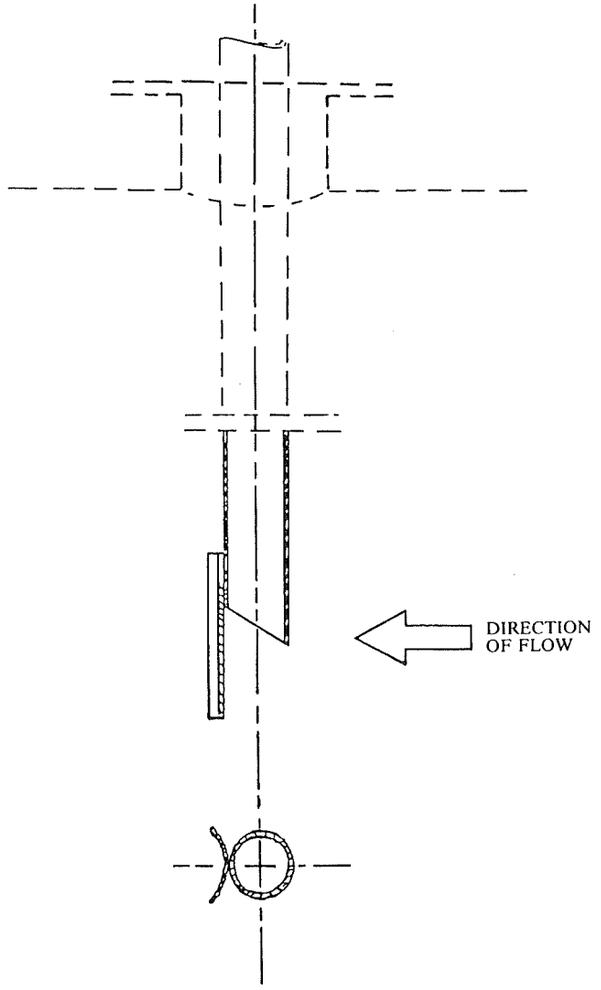


FIGURE 1
SAMPLING PROBE FOR A PART-FLOW DISPLAY SYSTEM

Made in Council this 28th day of April, 1988.

Wona M Jackson
Clerk of the Executive Council.

whenever any traces of oil are visible in the flow and when the oil content meter reading indicates that the oil content exceeds permissible limits.

5.3 On those systems that are fitted with flushing arrangements, the sample piping shall be flushed after contamination has been observed and the sample piping shall be flushed after each period of usage.

5.4 The ship's cargo and ballast handling manuals and, where applicable, those manuals required for crude oil washing systems or dedicated clean ballast tanks operation shall clearly describe the use of the part-flow system in conjunction with the ballast discharge and the slop tank decanting procedures.

exceed 12 months. Each verification shall be recorded in the Oil Record Book, Part II-Cargo/Ballast Operations. The Method of verification shall be stated in the Operations and Equipment Manual.

4.3 **Pumps**

4.3.1 The pumps supplying crude oil to the tank cleaning machines shall be either the cargo pumps or pumps specially provided for the purpose.

4.3.2 The capacity of the pumps shall be sufficient to provide the necessary throughput at the required pressure for the maximum number of tank cleaning machines required to be operated simultaneously as specified in the Operations and Equipment Manual. In addition the pumps shall, if an eductor system is fitted for tank stripping, be capable of supplying the eductor driving fluid to meet the requirements of paragraph 4.4.2.

4.3.3 The capacity of the pumps shall be such that the requirements of the paragraph 4.3.2. can be met with any one pump inoperative. The pumping and piping arrangements shall be such that the crude oil washing system can be effectively operated with any one pump out of use.

4.3.4 The carriage of more than one grade shall not prevent crude oil washing of tanks.

4.3.5 To permit crude oil washing to be effectively carried out where the back pressure presented by the shore terminal is below the pressure required for crude oil washing, provision shall be made such that an adequate pressure to the washing machines can be maintained in accordance with paragraph 4.3.2. This requirement shall be met with any one cargo pump out of action. The minimum

supply pressure required for crude oil washing shall be specified in the Operations and Equipment Manual. Should this minimum supply pressure not be obtainable, crude oil washing operations shall not carried out.

4.4 **Stripping system**

4.4.1 The design of the system for stripping crude oil from the bottom of every cargo tank shall be to the satisfaction of the Secretary of State.

4.4.2 The design and capacity of the tank stripping system shall be such that the bottom of the tank being cleaned is kept free of accumulations of oil and sediment towards completion of the tank washing process.

4.4.3 The stripping system shall be capable of removing oil at a rate of 1.25 times the total throughput of all the tank cleaning machines to be operated simultaneously when washing the bottom of the cargo tanks as described in the ship's Operation and Equipment Manual.

4.4.4 Means such as level gauges, hand dipping and stripping system performance gauges as referred to in paragraph 4.4.8 shall be provided for checking that the bottom of every cargo tank is dry after crude oil washing. Suitable arrangements for hand dipping must be provided at the aftermost portion of a cargo tank and in three other suitable locations unless other approved means are fitted for efficiently ascertaining that the bottom of the cargo tank is dry. For the purpose of this paragraph, the cargo tank bottom shall be considered "dry" if there is no more than a small quantity of oil near the stripping suction with no accumulation of oil elsewhere in the tank.

.3 The display arrangement shall be designed to be easily opened and cleaned.

.4 The internal surfaces of the display chamber shall be white except for the background wall which shall be so coloured as to facilitate the observation of any change in the quality of the sample water.

.5 The lower part of the display chamber shall be shaped as a funnel for collection of the sample water.

.6 A test cock for taking a grab sample shall be provided in order that a sample of the water can be examined independently of that in the display chamber.

.7 The display arrangement shall be adequately lighted to facilitate visual observation of the sample water.

4.6 **Sample discharge arrangement**

.1 The sample water leaving the display chamber shall be routed to the sea or to a slop tank through fixed piping of adequate diameter.

5. **OPERATION**

5.1 When a discharge of dirty ballast water or other oil contaminated water from the cargo tank area is taking place through an outlet below the waterline, the part-flow system shall provide sample water from the relevant discharge outlet at all times.

5.2 The sample water shall be observed particularly during those phases of the discharge operation when the greatest possibility of oil contamination occurs. The discharge shall be stopped

.4 The sample piping shall be of corrosion-resistant and oil-resistant material, of adequate strength, properly jointed and supported.

.5 Where several sampling points are installed the piping shall be connected to a valve chest at the suction side of the sample feed pump.

4.3 **Sample feed pump**

.1 The sample feed pump capacity shall be suitable to allow the flow rate of the sample water to comply with paragraph 4.2.2.

4.4 **Flushing arrangement**

.1 If the diameter of sample piping is less than 40 millimetres, a fixed connection from a pressurised sea or fresh water piping system shall be installed to enable flushing of the sample piping system.

4.5 **Display arrangement**

.1 The display arrangement shall consist of a display chamber provided with a sight glass. The chamber should be of a size that will allow a free fall stream of the sample water to be clearly visible over a length of at least 200 millimetres or such equivalent arrangement as may be approved.

.2 The display arrangement shall incorporate valves and piping in order to allow part of the sample water to bypass the display chamber to obtain a laminar flow for display in the chamber.

4.4.5 Means shall be provided to drain all cargo pumps and lines at the completion of cargo discharge, where necessary, by connecting to a stripping device. The line and pump draining shall be capable of being discharged both to a cargo tank and ashore. For discharge ashore a special small diameter line shall be provided for that purpose and connected outboard of the ship's manifold valve. For new oil tankers or existing oil tankers not already fitted with such a line the cross-sectional area of this line shall not exceed 10 percent of that of a main cargo discharge line. Where such a line is already fitted on an existing tanker, a cross-sectional area of not more than 25 percent of that of a main cargo discharge line may be accepted.

4.4.6 The means for stripping oil from the cargo tanks shall be by positive displacement pump, self-priming centrifugal pump or educator or other methods to the satisfaction of the Chief Marine Surveyor. Where a stripping line is connected to a number of tanks, means shall be provided for isolating each tank not being stripped at that particular time.

4.4.7 The carriage of more than one grade of cargo shall not prevent crude oil washing of tanks.

4.4.8 Equipment shall be provided for monitoring the efficiency of the stripping system. All such equipment shall have remote read out facilities in the cargo control room or in some other safe and convenient place easily accessible to the officer in charge of cargo and crude oil washing operations. Where a stripping pump is provided, the monitoring equipment shall include either a flow indicator, or a stroke counter or revolution counter as appropriate, and pressure gauges at the inlet and discharge connections of the pump or equivalent. Where eductors are

provided the monitoring equipment shall include pressure gauges at the driving fluid intake and at the discharge and a pressure/vacuum gauge at the suction intake.

4.4.9 The internal structure of the tank shall be such that drainage of the oil to the tank suctions of the stripping system is adequate to meet the requirements of paragraphs 4.4.2 and 4.4.4. Care shall be taken that both longitudinal and transverse drainage are satisfactory and shall be verified during the inspection required by paragraphs 3.2 and 4.2.10.

4.4.10 The trim conditions for crude oil washing given in the Operations Equipment and Manual shall be adhered to. In general, trim by the stern is only important during the final stages of tank discharge and shall be the maximum possible compatible with operational constraints but in no case less than that recorded during the crude oil washing prior to the inspection required by paragraphs 3.2 and 4.2.10.

4.5 **Ballast lines**

4.5.1 Where a separate ballast water system for ballasting cargo tanks is not provided, the arrangement shall be such that the cargo pump, manifolds and pipes used for ballasting can be safely and effectively drained of oil before ballasting.

5. **QUALIFICATION OF PERSONNEL**

5.1 The training requirements of ships' personnel engaged in the crude oil washing of tankers shall be to the satisfaction of the Chief Marine Surveyor.

5.2 Where a person such as the master, the chief officer or the

.3 A stop valve shall be fitted adjacent to each probe, except that where the probe is mounted in a cargo line, two stop valves shall be fitted in series, in the sample line.

.4 Sampling probes shall be of corrosion-resistant and oil-resistant material, of adequate strength, properly jointed and supported.

.5 Sampling probes shall have a shape that is not prone to becoming clogged by particle contaminants and shall not generate high hydrodynamic pressures at the sampling probe tip. Figure 1 is an example of one suitable shape of a sampling probe.

.6 Sampling probes shall have the same nominal bore as the sample piping.

4.2 **Sample piping**

.1 The sample piping shall be arranged as straight as possible between the sampling points and the display arrangement. Sharp bends and pockets where settled oil or sediment may accumulate shall be avoided.

.2 The sample piping shall be so arranged that sample water is conveyed to the display arrangement within 20 seconds. The flow velocity in the piping shall not be less than 2 metres per second.

.3 The diameter of the piping shall not be less than 40 millimetres if no fixed flushing arrangement is provided and shall not be less than 25 millimetres if a pressurised flushing arrangement as detailed in paragraph 4.4 is installed.

3.5. The part-flow system shall include the following components;

.1 sampling probes;
.2 sample water piping system;
.3 sample feed pump(s);
.4 display arrangement;
.5 sample discharge arrangement;

and, subject to the diameter of the sample piping:

.6 flushing arrangement.

3.6 The part-flow system shall comply with the appropriate safety requirements.

4. **SYSTEM ARRANGEMENT**

4.1 Sampling points

4.1.1 Sampling point location:

.1 Sampling points shall be so located that relevant samples can be obtained of the effluent being discharged through outlets below the waterline which are used for operational discharges.

.2 Sampling points shall, as far as practicable, be located in pipe sections where a turbulent flow is normally encountered.

.3 Sampling points shall, as far as practicable, be arranged in accessible locations in vertical sections of the discharge piping.

4.1.2 Sampling probes:

.1 Sampling probes shall be arranged to protrude into the pipe a distance of about one fourth of the pipe diameter.

.2 Sampling probes shall be arranged for easy withdrawal for cleaning.

cargo control officer assumes overall charge of a crude oil wash he shall:

(a) have had at least one year's experience on oil tankers where his duties have included the discharge of cargo and associated crude washing. Where his duties have not included crude oil washing operations, he shall have completed a training programme in crude oil washing which complies with the requirements set out in Appendix II to these Specifications and which is satisfactory to the Chief Marine Surveyor;

(b) have participated at least twice in crude oil wash programmes, one of which shall have been in the particular ship for which he is required to undertake the responsibility of cargo discharge or on a ship that is similar in all relevant respects; and

(c) be fully knowledgeable of the contents of the Operations and Equipment Manual.

5.3 Where other nominated persons are intended to have particular responsibilities as defined in the Operations and Equipment Manual they shall have had at least 6 months experience on oil tankers where, in the course of their duties, they shall have been involved in the cargo discharge operation. In addition, they shall have been instructed in the matters specified in Appendix II to these Specifications, in the crude oil washing operation in the particular ship for which they are required to undertake this responsibility and be fully knowledgeable of the contents of the Operations and Equipment Manual.

6. **OPERATION**

6.1 Tankage to be crude oil washed

Before departure on a ballast voyage, after the complete discharge of cargo, sufficient tanks shall have been crude oil washed in accordance with the procedures specified in the Operations and Equipment Manual to ensure that:

(a) as a minimum, sufficient tanks have been washed to permit compliance with the draught and trim requirements of regulation 18(2)(a), (b) and (c) of these Regulations during all phases of the ballast voyage; and

(b) account is taken of the ship's trading pattern and the expected weather conditions so that additional ballast water is not put into tanks which have not been crude oil washed.

In addition to the tanks referred to in (a) above, approximately one quarter of all remaining tanks shall be crude oil washed for sludge control on a rotational basis, but these additional tanks may include the tanks referred to in (b) above. However, for sludge control purposes, no tank need be crude oil washed more than once in every four months. Crude oil washing shall not be conducted between the final discharge and loading ports; that is to say, no crude oil washing shall be undertaken during the ballast voyage. Ballast water shall not be put into tanks that have not been crude oil washed. Water that is put into a tank which has been crude oil washed but not water rinsed shall be regarded as dirty ballast.

6.2 Drainage and discharge ashore of cargo lines

At the end of cargo discharge all cargo mains and stripping

provided that the arrangements comply with the requirements of this Schedule.

2.2 The part-flow concept is based on the principle that the observation of a representative part of the overboard effluent is equivalent to observing the entire effluent stream. These specifications provide the details of the design installation, and operation of a part-flow system.

3. **GENERAL PROVISIONS**

3.1 The part-flow system shall be so fitted that it can effectively provide a representative sample of the overboard effluent for visual display under all normal operating conditions.

3.2 The part-flow system is in many respects similar to the sampling system for an oil discharge monitoring and control system but shall have pumping and piping arrangements separate from such a system. However combined equivalent arrangements may be accepted by the Secretary of State.

3.3 The display of the part-flow shall be arranged in a sheltered and readily accessible location on the upper deck or above, approved by the Secretary of State (eg the entrance to the pump room). There shall be effective communication between the location of the part-flow display and the discharge control position.

3.4 Samples shall be taken from relevant sections of the overboard discharge piping and be passed to the display arrangement through a permanent piping system.

Regulation 26(6)(e)(ii)

SCHEDULE 8

SPECIFICATIONS FOR THE DESIGN, INSTALLATION AND OPERATION OF A PART-FLOW SYSTEM FOR CONTROL OF OVERBOARD DISCHARGES

LIST OF CONTENTS

1. PURPOSE

The purpose of these Specifications is to provide specific design criteria and installation and operational requirements for the part-flow system referred to in regulation 26(6)(e) of these Regulations.

2. APPLICATION

2.1 Existing oil tankers may, in accordance with regulation 26(6)(e) of these Regulations, discharge dirty ballast water and oil contaminated water from cargo tank areas below the waterline, provided that part of the flow is led through permanent piping to a readily accessible location on the upper deck or above where it may be visually observed during the discharge operation and

lines shall be drained and stripped and the drainings and strippings discharged ashore via the special diameter line required by paragraph 4.4.5. In addition all cargo tanks shall be stripped before the ship leaves its final port of discharge.

6.3 Filling of departure ballast tanks

Care shall be taken at the completion of crude oil washing of any departure ballast tanks to strip the tank as completely as possible. Where departure ballast is filled through cargo lines and pumps, these must be drained and stripped of oil using the means required by paragraph 4.4.5 before ballast is loaded.

6.4 Crude oil washing at sea

All crude oil washing must be completed before the ship leaves its final port of discharge. Where any tank is crude oil washed while the ship is at sea between multiple discharge ports, the tank shall be left empty and available for inspection at the next discharge port before commencing the next ballast voyage. This inspection may consist of multiple sounding/dipping of the bottom of the tank when the tank is empty. Departure ballast tanks shall be ballasted prior to departure from port so that examination of the surface of the ballast water can be made in accordance with the provisions of paragraph 4.2.10(b).

6.5 Discharge of oily water effluents on ballast voyage

The discharge of departure ballast and any other water effluent discharged during the ballast voyage shall comply with the requirements of regulation 13 of these Regulations.

6.6 Use and control of inert gas

On ships to which these Specifications apply, no tank shall be crude oil washed unless the inert gas system required by the Merchant Shipping (Fire Appliances) Regulations 1980 or the Merchant Shipping (Fire Protection) Regulations 1986(a)[1] is in proper operation. Before each tank is crude oil washed, the oxygen level shall be determined at a point 1 metre from the deck and at the middle region of the ullage space and neither of these determinations shall exceed 8 per cent by volume. Where tanks have complete or partial wash bulkheads, the determinations shall be taken from similar levels in each section of the tank. The oxygen level of the inert gas being delivered during the washing process shall be continuously monitored. If during crude oil washing:

(a) the oxygen level of the inert gas being delivered exceeds 8 per cent by volume; or

(b) the pressure of the atmosphere at the tanks is no longer positive;

then the washing shall be stopped until satisfactory conditions are restored.

6.7 Precautions against electrostatic generation

To avoid excessive electrostatic generation in the washing process due to the presence of water in the crude oil washing fluid, the contents of any tank to be used as a source of crude oil washing fluid must first be discharged by at least 1 metre

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[1](a) United Kingdom Regulations extended to the Cayman Islands by the Merchant Shipping (Safety Provisions) Regulations 1988.

(h) Maintenance of plant and equipment

(i) maintenance of equipment in accordance with manufacturers' instructions;

(ii) additional maintenance items.

(iii) filling and ultimate discharge of arrival ballast;

(iv) discharge of departure ballast;

(v) build-up and decanting of residues in slop tank;

(vi) requirements of Regulation 13 of these Regulations;

(vii) avoidance of venting in port during ballasting operations.

(e) Safety

(i) inert gas procedure;

(ii) maintenance and monitoring of inert gas quality and pressure;

(iii) stopping of washing/discharge under abnormal inert gas conditions;

(iv) electrostatic generation and the precautions required to avoid it;

(v) pipework integrity;

(vi) avoidance of surge pressures;

(vii) spillage.

(f) Check lists

(i) before entering port;

(ii) before commencing crude oil washing;

(iii) after crude oil washing;

(iv) after sailing.

(g) Regulatory enforcement procedures

(i) Operations and Equipment Manual;

(ii) Oil Record Book;

(iii) sounding of tanks;

(iv) measurement of oil on surface of departure ballast.

before being so used. Any tank used as a slop tank on the previous ballast voyage shall be completely discharged and refilled with dry crude oil if that tank is to be used as a source of washing fluid.

6.8 Vapour emission

On ships to which these Specifications apply there shall be means to avoid vapour emission during the filling of departure ballast wherever local conditions require it. The method of preventing the emission of hydrocarbon vapour into the atmosphere shall be:

(a) by the use of permanent ballast tanks wherever these are sufficient to provide the minimum departure draught; or

(b) by containment of vapour in empty cargo tanks by simultaneous ballasting and cargo discharge.

Alternative methods to the satisfaction of the Secretary of State may be accepted provided an equivalent degree of environmental protection is provided.

7. **OPERATIONS AND EQUIPMENT MANUAL**

The Operations and Equipment Manual shall be to the satisfaction of the Chief Marine Surveyor and shall contain the following information and operational instructions:

(a) The complete text of the Specifications for the Design, Operation and Control of Crude Oil Washing Systems as set out in this Schedule.

(b) A line drawing of the crude oil washing system showing the respective position of pumps, lines and washing machines which relate to the crude oil washing system.

(c) A description of the system and a list of procedures for checking that equipment is working properly during crude oil washing operations. This shall include a list of the system and equipment parameters to be monitored, such as line pressure, oxygen level, machine revolutions, duration of cycles, etc. The established values for these parameters shall be included. The results of the tests carried out in accordance with paragraph 4.2.10 and the values of all parameters monitored during such tests shall also be included.

(d) Details of the requirements of section 6 ("Operation") of this Schedule, together with advice and instructions, where appropriate, on meeting these requirements, such as:

(i) Recommended methods and programmes of crude oil washing in order to accord with all foreseeable circumstances of cargo discharge restraints and to obtain maximum trim during the completion of washing and draining of each tank.

(ii) The procedure on ships to avoid vapour emission in accordance with paragraph 6.8.

(iii) The method of draining tanks which shall include information on optimum trim conditions as required by paragraph 4.4.10.

(iv) The method of draining cargo pumps, cargo lines, crude oil washing lines and stripping lines, and spaces into which they may be drained, together with the final discharge ashore via the small discharge line on completion of discharge.

(b) Equipment and design

(i) location of washing machines;

(ii) washing machines, deck mounted and submerged:

-types;

-characteristics;

-features of construction;

-operating parameters;

(iii) drive units;

(iv) washing fluid supply and distribution systems;

(v) stripping systems;

(vi) means of sounding tanks;

(vii) inert gas requirements.

(c) Generalised crude oil washing procedures

(i) traditional pipeline ship/free flow ship/partial free flow ship;

(ii) single/multi parcel cargoes;

(iii) optimisation of washing procedure in order to minimise extra berth time;

(iv) ballasting for departure with various ship and pipeline configurations;

(v) procedure for washing at sea between discharge ports.

(d) Associated procedure

(i) means for minimising residues on board:

- stripping of cargo tanks;

- draining and stripping of cargo lines;

- final discharge of cargo ashore;

(ii) water rinsing of arrival ballast tanks;

APPENDIX II

TRAINING FOR PERSONS INTENDED TO ASSUME OVERALL CHARGE OF CRUDE OIL WASHING

INTRODUCTION

Any required training shall be supervised instruction, conducted in a shore-based facility or aboard a suitably equipped ship having training facilities and instructors for this purpose, dealing with the principles involved and the application of these principles to ship operation.

Such training shall include but not necessarily be limited to:

(a) An introduction to the principles of crude oil washing which shall include:
- the characteristics of crude oil as a washing fluid and its contrast with water washing;
- top washing;
- bottom washing;
- trim requirements;
- methods of bleeding of from the cargo discharge;
- maintenance of required washing fluid pressure;
- washing at sea between discharge ports;
- recirculatory washing;
- relative priorities and requirements for the departure ballast tanks, arrival ballast tanks and cargo only tanks.

(v) Typical washing programmes under various conditions of loading, specifying:
- (1) the tanks to be washed in accordance with paragraph 6.1;
- (2) the method for washing each tank, that is single or multistage;
- (3) the number of tank washing machines to be used simultaneously;
- (4) the duration of the crude oil wash and water rinse where the latter is appropriate;
- (5) the volume of water used for water rinse, which shall be at least equal to that used in the water rinse prior to the inspection required by paragraphs 3.2 and 4.2.10; and
- (6) the preferred order in which the tanks are to be washed.

(vi) The procedure for draining and stripping, where appropriate, cargo lines and pumps before being used for the loading of departure ballast.

(vii) The procedure for water washing lines before discharge of departure ballast and the loading and final discharge of arrival ballast.

(viii) The procedure for verifying by sound patterns that bottom mounted machines are operating shall be carried out towards the end of the wash cycle for each tank. When carrying out such verification all other machines shall be shut down if necessary.

(ix) Precise details of the procedure to ensure compliance with regulation 13 of these Regulations in the discharge of departure ballast, the water flushing of lines and the decanting of the slop tanks at sea.

(e) The dangers of leakage from the crude oil washing system and the precautions necessary to prevent leakage and the action to be taken in the event of a leakage. Guidance shall be given on how the crude oil washing system is to be operationally tested for leakage before each discharge

(f) The method of preventing the entry of oil to the engine room through steam heaters as required by paragraph 4.1.6.

(g) The personnel required at all times to conduct the dual operation of discharge in cargo and crude oil washing. The numbers of such personnel shall include:

(i) the person meeting the requirements of paragraph 5.2 who will have overall control of the crude oil washing process;

(ii) those persons meeting the requirements of paragraph 5.3 who will be expected to undertake the actual operation; and

(iii) at least one person on deck at all times during washing to keep watch for leaks and malfunctioning of equipment, to test the oxygen content of tanks before washing, to check tank atmosphere pressure, to sound tank bottoms if required, to lift ullage floats if necessary and to change drive units when this is necessary.

be used simultaneously;

(4) the duration of the crude oil wash and water rinse where the latter is appropriate.

(v) the procedure for verifying by sound patterns that bottom mounted machines are operating shall be carried out towards the end of the wash cycle for each tank. When carrying out such verification all other machines shall be shut down if necessary."

6.8 This paragraph is not applicable.

7(d) Replace by the following:

"7(d) Details of the requirements of section 6 ("Operation") of this Schedule, together with advice and instructions, where appropriate, on meeting these requirements, such as:

(i) Recommended methods and programmes of crude oil washing in order to accord with all foreseeable circumstances of cargo discharge restraints and to obtain maximum trim during the completion of washing and draining of each tank.

(ii) The method of draining tanks which shall include information on optimum trim conditions as required by paragraph 4.4.10.

(iii) The method of draining cargo pumps, cargo lines, crude oil washing lines and stripping lines, and spaces into which they may be drained, together with the final discharge ashore via the small discharge line on completion of discharge.

(iv) Typical washing programmes under various conditions of loading specifying:

(1) the tanks to be washed in accordance with paragraph 6.1;

(2) the method for washing each tank, that is single or multi-stage;

(3) the number of tank washing machines to

The duties of such persons are not necessarily mutually exclusive.

(h) An effective means of communication between the watchkeeper on deck and the cargo control position so that in the event of a leak in or malfunctioning of the crude oil washing system the washing may be stopped as soon as possible.

(i) The typical procedures for ballasting.

(j) A pre-crude oil wash operational check list for the use of the crew at each discharge, which shall include the checking and calibration of all instruments.

(k) The recommended intervals for on board inspection and maintenance of crude oil washing equipment in addition to statutory surveys. Reference should be made to technical manuals supplied by the manufacturers of the equipment.

(l) A list of crude oils unsuitable for the crude oil washing process and their origin.

APPENDIX I

MODIFICATIONS FOR APPLYING THE SPECIFICATIONS TO NEW CRUDE OIL TANKERS OF 20,000 TONS DEADWEIGHT AND ABOVE

Paragraph number	Modifications
4.2.5	This paragraph is not applicable.
4.2.10	Subparagraph (c) is not applicable.
6.1	Replace by the following: "6.1 Tankage to be crude oil washed 6.1.1 Before departure on a ballast voyage: (a) approximately one quarter of the cargo tanks shall be crude oil washed for sludge control purposes on a rotational basis and in accordance with the procedures specified in the Operations and Equipment Manual. However, for these purposes, no tank need be crude oil washed more than once in every four months; and (b) if it is considered that additional ballast in a cargo tank or tanks may be required during the ballast voyage under the conditions and provisions specified in regulation 18(3) of these Regulations, the tank or tanks which may be used for this ballast shall be crude oil washed in accordance with the procedures specified in the Operations and Equipment Manual. 6.1.2 Ballast water shall not be put into cargo tanks that have not been crude oil washed. Water that is put into a tank which has been crude oil washed but not water rinsed shall be regarded as dirty ballast. 6.1.3 Crude oil washing shall not be conducted between the final discharge and loading ports; that is to say, no crude oil washing shall be undertaken during the ballast voyage."
6.3	Replace by the following: "6.3 Ballasting of cargo tanks Care shall be taken at the completion of crude oil washing of any cargo tank that might contain ballast to strip the tank as completely as possible. Where this ballast is filled through cargo lines and pumps, these must be drained and stripped of oil using the means required by paragraph 4.4.5."
6.4	The last two sentences are not applicable.
6.5	Replace by the following: "6.5 Discharge of oily water effluents on ballast voyage The discharge of additional ballast from cargo tanks and any other water effluent discharged during the ballast voyage shall comply with the requirements of regulation 13 of these Regulations."