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Foreword

by Ronald K. Noble
Secretary General of the ICPO-Interpol

The purpose of this manual is to provide guidance for investigations of illegal oil discharges from vessels. The intentional illegal discharge of oil from vessels is a prevalent and significant problem faced worldwide. It is not limited to any one type of vessel or Flag State. While the individual discharges are not always large, the cumulative effect is significant. The OECD has estimated that every year unscrupulous vessel operators deliberately release more oil into the global marine environment than the combined amount contributed by recent major maritime accidents over the last 10 years.

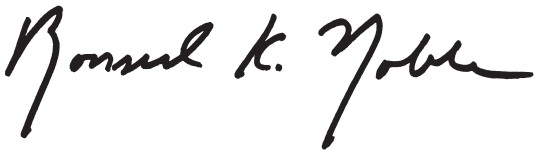
The International Convention for the Prevention of Pollution from Ships (MARPOL73/78) defines the legal discharge limits from vessels whether from machinery or cargo spaces. This is an economically motivated crime that can involve significant financial gain to those violating the law. Also violators have an unfair economic advantage over law abiding companies that do comply with the law. Law enforcement and regulatory officers have an obligation to protect the environment and the honest vessel operator.

National authorities need to aggressively investigate illegal oil discharges. Prosecutors and judges need to be informed of the significance of these crimes and encouraged to impose penalties significant enough to deter future violations. Those countries lacking enforcement capability are at risk of becoming victims of this type of crime, as the lack of enforcement and deterrence will encourage violations to be committed in the waters of those countries.

International co-operation in investigations and the sharing of information and experiences will lead to more efficient and effective enforcement activity and help maintain a healthier marine environment for the future.

This manual contains material drawn from several national enforcement guides as well as information provided by individual experts in the field. We encourage you to share this manual with the appropriate investigative authorities and prosecutors in your country.

We wish you well in conducting this important work.



1 INTRODUCTION

The aim of this manual is to provide information which is useful to both experienced and inexperienced investigators. Using this guide in combination with ordinary law enforcement experience will lead to successful investigations. As with other white collar crimes, the motivation behind illegal oil discharges is money. Money saved in man-hours by not minimizing waste streams and leakages, operating, maintaining and repairing pollution control equipment, purchasing pollution control spare parts and supplies, or properly disposing of waste on shore.

To e□ectively meet the challenge, investigators worldwide must raise their levels of competence so that there is no safe haven for polluters. Prosecutors and judges need to be made aware of the seriousness of this type of crime and provided with information that can result in successful prosecutions. Too often, serious violations are merely punished by small □nes. The lack of aggressive enforcement of international and national laws will result in continuing damage to our environment and disrespect for the law and for law enforcement personnel.

How does an oil pollution investigation begin? An oil slick may be reported by routine aircraft/vessel patrols, or by commercial or private vessels. A regulatory or law enforcement agency may be contacted by a "whistleblower" (informer), usually a crew member who has direct knowledge of the violation.

Another starting point is a Port State Control Inspection. The inspection may discover illegal bypass equipment, falsi□ed documents, tampering with pollution control equipment. Information can also be obtained by interviewing the vessel's crew members.

Illegal oil discharges can result from a number of di□erent activities such as tank cleaning, the draining of top lines, tampering with pollution control equipment, or emptying cargo slop tanks.

This manual contains information about the international laws governing oil discharges from vessels, as well as the use of national laws. The use of national laws, such as those prohibiting making false statements, has proved to be extremely e□ective when dealing with vessels illegally discharging oil in international waters. The tools for conducting a successful criminal investigation are described and explained in this manual. The Appendices include checklists that can be used for shipboard investigations, aerial surveillance and interviewing. We encourage you to make copies of these Appendices and to carry them with you while conducting your investigations.

The International Convention for the Prevention of Pollution from Ships (MARPOL73/78) which de□nes legal discharge limits for vessels, restricts discharges to be no greater than 15 parts per million of oil in water. When oil is visible on the sea surface, it is recognized to be greater than 15 parts per million, therefore a violation has been committed and investigative action should be taken.

2 INTERNATIONAL CONVENTIONS

There are two international conventions which apply to illegal oil discharges by vessels:

- United Nations Convention on the Law of the Sea (UNCLOS)
- International Convention for the Prevention of Pollution from Ships (MARPOL73/78)

For the international conventions to be enforceable, they must be implemented in national laws. However, some of the countries which have not adopted these conventions apply national laws that reflect them. The conventions provide for the right to investigate, take legal action and carry out inspections under a Port State Control regime. The effectiveness of international conventions depends upon the degree to which they are obeyed, and this in turn depends largely upon the extent to which they are enforced.

UNCLOS provides the legal basis for international co-operation, jurisdiction of Port, Coastal and Flag States, and the sovereign rights and obligations of a party over its territorial waters and its Exclusive Economic Zone (EEZ). As of 5 April 2006, 149 countries were party to UNCLOS. UNCLOS states that the competent international organization shall establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels.

The competent international organization for vessel-related pollution is the International Maritime Organization (IMO), which has negotiated the MARPOL73/78 Convention. This is a combination of two treaties adopted in 1973 and 1978 respectively. It has been updated by amendments over the years and which entered into force in 1983. As of November 2006, the 138 States party to the Convention account for over 97% of world shipping tonnage. The Convention establishes the rights and obligations of parties and requires parties to give full effect to the Convention's provisions in their national legislation. MARPOL73/78 currently contains six technical annexes containing the regulations for specific types of pollutants:

- Annex I Prevention of Pollution from **Oil**
- Annex II Control of Pollution by **Noxious Liquid Substances in Bulk**
- Annex III Prevention of Pollution by **Harmful Substances Carried by Sea in Packaged Form**
- Annex IV Prevention of Pollution by **Sewage** from Ships
- Annex V Prevention of Pollution by **Garbage** from Ships
- Annex VI Prevention of **Air Pollution** from Ships

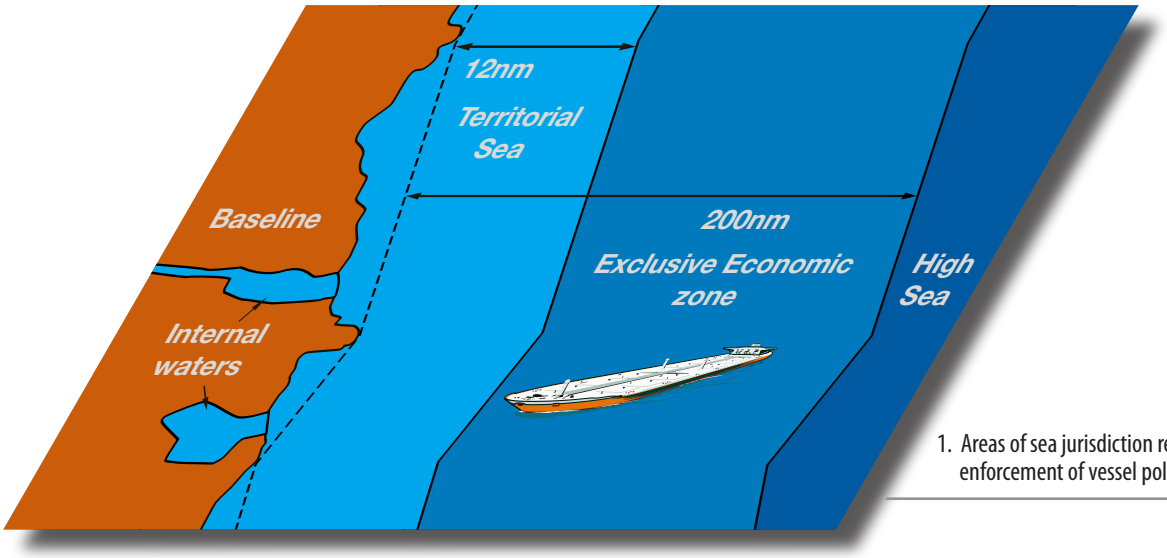
While this manual will only address the regulations in Annex I (Oil) and their enforcement, the information may also be of assistance in investigations concerning other pollutants discharged from vessels.

In addition to the international conventions discussed above, this manual will also address the enforcement of environmental laws and traditional criminal laws, such as conspiracy and false statements, as related to illegal oil discharges from vessels.

2.1 TERMINOLOGY AND JURISDICTION

UNCLOS sets out countries' sovereign rights so that they can use their national legislations to apply MARPOL73/78 within their jurisdictions. To understand how this system works, it is important to have a clear understanding of what the various terms mean in this particular context. A number of definitions are therefore given below:

- Internal Waters are waters on the landward side of the baseline, usually includes lakes, rivers and bays.
- Baseline is an artificial line from which zones of jurisdiction are measured in accordance with UNCLOS. The normal baseline for a State Party is the low-water line along the coast or reef; however, UNCLOS also provides for straight baselines that can be declared in areas of deeply indented coastlines or around fringing islands.
- Territorial Sea is the sea zone not exceeding 12 nautical miles (22.2 kilometres) from the baseline as declared by a Coastal State.
- Exclusive Economic Zone is a sea zone beyond the territorial sea over which the State has specific rights over the exploration, use of marine resources and environmental protection. This zone can be declared up to 200 nautical miles (370 kilometres) from the baseline, but not all countries have established an EEZ.
- High Seas is the sea area outside the above-mentioned zones.



1. Areas of sea jurisdiction relevant to the enforcement of vessel pollution laws.

- Flag State: The State under whose laws the vessel is registered and under whose nationality the vessel operates. The Flag State issues documentation for the vessel and also has full jurisdiction over the vessel when it is operating in the high seas.
- Port State: The State where the vessel is located at that time, in port or at an offshore terminal.
- Coastal State: The State which has jurisdiction over the waters through which the vessel is transiting or sailing.

2.2 OBLIGATIONS ON VESSELS

Every vessel operating under the authority of a party to MARPOL73/78 must comply with all the regulations of the Convention. MARPOL73/78 also contains requirements on documentation and records. The ship's owner and master are responsible for ensuring that ships comply with the relevant international conventions, codes and other instruments. A vessel of 400 gross tonnage (gt) and above and an oil tanker of 150 gt and above must carry an Oil Record Book (ORB) Part I (machinery space operations). Oil tankers must also carry an Oil Record Book Part II (cargo/ballast operations). More information about record-keeping can be found in section 3.4. Vessels of these sizes and categories must also carry other documentation, such as an International Oil Pollution Prevention (IOPP) Certi□cate and a shipboard oil pollution emergency plan.

An actual or probable discharge of oil, other than one allowed by MARPOL73/78, must be reported without delay to the closest Coastal State by the master or the o□cer in charge of the vessel.[1]

2.3 PORT STATE CONTROL AND VESSEL INFORMATION

A country that is a party to MARPOL73/78 must enforce all the provisions of Annex I and ensure that vessels □ying its □ag comply with all the requirements, including permitted discharges, construction and equipment.

The international conventions adopted by the International Maritime Organization and the International Labour Organization provide countries with instruments allowing them to conduct control inspections of foreign ships visiting their ports. Unfortunately, some Flag States fail to ful□l their obligations by ensuring that vessels entitled to □y their □ag meet agreed international standards. As a result, many ships now put to sea in an unseaworthy condition and pose a threat to those onboard and to the marine environment.

Port State Control (PSC) is the system under which nations inspect vessels registered under foreign □ags visiting their ports. They carry out inspections to ensure that foreign vessels trading in their ports meet internationally accepted standards, and that the vessels are operated by quali□ed crews. Port State Control also plays an important role in identifying and ultimately eliminating sub-standard shipping and operators. Port State Controls are important in complementing the responsibility of Flag States, but can never replace it.

Port State Control de□ciencies are issued to vessels which do not comply with the requirements of a relevant international convention. Database systems are maintained under each Port State Control MOU, containing information on de□ciencies and detentions. Port State Control information can be useful to an investigation by presenting the history of the vessel, its condition, equipment and human performance problems that have been noted during Port State Control Inspections.

Appendix 15 provides a list of the links to the Internet sites of Port State Control MOUs and also to the public Port State Control Internet site EQUASIS. Some of the detailed information may not be available on these sites, but it should be possible to request this information through the national maritime administration.

1. MARPOL73/78 Protocol 1

The Lloyd's Register Internet site can also provide specific information about vessels, via free or subscriber access, including the IMO number, registered owner, gross tonnage, dead weight tonnage, draught, length, breadth, etc. This information can also be verified by each country's maritime administration and Port State Control information.

2. Response to oil discharge.

French Customs

3 TECHNICAL INFORMATION ABOUT VESSELS

This chapter provides technical information about speci□c operational activities that occur onboard vessels. An understanding of terminology used in technical issues relating to vessels is useful when reading this manual and can be found in Appendix 1.

3.1 HOW OILY WASTE IS GENERATED

Three categories of oily waste generally accumulate onboard large vessels. These are:

- **bilge waste** on all vessels
- **sludge-type waste** that stems from the routine operation of puri□cation equipment on all vessels and from a speci□c type of propulsion engine design
- **oil cargo residues** on tankers.

Bilge Waste

Machinery spaces on large commercial vessels contain a wide array of complex engineering systems to propel and power the vessel. Supporting systems include those used to manage fuel, lubrication, fuel and lubricating oil puri□cation, saltwater service, bilge and ballast, □re□ghting and sewage. Each system contains numerous pumps, □ttings, control devices and other components, along with extensive lengths of piping. All components are engineered to prevent and minimize leakages through the use of mechanical seals, gaskets, etc.

Waste accumulation of 20 cubic metres per day or more may occur. These accumulations occur because the shipboard machinery spaces are so huge, the kilometres of piping, thousands of □ttings and connections, and the many pumps installed on vessels, any of which may develop leaks. Additionally, quantities of condensation accumulate quickly, developed by main engine air cooling systems, □uids generated by tripped evaporators, drains from engine room sinks, engine room cleaning, leakages from other equipment and operations, and very large quantities of bilge water waste. The system of pipes, pumps, tanks, bilge wells and other items associated with this equipment and the processes involved can be complex and di□cult to understand, even when a detailed piping diagram is available.

The names and arrangement of oily waste tanks on vessels will di□er according to the type and size of vessel. Many other tanks are used to store various liquids including cargo, fuel, lubricating oils and various types of liquid wastes. All vessels over 400 gt are required to have tanks for collecting oily residues (sludge) and they should be of a size that is adequate to the operation of the vessel. Generally, sludge tanks are separate and independent, however they may also be combined. Bilge water holding tanks are not mandatory but are □tted to most vessels. Vessels over 400 gt are also required to be □tted with oil □ltering equipment that may include any combination of a separator, □lter or coalescer, and also a single unit designed to produce an e□uent with oil content not exceeding 15 ppm. Pumps, piping,

valves, and other equipment will connect to the different tanks and facilitate the transfer of bilge and other oily wastes throughout the machinery space or engine room.

The IOPP certificate and appendix will contain information about the tanks and equipment onboard that particular vessel for the handling of oily waste. The vessel will also have piping and tank diagrams for the various systems. The IOPP certificate, piping diagrams and Oil Record Book should contain a tank plan.

Sludge Waste

Deep-draught vessels generally burn low quality heavy fuel oil in their main engines and, at times, in auxiliary engines. This fuel contains contaminates that are not removed during the refining processes. Additional contamination may occur during transfers and storage prior to delivery to the vessel and while onboard. To prevent damage to engine components, retard wear, and improve combustion, the fuel is purified by centrifuges before entering the engines. Oil purifying equipment is typically self-cleaning and operates continually to remove both solid and fluid contaminates.

Fuel oil flows through the purifier and the heavier solid contaminates are forced by centrifugal force to the outer walls of the centrifuge. At preset intervals, a shoot cycle occurs, which ejects contaminates. Water within the fuel is removed through other outlets/ports. Both the sludge and fluid contaminates drain to a sludge tank. The shoot cycles are controlled by timers, which the engineers set according to the quality of the fuel. Some fuel centrifuges may be fitted with other types of automatic sensors that control the ejection process.

Main and auxiliary engine lubricating oil is similarly processed. The equipment may be self-cleaning, and the resultant sludge and waste fluids enter a sludge tank. The waste quantities produced in this process are normally less than the quantities resulting from fuel oil.

The area between the pistons and cylinders on crosshead-type, slow speed main propulsion engines is lubricated by a separate system. Oil is injected along the cylinder walls and is scraped off by the pistons' reciprocating action. The by-products of combustion contaminate the oil, and it is not reused. The waste gravitates to a separate sludge oil tank known as a stuffing box or lantern ring drain tank. Eventually, the lubricating oil, fuel oil, cylinder oil sludges and oil from dirty oil tanks may be consolidated in a single waste or sludge tank.

Compared with bilge waste, fuel oil sludge is generally less varied and the quantities are more predictable, provided the quality of the fuel oil remains constant. As a general rule of thumb, approximately 1-2% of the heavy fuel oil burned in a vessel's main engine and generators ends up as sludge. The quantity could vary depending on the fuel's quality, its compatibility with previous shipboard fuels and the condition of the equipment used to store, transfer and heat it.

Oil Cargo Residue Waste

Tankers (product, chemical and crude) carry oil in bulk and generate oil cargo waste residues. Tanker vessels have numerous tanks and may carry many different cargos at the same time varying from different types of petroleum products to chemicals and food products. As a result, these cargo tanks must usually be cleaned between carrying different cargos. Steam cleaning cargo tanks after carrying petroleum products produces oily waste. Cleaning by

another process involves a sprinkler-like device, known as a “Butterworth” machine that sprays pressurized hot water in the tanks and results in a greater amount of oily tank waste than steam cleaning. The MARPOL73/78 requirements for oil cargo residue discharges at sea are outlined in section 4.4.

Product Tankers

At the final discharge, the cargo tanks will usually be stripped empty, apart from a quantity of “unpumpable residue” in each tank. The “unpumpable” quantity in each tank will vary due to several factors:

- Cargo density
- Temperature
- Trim of the vessel during the stripping operation
- Efficiency of the vessel's cargo equipment/pumps etc
- Efficiency of the vessel's crew
- Design and shape of tank internals.

In a modern product tanker, the "unpumpable" quantities will usually be small, (around 200 litres per tank) but this figure will vary significantly due to the size of the cargo tank/ arrangements and the factors noted above. A cargo surveyor will usually check cargo tanks and the status of the vessel on completion to verify that all cargo has been discharged. A copy of this report will usually be onboard the vessel, as well as comments regarding the discharge and assessment of the cargo remaining onboard. The vessel may still have quantities of cargo in the cargo stripping pipelines and pumps. This should be limited to a few cubic metres only, depending on the factors noted above.

The vessel will begin tank washing in preparation for taking on its next cargo. A quantity of saltwater will be taken onboard into a slop tank. The quantity will vary according to the ship's requirements, but could be several hundred tonnes. This water is recycled from the slop tank through the cargo tank washing system, according to tank preparation requirements. The water may be heated. On completion of tank washing, and stripping of the washed tanks and pipelines, the slop tank will contain the saltwater used for washing, and the cargo residues and unpumpable quantities from each tank. These quantities will be measured, the interface recorded and cubic metres calculated. Sometimes chemicals may be used, but not often, as terminals cannot process tank washing slops that contain chemicals.

The vessel may choose to discharge a quantity of the slops (water) through its Oil Discharge Monitoring and Control system after the slops/cargo residues have settled out and the interface-measured quantities have been calculated, in accordance with MARPOL73/78 requirements.

The vessel will arrive at the load port terminal with a quantity of slops made up of cargo residues. These slops will usually be discharged for processing in the terminal. The slop tank is cleaned again and the washings discharged ashore in preparation for taking on the next cargo.

Crude oil tankers

On completion of crude oil discharge operation from a tanker, there will be unpumpable quantities of cargo residue in each tank, and subject to the same factors as previously mentioned for the product tanker. As much as possible of the crude oil will be discharged and systems stripped to shore, and as previously mentioned , a cargo surveyor will verify the tank status of the vessel.

Unpumpable quantities in crude tankers will vary more than for product tankers, primarily due to the size of the cargo tanks and nature of the cargo. Crude tankers may also have tank clingage, a quantity of residue sticking to the tank bulkheads and tank structures. The quantity will vary due to cargo type, and whether the vessel had undertaken crude oil washing during discharge.

Crude oil washing is a process in which the vessel's cargo is used to clean its own tanks. When completed the washings are combined with the cargo and discharged ashore. When not discharged ashore immediately or if the cleaning takes place o□shore the washings are collected in a slop tank. Decanting via the Oil Discharge Monitor Equipment may take place to remove water from the tank and if the next cargo is a similar product it may be loaded on top and combined with the cargo collected during the cleaning process.

3.2 DISPOSAL OF WASTES

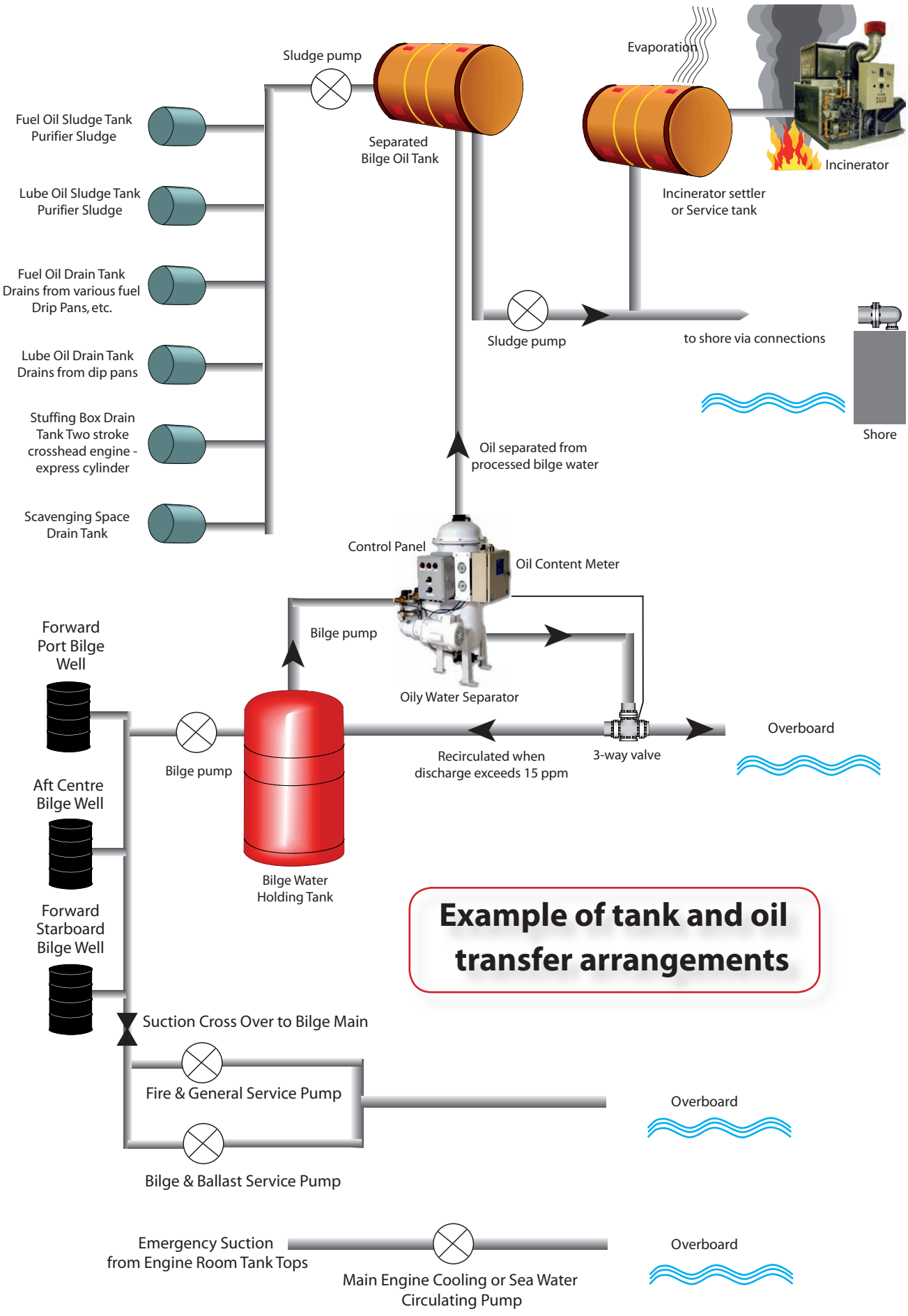
There are very few legal options for dealing with sludge and bilge water waste. The sludge and bilge waste are pumped to and contained in various holding tanks. From there, the sludge should be either stored on the vessel for eventual disposal ashore or burnt in the incinerator.

A typical bilge water processing system usually involves two processes. First, as shown on page 14, bilge from bilge wells located throughout the engine room is pumped to a bilge water holding tank. In newer vessels, this system may have been automated. Once a bilge well □lls to a predetermined level, a switch starts the pump, provided that the valves are lined up properly. The bilge will be transferred automatically to the bilge water holding tank. The system may also be equipped with an excessive run alarm which informs the engineer when abnormal quantities of water are being transferred to the bilge water holding tank.

The piping system connecting the various bilge wells to the bilge pump may be cross-connected to other systems. Such cross-connections may be considered as internal bypasses and connect the system to larger pumps, sometimes known as the "bilge and ballast pump", "□re, bilge and ballast pump", or "general service pump". These cross-connections can facilitate the rapid pumping of the bilge overboard and are required by the International Convention for the Safety of Life at Sea (SOLAS), but are intended for emergency use only.

The oily water that is collected in the bilge wells and transferred into tanks can then be transferred ashore via a □xed transfer system, provided there is enough storage capacity onboard. However, there is often a large amount of water, and disposal ashore is often not considered cost e□cient by the vessel. If not transferred ashore, the bilge waste should be processed by the oil □ltering equipment.

Oil □ltering equipment consists of any combination of separator, coalescer or other equipment that separates oil and water, and is commonly referred to as an Oily Water


Sludge pump
Separated Bilge Oil Tank
Evaporation
Incinerator
Incinerator settler or Service tank
Fuel Oil Sludge Tank Purifier Sludge
Lube Oil Sludge Tank Purifier Sludge
Fuel Oil Drain Tank Drains from various fuel Drip Pans, etc.
Lube Oil Drain Tank Drains from dip pans
Stuffing Box Drain Tank Two stroke crosshead engine - express cylinder
Scavenging Space Drain Tank
Sludge pump
to shore via connections
Shore
Oil separated from processed bilge water
Control Panel
Oil Content Meter
Bilge pump
Oily Water Separator
Forward Port Bilge Well
Aft Centre Bilge Well
Forward Starboard Bilge Well
Bilge pump
Bilge Water Holding Tank
Recirculated when discharge exceeds 15 ppm
3-way valve
Overboard
Example of tank and oil transfer arrangements
Suction Cross Over to Bilge Main
Fire & General Service Pump
Overboard
Bilge & Ballast Service Pump
Emergency Suction from Engine Room Tank Tops
Main Engine Cooling or Sea Water Circulating Pump
Overboard

Separator (OWS). This equipment is required to be designed and tested to separate oily water mixtures to a maximum limit of 15 parts oil to one million parts water (15 ppm). The equipment may be □tted with an Oil Content Meter (OCM) and automatic stopping device which prevents the discharge of any e□uent above the 15 ppm limit, but this is only required on vessels over 10,000 gt.

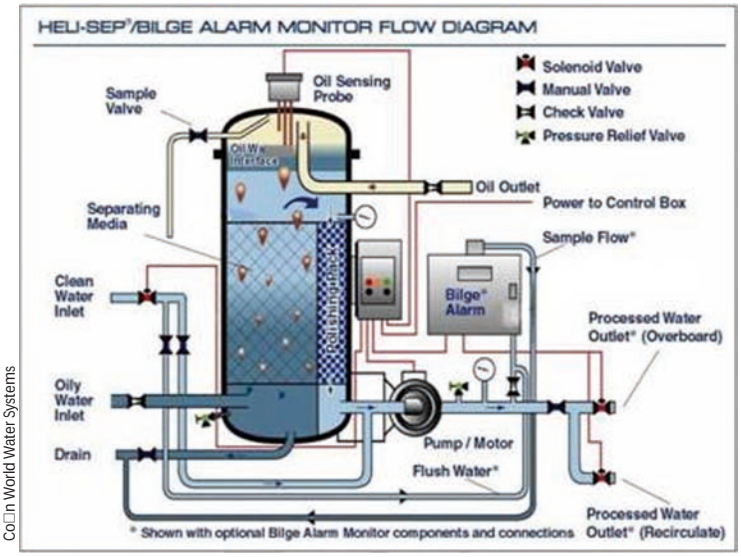
Such equipment must be approved to international standards under MARPOL73/78. The approval standards are speci□ed in IMO Resolutions.[2]

3.3 BASIC OPERATION OF OIL FILTERING EQUIPMENT

Depending on a vessel's procedures, bilge would generally be pumped to a bilge water holding tank. Once there, the oily water mixture is allowed to settle. Some gravitational separation of the oils takes place prior to the oily water mixture being processed by the Oily Water Separator. The Oily Water Separator will be piped to take suction at a lower level within the bilge water holding tank. The piping leading up to the separator will include an inline basket strainer to remove large particles of debris from the bilge water before it enters the Oily Water Separator. Often, as in the illustration beside, the pump transferring the □uid from the holding tank is located with the Oily Water Separation equipment on the separator's outlet side. In this case, the separator operates under a vacuum when processing bilge □uids.

The pump serves both to draw the bilge water into the unit and to discharge processed water (e□uent) overboard. This arrangement places the unit's casing and suction piping under a vacuum during normal operation. Installing the pump here bene□ts the process by not creating additional mechanical emulsions resulting from the liquid □owing through the pump prior to the bilge water entering the separator. The diagram below illustrates the basic components of a typical gravitational-type Oily Water Separator.

The oil forced out of the Oily Water Separator is piped to a holding tank (often called a sludge tank or separated bilge oil tank) where it may eventually be incinerated; mixed with other shipboard fuel and lubricating oil sludge; retained onboard for future shoreside disposal or in some cases illegally disposed of by discharging overboard. The bilge monitor shown in the



Co□n World Water Systems

3. Example of Oily Water Separator with bilge alarme.

2. Up until 1994, such equipment had to be approved to resolution A.393(X) and, from April 1994, such equipment had to be approved to resolution MEPC 60 (33). Equipment fitted to vessels after 1 January 2005 has to be approved to resolution MEPC 107(49).

diagram is also referred to as an Oil Content Monitor. Its purpose is to sample and measure the Oily Water Separator e□uent during normal discharging. Should the Oil Content Monitor sense a discharge containing oil in excess of 15 ppm, the control will set o□ an alarm. It will also automatically secure the overboard discharge valve on the processed water outlet and then open the recirculation valve. When the recirculation valve is opened, the discharge □uid will return to the bilge water holding tank or bilges.

On other systems, a three-way valve is used to accomplish the same action. The valve is similarly controlled by the Oil Content Monitor and has an inlet port and two outlets. Only one outlet can be used at any particular time. Oil Content Monitor control systems may be designed to continue operating the Oily Water Separator in the recirculation mode until the oil content in the discharge falls below 15 ppm. The unit then returns to automatic operation. Other con□gurations may automatically initiate a back-□ushing cycle to purge the Oily Water Separator of oil, and yet others may require human action to reset the device or to establish the back □ushing and self-cleaning of the unit.

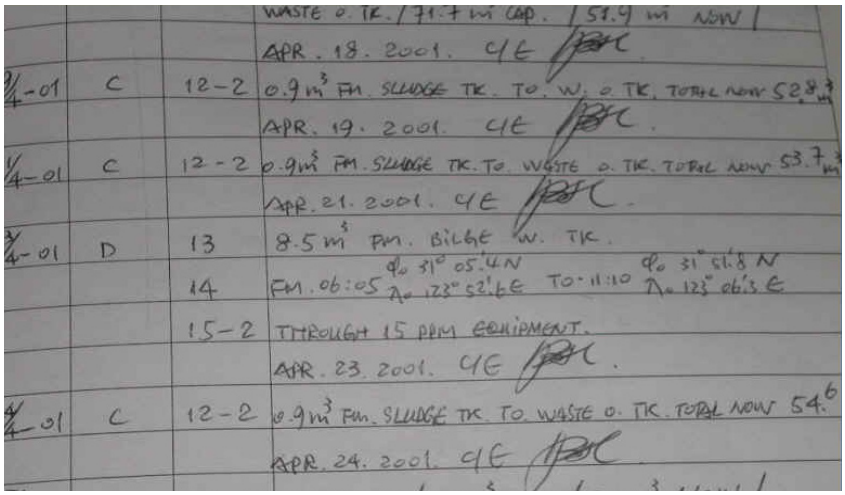
While all Oily Water Separators must be designed to allow only the discharge of e□uent containing less than 15 ppm oil, only vessels greater than 10,000 gt have to be □tted with an alarm and automatic stopping device should this limit be exceeded. The IOPP certi□cate will state if it is □tted with such items.

If a gravitational-based Oily Water Separator is operating properly, and if the equipment is not attempting to process oil and water emulsions, oil-free water is discharged into the sea, and oily waste is discharged into a sludge tank for incineration or disposal ashore.

3.4 RECORDING OF OIL OPERATIONS

The Oil Record Book Part I[3] for machinery space operations must contain all records of transfers of oil, the disposal of sludge and bilge water, the onboard incineration of oily waste, and bilge water that has been discharged overboard via the Oily Water Separator.

The Oil Record Book Part II[4] for cargo/ballast operations must contain all records of loading, unloading of oil cargo, internal transfers, ballasting of cargo tanks, discharge of water from slop tanks and disposal of oil residues.



Australian Maritime Safety Authority

4. Example of entries in an Oil Record Book Part I.

3. MARPOL73/78 Regulation 17

4. MARPOL73/78 Regulation 36

Swedish Coast Guard

5. Coastline contamination.

Vessels must obtain receipts for any discharges made to shore facilities. These should be kept with the Oil Record Book and may aid the vessel in proving exactly where the disposal of waste from the vessel has occurred.

Each of the machinery space operations, including the overboard discharge of bilge waste, is required to be "fully recorded without delay" in the Oil Record Book. Further, each completed operation has to be signed by the officer or officers in charge of the operations concerned. Finally, each page must be signed by the Master of the vessel. The Oil Record Book must also be kept for three years after the last entry has been made and maintained on the vessel so as to be readily available for inspection.

The formats of the Oil Record Books Parts I and II are contained in Appendix III of Annex I of MARPOL73/78. The entries must be recorded using the letters and numbers that correspond to each particular operation undertaken as stated in the list of items to be recorded. The machinery space operations and the cargo/ballast operations on oil tankers that are required to be logged, are listed in the relevant Oil Record Book (reproduced at Appendices 7 and 8).

While there is an exception from the restrictions on oil discharges specified in MARPOL73/78 for accidental or exceptional discharges of oil or oily mixtures, they must be reported in the Oil Record Book. The records must include the circumstances of, and reasons for, the discharge. More information on what kind of situations are included under these regulations and the reporting requirements can be found in section 4.4.

4 VIOLATIONS

A Flag State, i.e. the one in which a vessel is registered, has the primary obligation to enforce MARPOL73/78. However, Article 4.2 of MARPOL73/78 provides concurrent jurisdiction to Port and Coastal States through both Port State Control Inspections and legal proceedings for violations. Historically, referrals for Flag State enforcement have resulted in few sanctions and have rarely resulted in signi□cant penalties. Consequently, Port or Coastal States are strongly encouraged to enforce MARPOL73/78 as they are speci□cally authorized.

MARPOL73/78 states that: "Wherever visible traces of oil are observed on or below the surface of the water in the immediate vicinity of a vessel or its wake, Governments of Parties to the present Convention should, to the extent that they are reasonably able to do, promptly investigate the facts bearing on the issue of whether there has been a violation of the provisions of this regulation. The investigation should include, in particular, the wind and sea conditions, the track and speed of the vessel, other possible sources of the visible traces in the vicinity, and any relevant oil discharge records."[5]

4.1 ENFORCEMENT AND REFERRALS

There are a number of mechanisms by which a country may seek to enforce MARPOL73/78. These are listed below and are explained in more detail in the rest of the manual.

Enforcement of MARPOL73/78

A country will use its national law to implement the MARPOL73/78 regulations. A key issue will be establishing jurisdiction and location consistent with the application of that country's national law. Depending on the type and location of the pollution discharge, a country may also have other environmental legislation that can be directly enforced.

Enforcement of laws related to illegal discharges

MARPOL73/78 not only de□nes illegal discharges, but also provides other applicable rules and standards for the prevention, reduction and detection of pollution. One such rule is the requirement that ships fully record all overboard discharges in an Oil Record Book kept onboard and made available for inspection. As set forth below, a country may prosecute a violation of this requirement when the Oil Record Book contains false entries (or is rendered false because of omissions). Additionally, a country may identify other criminal laws that may be violated when the vessel is in its jurisdiction. One example of this approach is to prosecute individuals and corporations for the use of a falsi□ed Oil Record Book, or other ship records. Many countries have legislation that makes it a crime to make a materially false statement to government o□cials or use a materially false document in dealing with those o□cials or in o□cial proceedings. The charging of the false statement violation allows for prosecution of illegal discharges even when the discharge occurred in international waters.

5. MARPOL73/78 Regulation 15.7 and 34.7 (D General requirements)

Referral to Port and Coastal States

Another enforcement option is to refer violations to or share information with another Port or Coastal State. For example, if a vessel is identified making an illegal (polluting) discharge and that vessel is either bound for a port in another country or perhaps in a different country's territorial waters or Exclusive Economical Zone, the monitoring State may choose to alert that next Port State or the Coastal State in whose waters the discharge occurred so that it may conduct an investigation or collect further evidence on behalf of the monitoring State (see section 7.4).

Referral to the Flag State

A Port or Coastal State may refer a matter to the Flag State for a particular vessel and ask that the Flag State take appropriate action in accordance with MARPOL73/78 (see section 7.4).

4.2 ELEMENTS OF PROOF FOR ILLEGAL DISCHARGES

It is prohibited to discharge oil or oily mixtures into the sea. This applies to both discharges from the machinery spaces of all vessels of 400 gt and above and to discharges from cargo spaces of oil tankers. However, discharges from machinery spaces can take place if the oil content in the effluent does not exceed 15 ppm and if the oily mixture is processed through the required pollution prevention equipment. The only way for a vessel to achieve this legal discharge rate is through the use of oil filtering and monitoring equipment. Vessels that are less than 400 gt must either retain the oil or oily mixtures onboard (for discharge to shore facilities) or discharge through equipment approved by the Flag State so that the effluent does not exceed 15 ppm.

Oil cargo residue discharges can take place if the tanker is located more than 50 nautical miles from the nearest land and in accordance with the specific conditions of Regulation 34 of MARPOL73/78 (see section 4.4). These permitted discharges may create a visible sheen on the sea surface.

Stricter enforcement of MARPOL73/78 provisions may also be required in Special Areas and Particularly Sensitive Sea Areas. These areas are declared and approved by the International Maritime Organization (IMO). More information on them can be found on the IMO's website (www.imo.org).

Proving illegal discharges at sea has been made easier by the adoption of an IMO Resolution[6] in 1993. This resolution endorsed research undertaken by the Netherlands demonstrating that an oily mixture with a concentration of 15 ppm cannot be observed either visually or with remote sensing equipment.

6. MEPC 61(34), titled «Visibility limits of oil discharges of Annex I of MARPOL73/78»

The lowest concentration of oil in a discharge where the first traces can be visually observed is 50 ppm. Therefore; **any visible traces of oil at sea or in waters near a vessel, indicate a violation and should be investigated.**

There are a number of common elements that need to be established to prove violations of MARPOL73/78. National legislation will specify the elements of the offences to be established and the penalties that can be imposed for illegal oil violations. The legislation may allow for criminal, civil or administrative proceedings. Investigators need to be familiar with national legislation and the specific elements that must be established by the evidence relating to a particular discharge or pollution incident.

The common elements for oil violations are listed below, along with examples of evidence that should be obtained:

Element	Evidence required (examples)
Vessel	Identification, size and type of vessel (registration certificate, IMO number, International Oil Pollution Prevention Certificate).
Person responsible	Can be individual or corporation: owner, master, charterer, operator, crew members (name, address, etc.).
Conduct	Was the discharge caused through intentional (deliberate), negligent, reckless or knowing conduct; was there a history of repeated violations (admissions or documentation); was there evidence of concealment, falsification of records, or a failure to report or a false report, etc.
Discharge	To establish that the vessel is the source through crew member statements, eye witness observations, photographs, laboratory analysis and matching of samples from the vessel and the discharge, expert opinion on piping and pumping diagrams, etc.
Pollutant	The pollutant (oil) can be identified in various ways, such as laboratory analysis of discharge samples; witnesses; log books, bunker and cargo documents, etc.
Sea	Location of the vessel at the time of the pollution incident in the sea or waters of the country (vessel documentation, including GPS records, eye witness). Also assists in determining jurisdiction for application of legislation.
Failure to record	Determine by combining vessel documentation with evidence of a discharge (including omission of required entries).
Failure to report	Determine by combining vessel documentation with evidence of a discharge (no report or a false report received by nearest Coastal State).
False statements	False or incorrect information recorded or provided by the vessel/master/crew to deliberately conceal or minimize illegal activities.

4.3 TYPES OF DEFENDANTS

A decision on whether to prosecute, or whom to prosecute in relation to an illegal oil discharge will depend on the legal system, the authorities concerned and enforcement practices. There are numerous individuals, corporations and other parties involved in any commercial shipping venture, any of whom may be responsible parties depending on a country's domestic legislation. Depending on a country's national legislation, a criminal action may be brought against the vessel owner and/or operator, individual offending crew members, the vessel's master, and potentially other parties.

In considering who it would be most appropriate to prosecute, attention should be given to who has the greatest criminal culpability and what would achieve the greatest degree of deterrence. The laws in some countries allow their governments to hold both individuals as well as owners and operators, accountable for criminal violations. There are advantages to prosecuting both.

4.4 TYPES OF DISCHARGE VIOLATION

A number of countries' experience in the investigation of illegal oil discharges shows that many vessels are using extreme measures to circumvent the laws and illegally discharge oily waste at sea. This section provides information about certain methods that vessels may use to attempt to conceal illegal oil discharges by bypassing pollution prevention equipment, falsifying records and tampering with Oily Water Separation equipment. Investigators need to be familiar with these activities to ensure that an investigation can obtain relevant evidence to prove illegal activity and ensure that deliberate pollution is detected and punished through legal processes.

Oil discharges from machinery spaces on tankers and all spaces on other vessels

Vessels of 400 gt and above, and all oil tankers, are subject to restrictions with regard to discharging oil and oily mixtures into the sea (note there are stricter discharge conditions for "Special Areas" under MARPOL73/78). Vessels may not discharge oil or oily mixtures from the machinery spaces unless the vessel is proceeding *en route,* the oil content is less than 15 ppm, and the oily mixture is processed through approved oil □ltering equipment in operation. Furthermore, vessels of 10,000 gt are required to have an alarm and automatic stopping device in operation. Both of these must be activated when the concentration of oil in the discharge from the oil □ltering equipment exceeds 15 ppm. The deliberate use of bypass equipment to circumvent a vessel's Oily Water Separator and Oil Content Meter violates MARPOL73/78 regardless of proof of oil content because the oily mixture was not processed through the pollution prevention equipment as required.

Machinery space discharges for all oil tankers and discharges for other vessels of 400 gross tonnage and above	
Outside Special Areas	**Discharges are prohibited,** except when: 1. The vessel is proceeding *en route*, 2. The oil content of the effluent without dilution does not exceed 15 ppm, 3. The oily mixture is processed through an oil discharge monitoring and control system, oily-water separating or filtering equipment or other installation required by Regulation 14, 4. On oil tankers, bilge water is not mixed with cargo pump room bilge, and 5. On oil tankers, the effluent does not originate from cargo pump room bilge and is not mixed with oil cargo residue (Regulation 15.2, 15.2.4-5).
Within Special Areas	**Discharges are prohibited,** except when: 1. The vessel is proceeding *en route,* 2. The oil content of the effluent without dilution does not exceed 15 ppm, 3. The oily mixture is processed through oil filtering equipment with an automatic 15 ppm stopping device as required by regulation 14.7, 4. The vessel is over 10,000 gt, it has in operation an alarm and automatic stopping device; and 5. Bilge water is not mixed with oil cargo residue or cargo pump room bilge (on oil tankers).

Discharge of oil or oily mixtures from tanker vessel cargo areas

The requirements applying to oil tankers vary depending on the space in the vessel from which the oil is discharged, the location of the tanker when the discharge occurs, and the nationality of the tanker. Oil tankers are treated separately from other vessels for MARPOL73/78 purposes, primarily because they carry oil as cargo. Therefore, this section only discusses discharges of oil from cargo-related spaces of oil tankers.

Seagoing tanker vessels of 150 gt or more may only discharge overboard oily waste mixtures created by tank cleaning if they comply with certain requirements to limit the pollution, including the use of a pollution control system known as the Oil Discharge Monitor and Control system. Such discharges must also be recorded in an Oil Record Book (Part II). If the vessel cannot comply with the pollution prevention requirements, the oily mixtures must be retained onboard the vessel for subsequent transfer to a reception facility ashore.

Cargo Space Discharges from Tankers	
Sea area	**Discharge criteria**
In Special Areas OR outside Special Areas but within 50 nautical miles from land	**Discharges of oil cargo waste from tankers are prohibited,** except clean or segregated ballast (15 ppm maximum oil content)
Outside a Special Area and more than 50 nautical miles from land	**Discharges of oil cargo waste from tankers are prohibited** except either: (a) clean or segregated ballast (regulation 34.2) or (b) when: (1) the tanker is en route; and (2) the instantaneous rate of discharge of oil does not exceed 30 litres per nautical mile; and (3) the total quantity of oil discharged does not exceed 1/15,000 (for existing tankers) or 1/30,000 (for new tankers) of the total quantity of cargo which was carried on the previous voyage; and (4) the tanker has in operation an oil discharge monitoring and control system and slop tank arrangements as required by Regulation 34.1 of Annex I of MARPOL73/78.

Failure to report discharges

MARPOL73/78 anticipates that some types of emergency or "exceptional" discharges will be unavoidable, such as those necessary to secure the safety of a vessel or to save a life at sea, or that result from damage to a vessel or its equipment. These discharges do not violate the Convention, *provided that* all reasonable precautions have been taken after the occurrence of the damage or discovery of the discharge in order to prevent or minimize the discharge. The master or other person(s) in charge of a vessel also has an obligation to report[7] the discharge (or probable discharge) of oil in excess of 15 ppm regardless of whether it resulted from damage to the vessel or its equipment or for the purpose of securing the safety of a vessel or saving a life at sea. The report[8] must specify the identities of vessels involved, the time, type and location of the incident, the quantity and type of harmful substance, assistance required and salvage measures. The emergency exemption does not apply "if the owner or the master

7. MARPOL73/78 Protocol 1 and Annex I, Regulation 4
8. Protocol I, Article V(1)

acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result…."[9] Many countries have enacted national legislation that requires notification of specific Port or Coastal State authorities in the event of any oil discharge or of a potential incident. As mentioned in section 3.4, these incidents must also be fully recorded in the Oil Record Book. It is a violation of MARPOL73/78 to fail to record of falsely record exceptional discharges of machinery space waste or cargo waste such as those made through a bypass of required pollution prevention equipment.

One important rationale for the notification requirement is to allow interested Port and Coastal States to make timely decisions as to whether to respond to the discharge. Late reports or those that improperly minimize the nature and extent of the discharge can seriously undermine the mobilization of clean-up resources and can cause further environmental damage. In a case involving an emergency discharge, a situation can arise where the discharge was lawful, but where efforts to conceal or minimize the discharge or escape liability may constitute the basis for a criminal prosecution.

In considering a possible failure to report, attention will need to be paid to identifying the appropriate defendant(s). In some legal systems, this may be limited to the master, owner and/or operator, and other person(s) in charge of the vessel. Another legal element may be the timeliness of the report and the accuracy of the information contained in the report. Some countries have specified precisely what information must be communicated, how it should be communicated, to whom the report must be made, and what information (e.g. how much oil was discharged, wind and weather conditions, cause, etc.) must be included.

4.5 FALSE STATEMENTS OR USE OF FALSE RECORDS

An indirect method of enforcing MARPOL73/78 is to base a prosecution on the use of false records that conceal, falsely record or fail to record illegal discharges. This can be done by enforcing the requirement that ships fully maintain an accurate Oil Record Book, or by the use of general criminal law provisions that prohibit the making of false statements to government officials or the use of false records. The availability of these provisions will vary from country to country. Many countries have general laws that make it a crime to lie to the government, to submit false documents to a governmental agency, to use a document in order to gain a benefit (such as port entry) or to use a false document in an official proceeding (such as a Port State Control Inspection).

The use of general criminal law provisions is beneficial because it highlights the seriousness of the criminal conduct and focuses attention on crimes that are committed while the vessel is in port as opposed to some unknown or foreign location. A premise of this type of prosecution is that the making of a false statement or use of a false document undermines the regulatory system and that, if Port State Control officials knew the truth (e.g. Oily Water Separator was not operational or was not being used, that there was tampering of Oil Content Monitor, or that official vessel records were being deliberately falsified, etc.) there would be a regulatory consequence (e.g. detention, repairs, Flag State referral, etc.). Each country will have its own domestic criminal provisions that may be violated when official ship records are deliberately falsified and used.

The testimony of crew members is perhaps the best evidence of record falsification. When there is evidence that a vessel's oil filtering equipment has been bypassed, it is likely that the vessel's Oil Record Book has been falsified. As a result, the Oil Record Book is a crucial piece

9. Regulation 4.2

of evidence and careful review is essential. Other types of evidence of record falsi□cation can be found in the comparison of other vessel records, both o□cial, such as the O□cial Log Book, and uno□cial, such as a record of daily tank soundings. Investigators should examine these records and analyse the entries compared with the consumption of fuel and generation of oily waste by the vessel. A simple graph can compare the recorded discharges and provide a visual representation of the oily waste activity as stated in the records.

In addition to general criminal law provisions, MARPOL73/78 itself requires oil tankers of 150 gt and above and every ship of 400 gt and above shall keep an Oil Record Book Part I that contains entries of key machinery space operations. Oil tankers of 150 gt and above must also keep an Oil Record Book Part II recording cargo/ballast operations. Appendix III of Annex I provides examples and operational codes that must also be entered for each operation.

An Oil Record Book Part I must contain the following machinery space operations:

1. ballasting or cleaning of oil fuel tanks;
2. discharges of dirty ballast or cleaning water from oil fuel tanks;
3. collection and disposal of oil residues (sludge an dother oil residues;
4. discharge overboard or disposal otherwise of bilge water whichh has accumulated in machinery spaces; and
5. bunkering of fuel or bulk lubricating oil

An Oil Record Book Part II for oil tankers must contain the following cargo/ballast operations:

1. loading of oil cargo;
2. internal transfer of oil cargo during voyage;
3. unloading of oil cargo;
4. ballasting of cargo tanks and dedicated clean ballast tanks;
5. cleaning of cargo tanks including crude oil washing;
6. discharge of ballast except from segregated ballast tanks;
7. discharge of water from slop tanks;
8. closing of applicable valves or similar devices after slop tank discharge operations;
9. closing of valves necessary for isolation of dedicated clean ballast tanks from cargo and stripping lines after slop tank discharge operations; and
10. disposal of residues.

MARPOL73/78 requires that each machinery space and cargo/ballast operation be "fully recorded without delay," that entries are signed by the o□cer(s) in charge of the operations, and that each completed page be signed by the master of the ship.

Oil Record Books (Part I and Part II) must also contain the circumstances and reasons for any accidental, exceptional or emergency discharges.

MARPOL73/78 anticipates that the Oil Record Book will be the basis of enforcement actions. Accordingly, Oil Record Books are required to be kept in a place as to readily available for inspection at all reasonable times and preserved for a period of three years after that last entry. MARPOL73/78 also provides that any party may make a copy that once certi□ed by the master of the ship as true, will be admissible in any judicial proceeding as evidence of the facts stated in the entries.

Accordingly, the failure to comply with these MARPOL requirements could be prosecuted pursuant to MARPOL73/78 or potentially under a country's general criminal law governing the making of false statements or using false documents.

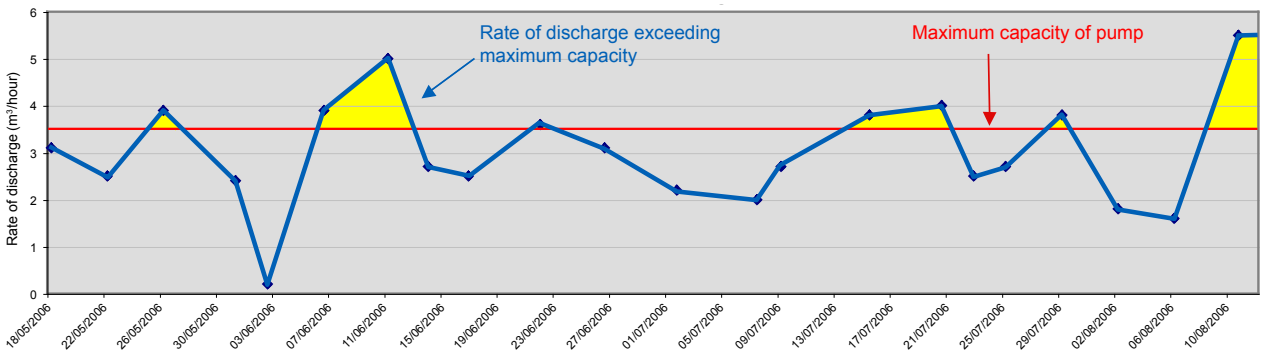
The following are examples of Oil Record Book entries that would be considered suspicious and should therefore be thoroughly investigated:

- Few or no entries in the Oil Record Book relating to oil or waste transfers, use of the Oily Water Separator, incinerator, or waste disposal ashore.
- Oil Record Book entries that are illogical, such as transfers of waste oil greater than the capacity of the transferring or receiving tanks.
- Exact same entries in the Oil Record Book over an extended period of time in regards to amounts and time of day.
- Signi□cant or unexplained drops in tank volumes (often during the evening or night hours at sea).
- No entries of Oily Water Separator cleaning or maintenance, such as steam cleaning of coalescing media or changing of □lters.
- Oil Record Book does not re□ect waste oil transfers documented in tank sounding records.
- Oil Record Book entries for Oily Water Separator discharge that exceed the Oily Water Separator's processing capacity.
- Oil Record Book entries for the incinerator that exceed the burning capacity or waste oil tank capacity.

A more detailed explanation of what records to compare and how to do this follows.

Rate of discharge and Oil Record Book entries

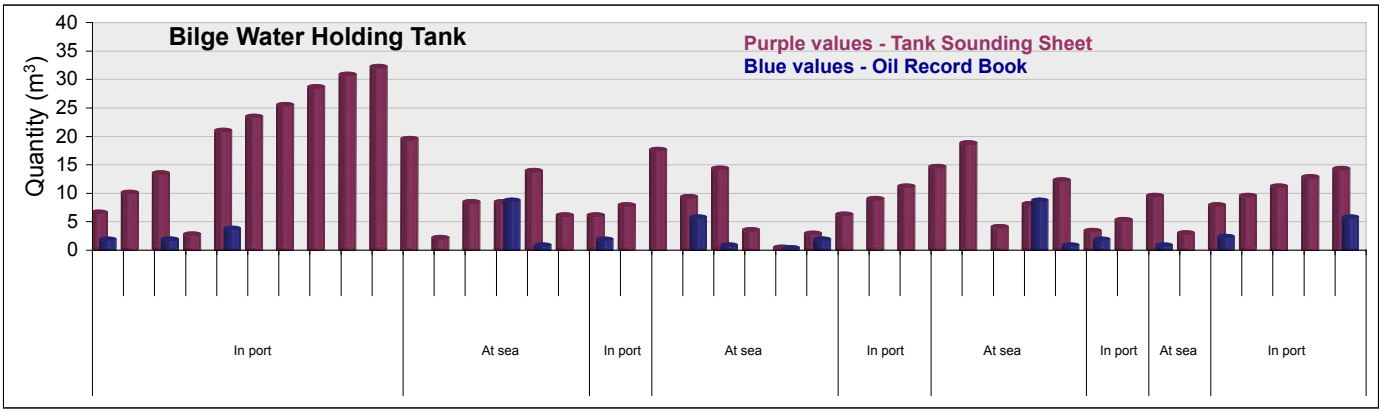
A useful analysis can be made by comparing the rate of discharge through the oil □ltering equipment (obtained by dividing the volume of the discharge by the length of time in which the discharge was asserted to have occurred in the Oil Record Book) with the rated capacity of the oil □ltering equipment supply pump or bilge pump. This is displayed in diagram no. 6. The pumping capacity can be found in the technical manual of the Oily Water Separator. Note that this rated capacity is the maximum throughput, and may be reduced if signi□cant quantities of oil are present in the in□uent stream, if the pump is in poor condition, or the □lters are blocked. Many vessels routinely complete the Oil Record Book using the maximum rated capacity of the Oily Water Separator. It is simple to test the Oily Water Separator onboard to determine whether this throughput is achievable in normal operating conditions.

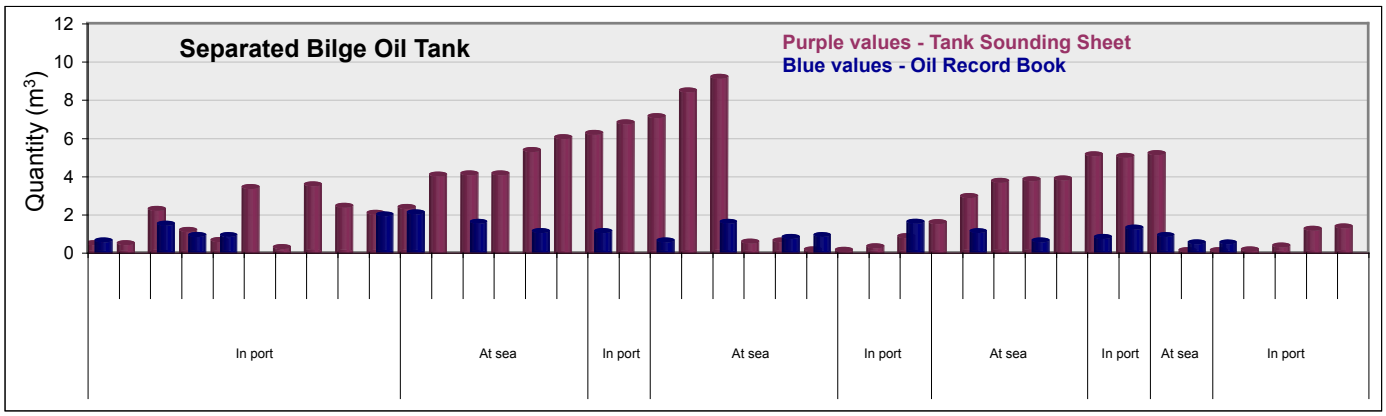


6. The table shows records of discharges in excess of the maximum capacity of the OWS which is 3.5 cubic meters. Such discharges are made discreetly.

Tank Sounding Records and Oil Record Book entries

A comparison of a vessel's record of tank soundings should show a similar accumulation and processing or discharge of bilge waste and sludge. Con□icts between the Oil Record Book and the Tank Sounding Records may constitute evidence of bypassing the Oily Water Separator in violation of MARPOL73/78. This is displayed in diagram no. 7, which shows the □lling up and emptying of the Bilge Water Holding Tank and Separated Bilge Oil Tank as would be expected, but inconsistent entries in the Oil Record Book.





7. The charts show discrepancy between Tank Sounding Sheet and Oil Record Book.

Incinerator Log and Oil Record Book entries

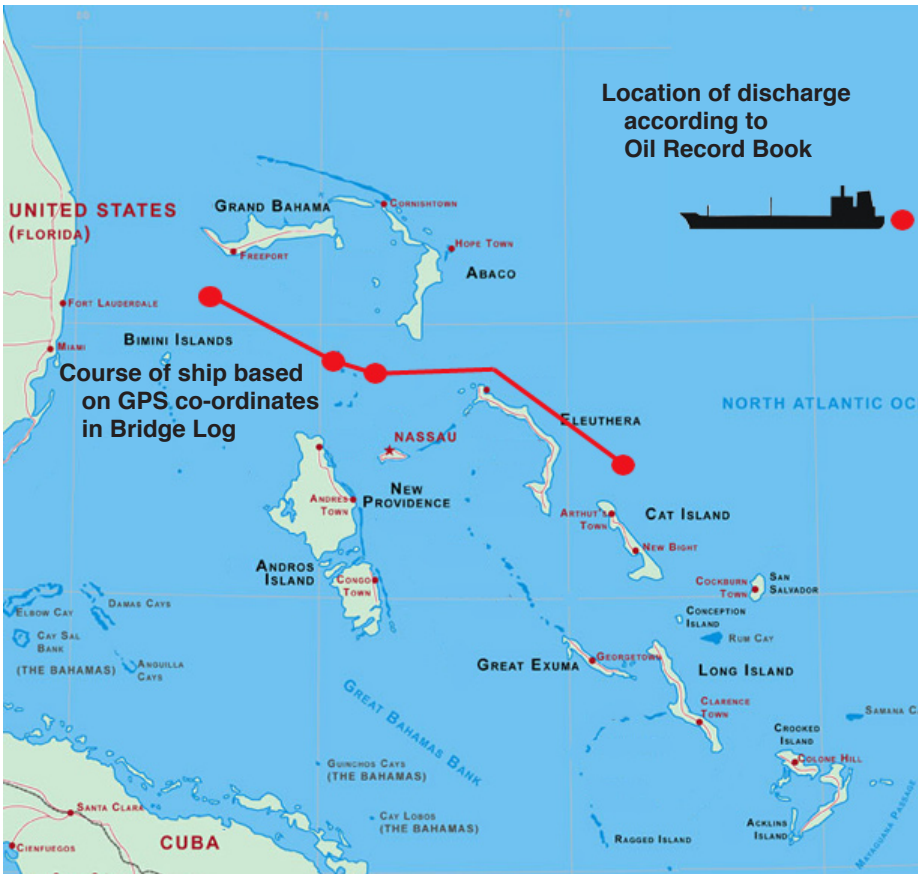
Other similar comparisons can be made with the rates of incineration by comparing the volume of sludge incinerated with the maximum capacity of the incinerator to burn sludge or by comparing the record of incineration in the Oil Record Book and the Incinerator Log. Investigators need to be aware that when a vessel has a heated tank prior to the waste oil incinerator, the water component of the oily waste can be evaporated prior to incineration. Prudent vessels carefully record tank soundings before and after heating to quantify this evaporation. A technical manual should be available for the incinerator. When port regulations permit, the waste oil incinerator should be tested to determine if it operates at rated or recorded capacity.

Control Room Alarm records and Oil Record Book entries

A particularly useful comparison can be made between the Oil Record Book and the printout of a vessel's engine control room alarm record that typically shows when the oil filtering equipment is used.

Bridge Log and Oil Record Book entries

The Bridge Logs (deck logs) should be compared to the Oil Record Book to determine if the vessel's positions match the entry in the Oil Record Book for the position where the discharge operation is stated to have occurred.



8. This image shows inconsistent vessel positions between those stated in the ORB and co-ordinates established by GPS recorded in the Bridge Log.

4.6 BYPASSING OF POLLUTION PREVENTION EQUIPMENT

Pollution prevention equipment is commonly bypassed by connecting a bypass hose or pipe directly from bilge, or storage tank or bilge waste and/or sludge piping to the Overboard Discharge Valve (ODV), of either the Oily Water Separator or of another machinery space system. For example, a bypass hose from bilge/sludge piping can be connected to Marine Sanitation Device (MSD) sewage discharge piping, boiler bottom blow Overboard Discharge Valve, and auxiliary condenser Overboard Discharge Valve.

A bypass hose or pipe can be connected directly from bilge and/or sludge piping to an overboard discharge valve. The hose connection can be anywhere along the entire length of the piping system, including several feet/meters away or even an entire deck above in the engine room. Illegal discharges of waste oil and oily water mixtures often leaves signi□cant oil residue in the overboard piping. Consequently, one e□ective inspection method of discovering illegal bypassing and other illegal discharges is to open up a portion of the overboard piping.

The investigator should look for the following physical evidence on the piping system:

- Scratched paint on bolts and piping connections showing dismantling
- Fresh paint on piping connections only
- Loose, missing and/or worn bolts and nuts
- Spare gaskets in vicinity of piping connection
- Unexplained □exible hoses with □anges matching the piping connections
- Unexplained fabricated piping
- Oil residue or solvents present in Overboard Discharge Valve
- Flanges in bilge/sludge piping systems that are blanked o□
- Oil residue that has dripped on deck below piping connections

Photographs on pages 29 to 31 provide examples of this illegal shipboard activity.

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9. Blanked flange on discharge side of the bilge pump.

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10. Oily residue found inside Overboard Discharge Valves.

11. Disassembled Valve.

U.S. Coast Guard Investigative Service

U.S. Coast Guard Investigative Service

12. 40-foot flexible bypass hose with oil residue.

U.S. Coast Guard Investigative Service

13. Fabricated piping with oil residue found in storeroom.

U.S. Coast Guard Investigative Service

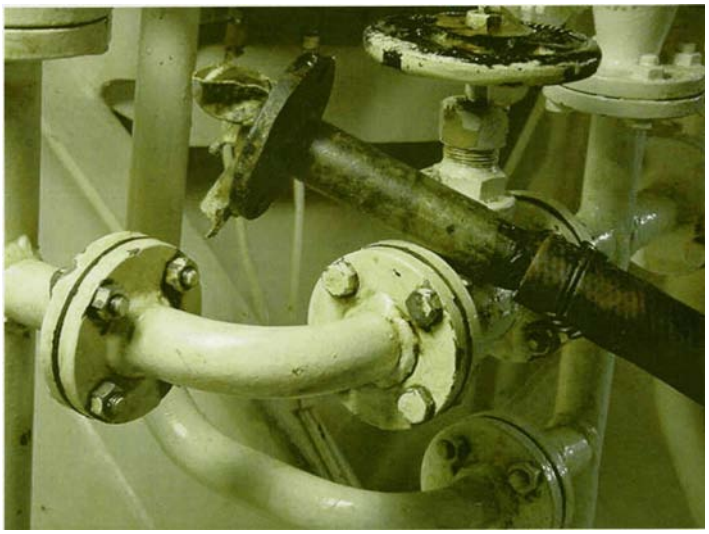
14. Fabricated piping used to bypass Oily Water Separator.

15. Marine Sanitation Device showing overboard sewage discharge piping.

U.S. Coast Guard Investigative Service

16. Bypass hose connecting bilge piping to Marine Sanitation Device discharge piping.

U.S. Coast Guard Investigative Service



U.S. Coast Guard Investigative Service

17. Flanges on flexile hose with oil residue matches to Overboard Discharge Valve piping.

U.S. Coast Guard Investigative Service

18. Bypass hose connected from the bilge manifold directly to the Overboard Discharge Valve.

U.S. Coast Guard Investigative Service

19. Evidence of repeated dismantling of piping connected to ODV. Note that the use of a chain and padlock does not prevent illegal discharges. It just means it is less likely for them to be accidental.

U.S. Coast Guard Investigative Service

20. Evidence of chipped paint and worn bolts.

Tampering with the Oil Content Monitor of the Oily Water Separator

Some ships have been found to have tricked or tampered with the Oil Content Monitor. This device is designed to detect and prevent discharges involving more than the 15 ppm limit established by MARPOL73/78. Recent investigations have discovered a number of di□erent ways in which the Oil Content Monitor has been defeated including the following:

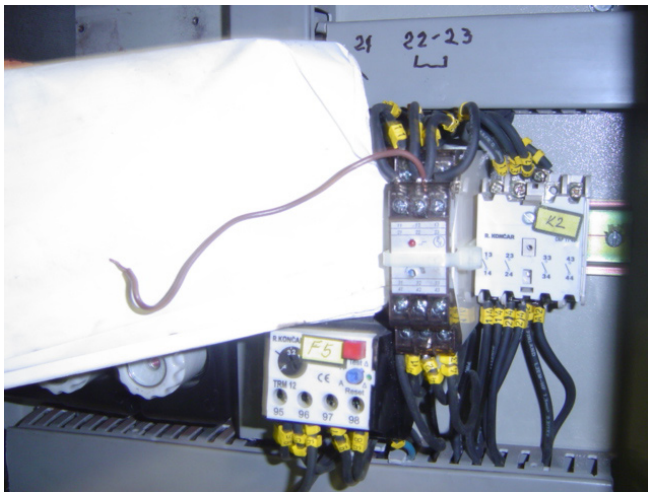
- use of jumper wires to silence the Oil Content Monitors alarm and prevent the Oily Water Separator from switching to the recirculation mode when oil is detected above the 15 ppm limit.
- recalibrating the Oil Content Monitor so that it will not alarm at 15 ppm.
- use of fresh water (usually by the operation of a simple valve used to supply fresh water to clean the Oil Content Monitor) to □ush the Oil Content Monitor during an overboard discharge, so that the Oily Water Separator will continue to operate even when oil content in the e□uent is above 15 ppm.

Tricking and tampering with the Oily Water Separator may result in an accumulation of excess levels of oil in its outlet stages and piping, which may remain as evidence of this crime.

The following photographs are examples of methods used to "trick" the Oil Content Monitor for the Oily Water Separator:

U.S. Coast Guard Investigative Service

21. Bypass switch installed to silence the Oil Content Monitor alarm and allow the Oily Water Separator to continue to operate even when oil content is more than 15 ppm.



U.S. Coast Guard Investigative Service

22. "Jump" wire installed by crew to disable the purge cycle.

5 DETECTION OF ILLEGAL OIL DISCHARGES AND INITIAL RESPONSE

Detecting illegal oil discharges is crucial for the collection of further evidence that may identify the source of the discharge. Each country has different capabilities and resource availability, and the methods that can be used will therefore vary. The main detection methods are normally the use of surface sea-going vessels, aerial surveillance or discovery of pollution in shore areas.

5.1 VESSEL SURVEILLANCE AND TRACKING SYSTEMS

Using government vessels to conduct routine surveillance of national waters helps to locate illegal oil discharges and serves as a deterrent to vessels contemplating illegal discharges. Compared to aerial surveillance, the use of vessels to locate oil discharges and suspect vessels is much more limited with regard to the area that can be covered. But a vessel has the ability to be in operation for longer periods of time than an aircraft and may function in weather conditions that make the use of aircraft impossible. The ideal surveillance coverage of national waters combines the use of aircraft and vessels in a co-ordinated effort.

Naval or government vessels in the vicinity of an oil discharge can provide assistance by undertaking close proximity surveillance of the suspect vessel. Another vessel may also be deployed to examine and record the extent of the oil in the water. This may include taking further samples of the oil.

Suspect vessels may have transited the waters of the country where the pollution occurred. Therefore, it is important to share this information with neighbouring countries and officials in the suspect vessel's next port of call (see section 7.5). Other countries may also have more resources and be able to assist in the investigation.

Many countries will have access to vessel-tracking systems that are useful for identifying what vessels were in the vicinity of an oil discharge at sea. One piece of technology that is gradually being rolled out around the world is the "Automatic Identification System" which is a broadcast system that provides a communication link. It provides possibilities to obtain crucial vessel information such as name, course, speed etc.

5.2 AERIAL SURVEILLANCE

Surveillance flights are used to detect, investigate, gather evidence of, and monitor discharge of oil and other harmful substances. Routine aerial surveillance programmes enhance these capabilities. Awareness of active programmes can also deter crew members from engaging in illegal polluting activities.

Time is an important factor when it comes to identifying a suspected polluter, particularly in busy shipping lanes. The ability to establish the moment when the discharge occurred will also decrease with time, even if computer models can be used to track back the possible discharge locations and thereby facilitate the identification of the possible polluters.

French Customs

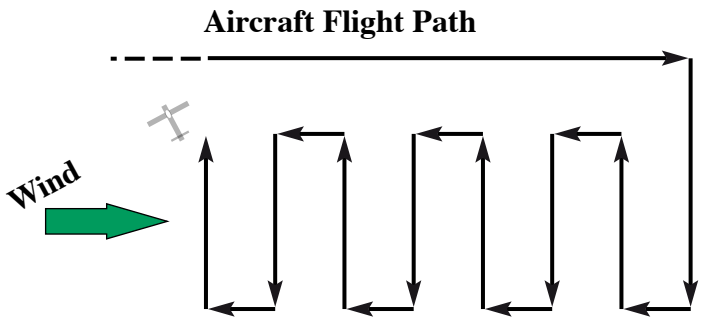
23. Air surveillance plane

Means and methods

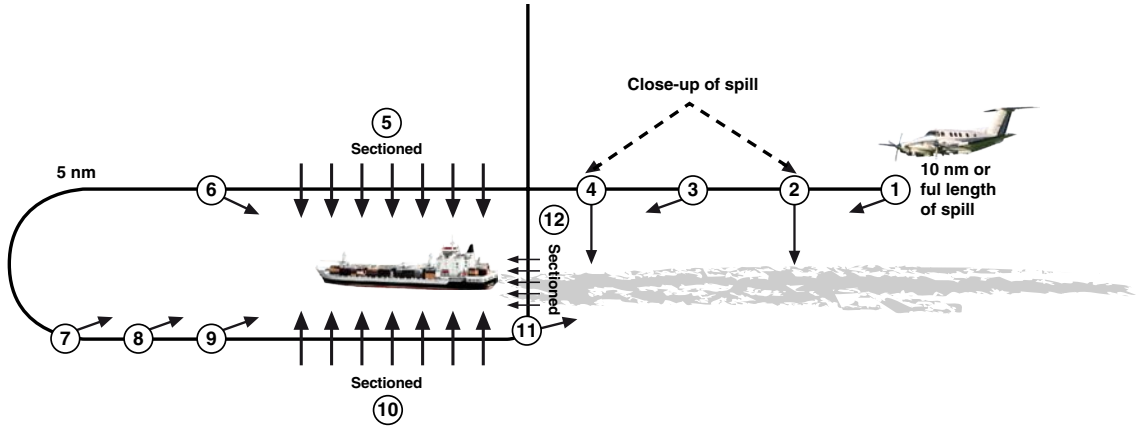
There are many factors to take into consideration when choosing an aircraft for aerial surveillance. Small fixed-wing aircraft are most commonly used for this purpose. For surveillance of certain coastlines, archipelagos, etc., it can be advantageous to use a helicopter, although this can cause difficulties during sample taking due to turbulence scattering the oil.

Every effort should be made to identify the polluter in the act and secure all available evidence. If there are no dedicated surveillance aircraft on regular flights it is therefore preferable to use available civil aviation aircraft. For such incidents, experienced investigating officers should be onboard these aircraft and direct the pilot.

When deploying an aircraft it is important the pilot fully understands the task to be undertaken. This includes providing the pilot with the details of the report of a discharge sighted in a particular geographic position, the extent or colour of the discharge and directing the aircraft to fly over this area. Alternatively, a routine flight may just happen to come across a vessel trailing a slick or actually be tasked to investigate a report of a vessel trailing a slick. Particular flying paths can make it easier to collect photographic or other visual evidence. It is suggested that the aircraft fly up the line of oil towards the polluter in order to catch the polluter unawares, and also to avoid flaring out because of the rapid increase in temperature when using infrared systems. The height of the aircraft should allow as much of the slick as possible to be in view. For vertical sensors it may be necessary to fly over large slicks with repeated runs in a ladder pattern. The following diagrams provide examples of flight paths useful for locating discharges at sea and for a vessel trailing a slick:



24. Example of flight path for locating an oil discharge at sea.



25. Example of flight plan for vessel trailing discharge and suggested photograph positions.

The observer must be able to provide identi□cation details of any suspect vessels in the vicinity. This information must be clear so that there can be no doubt that the vessel was the one observed in that position. The information that the observer should be able to provide includes:

- date and time
- geographical position of the vessel
- vessel name
- Port of Registry or Flag (on stern of vessel)
- IMO number (if displayed)
- superstructure colours and any other visual identi□cation
- heading and speed.

Techniques

The most common aerial detection methods are visual observation and radar. Many marine operating aircraft have remote sensing equipment that can be used to detect oil on the water. Satellite technology also can provide credible evidence.

Visual observations can provide essential information about the size, appearance and coverage of the slick. The visual form of an oil slick may suggest the probable source of the discharge:

- A long thin slick of oil or sheen suggests a possible illegal discharge from a moving vessel. The source is obvious if the vessel is still discharging or in a line directly ahead of the discharge. The slick will persist for some time after the discharge has stopped and it will be subsequently broken up and dispersed by wind and waves.
- A triangular slick with one side aligned with the wind and another aligned with the prevailing current suggests a sub-sea release such as a sub-sea pipeline release, natural seepage, or oil slowly escaping from a sunken wreck.

Regardless of the initial appearance, images should be properly recorded with information about the slick so that an analysis can be undertaken by experienced o□cers.

French Customs

26. Visual observation from an aircraft.

Australian Maritime Safety Authority

27. Video footage from a dedicated surveillance aircraft. Image automatically records date, time and position.

Photographs are the most widely used and accepted method of identifying oil at sea and they are critical as evidence for most cases. Using a digital camera can be easier and provide a fuller set of images, although some countries may raise objections due to manipulation possibilities. When interpreting the photographs, it is important to remember that the appearance of the oil slick can sometimes di□er from reality, especially the colour. It is also important to take pictures of the uncontaminated water in front of the polluting vessel. The geographical positions for the vessel and the extent and/or size of the slick must be accurately recorded. Photographs should preferably be taken with the sun behind the observer.

When photographing the slick, the following details should be clearly visible on the photographs or recorded by the person taking the photographs:

- Date and time
- The slick connected to vessel
- Close-up of the slick to see speci□c colours in the oil
- Vessel's name
- Vessel's hull colour and other speci□cs
- If detectable, a photograph of the vessel outlet from which the oil or oil-water mixture is being pumped into the sea
- Slick from directly above
- Clean water to either side and in front of the vessel
- A picture showing the general sea state and situation around the suspected vessel.

Video cameras can also provide useful supporting evidence, as they give an instant record and a moving picture. A handheld camera records verbal comments during the surveillance which can be helpful in recalling the observations for the report. However, care must be taken to ensure that persons using such devices record only facts and not personal opinions and other dialogue that may impact future prosecution.

Side Looking Airborne Radar (SLAR) □tted on an aircraft measures the roughness of the sea surface, and can also be used in darkness and in bad visibility. Side Looking Airborne Radar swath width is usually 30 to 40 nautical miles. When interpreting these images, it must be remembered that not only oil, but also natural features such as □sh oil, ice and algae dampen the sea surface. Plainly put, the Side Looking Airborne Radar only gives an indication that something is dampening the sea surface, and detection requires further investigation with other sensors or visual observations.

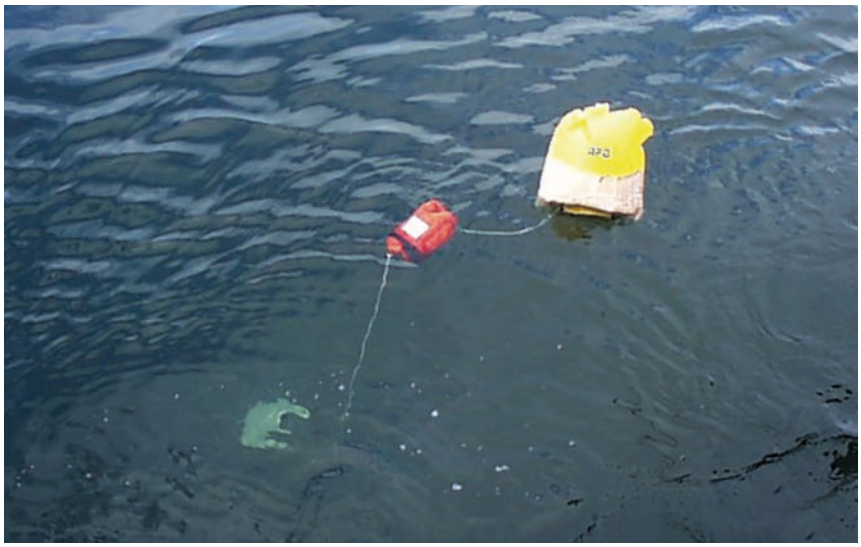
Forward Looking InfraRed (FLIR) sensor is another kind of technology used during night-time operations. It detects variations in heat, and therefore visualizes vessels and oil discharges. During daytime, oil absorbs heat faster than the surrounding water and at night oil emits heat faster that the surrounding water. Sensors need to be calibrated and may be able to determine the relative thickness of the oil. The limitations are that they require good atmospheric conditions, they are not e□ective with thin □lms of oil and may give false results in the event of lookalike features.

Ultraviolet (UV) scanners can detect di□erences in optical properties between oil and water as the oil is more re□ective than water in the UV band. They can also detect thin □lms of oil but only in daylight or an active sensor. The limitations are similar to those for Infrared sensors.

Documenting the aerial surveillance detection

It is particularly important to document early reports and observations to support future investigation and prosecution. Statements from law enforcement o□cers about the observations of the oil slick need to be documented. A report should be made promptly after the surveillance □ight to ensure details are not forgotten. In some circumstances it may be necessary to make a verbal report during the □ight as other o□cers may need to activate a clean-up response if the slick is large and threatening to pollute sensitive sea areas.

Sampling of the discharge can be initiated through either deployment of a sampling buoy from an aircraft or deploying a vessel to collect a sample from the sea.



Airsafe

28. Sampling buoy that can be released from an aerial surveillance plane, developed in co-operation with Swedish Coast Guard.

5.3 USING COMMERCIAL SATELLITES IN MARITIME POLLUTION SURVEILLANCE

Optical and microwave satellite-based sensors provide an e□ective «eye-in-the-sky». They improve surveillance over wide areas of ocean, both day and night. This complements the traditional aircraft and surface vessel surveillance systems and acts as a powerful deterrent for illegal activities at sea.

There is a wide range of international commercial satellite service providers and an increasing number of di□erent types of sensor for both land and ocean observation. Remote sensing provides an improved means of wide-area surveillance and tracking suspect vessels anywhere, and gathering detailed intelligence on their activities without their knowledge.

Availability and tasking of commercial satellites

Commercial satellite imagery can provide programmed remote sensing, i.e. tasking of areas of interest at speci□c times. Archived imagery is also available from extensive digital databases. Each provider has di□erent program requirements and access provisions for their existing imagery.

29. Optical satellite image of a long illegal oil discharge (70 km in length). A vessel can also be seen transiting through the slick in the opposite direction of the discharging vessel.

Australian Maritime Safety Authority

Each satellite has technical limitations, with which the user must be familiar when requesting tasking of satellites. These limitations include:

- Coverage/orbit timing
- Swath width
- Revisit time to site
- Sensor resolution, for example pixel size in metres
- Sensor orientation (□xed/forward/reverse/manoeuvrable)

- Sensor orientation to sea surface (e.g. for microwave sensor - low angle for pollution versus high angle for vessel detection)
- Onboard data storage capacity and accessibility of ground download station
- Processing of data
- Delivery time of data
- Format of data and software to visualize imagery.

Many of the optical satellites have multiple bands of different wavelengths and resolutions. Resulting image size can exceed many gigabytes of data storage, and require geo-referencing, processing and enhancement to achieve a final image.

Information requirement for tasking of commercial satellites

To get the necessary information from the satellite imagery, the providers must be given certain information.

1. Purpose of the imagery (target detection, pollution, etc.)
2. Area of Interest (latitude/longitude of area)
3. Time of Interest (usually in universal time co-ordinates)
4. Expected Meteorological Conditions (cloud cover, wind speed, sea state)

The rapid processing and delivery of imagery is vital to combating offences at sea and detaining the vessels. Vessels can then be intercepted or arrangements made at ports for officers to board, sample tanks and/or detain the vessel on arrival. To meet this need it is important to set up quick imagery access systems with the commercial provider and test transfer and download speeds along with any necessary imagery visualization software.

Types of satellite sensors

The two main categories of satellite sensors are optical and microwave. Optical satellites require the reflective light of the sun and clear skies. Recent high-resolution optical satellites have sub-metre resolution (Quick Bird, IKONOS, OrbView) and can provide excellent target identification for even small vessels, and pollution identification, but they are limited in many parts of the world by cloud cover, fog, rain, sunlight and revisit time to site.

One significant advantage of modern microwave sensors on satellites is the ability to monitor maritime activities at night, on the high seas and in bad weather, when most illegal discharges of pollutants occur. Unlike optical sensors, microwave energy penetrates cloud, smoke, rain, dust and haze and operates at night to monitor vessels, objects at sea or pollution. Vessels are usually seen as bright highly reflective objects and oil slicks as dark on grey water.

No single satellite or service provider meets all maritime surveillance needs. A combination of optical and microwave sensors now provides surveillance of the world's oceans for most conditions. The increasing resolution of new microwave satellite sensors such as Radarsat 2 (3 metre) and TerraSAR (1 metre) will also provide excellent surveillance at night and in bad weather, and improved target identification with almost the resolution of optical satellites.

Data analysis & training

To ensure a successful prosecution of o□enders, the satellite imagery must be admissible in court. It is therefore advisable to have the imagery veri□ed by an analyst specialized in that □eld.

There is a vast number of digital imagery data formats. Some are proprietary to the satellite company and many require specialized software to read the data. Also, other intelligence information needs to be integrated with imagery e.g. vessel position by Automatic Identi□cation Systems, reports of oil slicks or other pollution, etc. Imagery must therefore be in a form easily read by geographic information system (GIS) software. It is essential for service providers to be noti□ed of the customers' imagery format requirements.

Accessing archived satellite imagery for oil discharge investigations

Globally, there are many service providers to provide satellite tasking, data download and processing of imagery. Most commercial satellite imagery providers have on-line web-based archives of their data. Some databases require "registration by the user" to access the sites. Some are free and easily accessed, such as Google Earth search tool, and others have user restrictions.

Below is a list of global and regional web addresses.

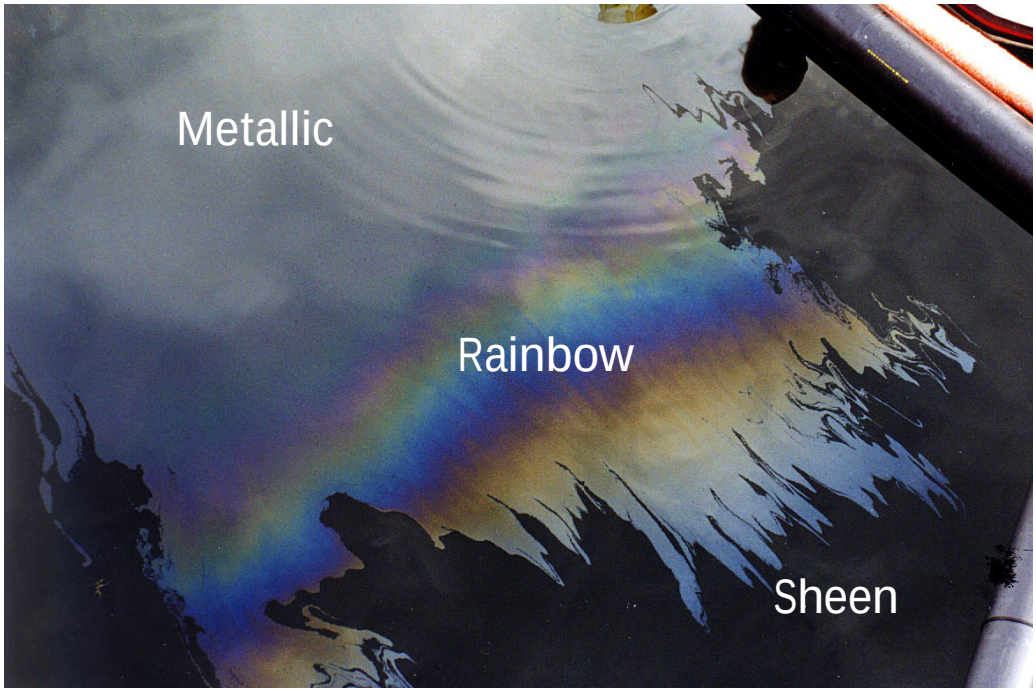
Sources of on-line search engines for satellite imagery	
European Space Agency	http://earth.esa.int/resources/catalogues/
Digital Globe	http://archivetool.digitalglobe.com/
SPOT Image	http://sirius.spotimage.fr/anglais/welcome.htm
Space Imaging	http://www.spaceimaging.com/help/search/index.htm
Carterra Online	http://carterraonline.spaceimaging.com/cgi-bin/Carterra/phtml/login.phtml
Geo Eye	http://www.geoeye.com/
CRISP Catalogue	http://www.crisp.nus.edu.sg/crisp_cat.html
NOAA Environmental Satellites	http://www.class.noaa.gov/nsaa/products/
EarthSat MDA	http://www.earthsat.com/ArcIMS/naturalvue/viewer.htm

5.4 VOLUME ESTIMATION

Courts are often interested to know the quantity of oil that has been discharged. Penalties may be linked to this quantity as well as other factors. The oil can rapidly evaporate or dissolve and it may even sink below the surface. It is therefore preferable for the aircraft and the vessel taking the samples to be present simultaneously.

Volume should be estimated at two stages during the investigation:

1. **In □ight,** onboard an aircraft at time of detection, and/or
2. **Post □ight** examination of photographs, video or satellite imagery combined with records of the extent of the discharge and reports of the thickness of the oil.



SINTEF

30. Oil sheen colours.

Estimating the area of oil can be done visually, by measuring sensor images, or a combination of the two. Visual estimations are likely to be less accurate. For calculating the oil discharge, the whole slick should preferably be visible in one image. To estimate the volume of an oil slick, it can be divided into areas that relate to special oil appearance. Depending on the colours that appear, the sector can be assumed to have a certain thickness of oil. It is generally considered that 90% of the oil will be contained within 10% of the overall slick.

The thinnest oil has a silver sheen, rainbow sheens are a bit thicker, and an oil layer with a metallic sheen on the water surface will be quite thick. The thickest oil layer indicates the true colour of the oil. The colour of the oil film depends on the way the light waves of different lengths are reflected off the oil surface, transmitted through the oil (and reflected off the water surface below the oil) and absorbed by the oil. The colour observed is the result of a combination of these factors but also dependent on the type of oil.

Appearance	Layer thickness interval (µm)	Litres per km^2
Sheen (silvery/grey)	0.04 to 0.30	40-300
Rainbow	0.30 to 5.0	300-5,000
Metallic	5.0 to 50	5,000-50,000
Discontinuous true oil colour	50 to 200	50,000-200,000
Continuous true oil colour	2,000 and more	200,000 and more

The table above is the colour code that has been adopted by the contracting parties to the Bonn Agreement for use from 2004, known as the "Bonn Agreement Oil Appearance Code". This code classifies oil slicks observed from aerial surveillence according to appearance. The appropriate thickness of the slick can be calculated from the colour which, together with an estimate of its area, allows the approximate volume of oil to be calculated. This code is attached to the Bonn Agreement Aerial Surveillance Handbook 2004.

6 ONBOARD INVESTIGATION

It is critical to conduct the onboard investigation as soon as possible to obtain evidence and provide a conclusive link between the vessel and the illegal oil discharge. The investigation may only involve one vessel, although with mystery slicks the investigation may involve a number of suspect vessels. In such cases, evidence should be obtained from all suspects to identify the vessel responsible for the illegal discharge.

When there are "clear grounds" for believing a vessel has violated pollution laws, the Port/Coastal State may undertake physical inspection of the vessel.[10] When appropriate, detention proceedings can be instituted. The vessel should not be detained for longer than is essential for the investigation and should be promptly released after provision of appropriate financial security. When a country is not a party to UNCLOS, national legislation will determine investigation, arrest or detention requirements. The following sections provide further details to assist with the investigation onboard the vessel.

When a vessel has undertaken an illegal discharge and is en route heading out of the Port or Coastal State jurisdiction, the State can contact the vessel and request certain information and/or request that the vessel return to port to assist an investigation. When a vessel does not turn around, a request can be made to another State to board and undertake an investigation on your behalf or wait until the vessel returns to the jurisdiction (depending on the vessel's trading pattern).

6.1 PREPARATION PRIOR TO BOARDING

Once the vessel(s) to be investigated have been identified, information on when and where to board should be obtained through the relevant authorities (port, maritime or customs). The vessel may either come to a berth, an offshore anchorage or remain at sea. Contacting the agent for the vessel **is not recommended,** as this could lead to suspects being alerted to the impending investigation. If the vessel is at an offshore anchorage or at sea, you may need to consider boarding offshore via boat or helicopter.

To board the vessels, investigators must have the appropriate powers or authority under national legislation. In some countries investigators may need to obtain a search warrant. It is important for an investigating team to include people who are familiar with vessel operations. Such expertise can be from Port State Control officers, marine surveyors or engineers. The investigators and any expert assistants should meet before boarding the vessel. All persons should be clear on the purpose of the investigation, what the potential violations are and what evidence is required to prove the violations. One person should lead the investigation and all involved must be clear on their roles.

An investigations plan may be developed to clearly identify the types of evidence and the list of documents that need to be collected, copied or seized from the vessel. All evidence collected should be secured and its integrity maintained to ensure it cannot be subjected to tampering. Receipts should be given to the master for evidence taken by the investigator and Chain of Custody documentation should be maintained for all evidence obtained.

10. UNCLOS Articles 218 and 220

It is advisable to obtain a copy of the crew list prior to boarding the vessel. In most situations the customs agency should be able to provide this list. The list will contain information on the names of the master and the crew, position on the vessel and nationality. Prearranging an interpreter is also advisable to assist the investigating team when dealing with foreign crew.

Contemporaneous notes

All investigators should maintain comprehensive notes of all tasks undertaken and be prepared to provide written statements of their role and activity in the investigation. These notes can be handwritten. Investigators need to be aware that they are also likely to be called as witnesses and cross-examined in relation to the collection of evidence and any report prepared in relation to the investigation. An investigator should record every step taken in the investigation, including witnesses spoken to, evidence collected, any observations of the incident and any other relevant material.

In court, a witness may refer to notes made at the time of the oil pollution event to refresh his/her memory. The investigator should therefore make the notes as soon as possible after the event or conversations concerned and always on the day of the investigation.

There is no standard format for notes taken at the time of the investigation but, as the notes may be produced to the court, it is important for them to be made in a form that can be understood by the investigator.

Authority to board a vessel

National legislation should include authority for boarding a vessel suspected of violating pollution laws. Investigators need to be aware of security arrangements and appropriate authorization to enter the port. In addition, the national legislation should outline the powers or authorities of investigators. When boarding the vessel, the lead investigator must identify himself/herself to the master or o□cer in charge of the vessel and state the purpose of the investigation.

The powers of investigators that may be provided under national legislation may include the authority to:

- Board the vessel with such assistants and equipment considered necessary and undertake inquiries, examinations, inspections, searches, seizures and arrests
- Inspect and test any machinery or equipment of the vessel
- Open and inspect the contents of any hold, bunker, tank, compartment or receptacle in or onboard the vessel
- Require production of a record book (required by MARPOL73/78 to be carried in the vessel) or any other books, documents or records relating to the vessel or its cargo that are carried in the vessel
- Make copies of, or take extracts from, any such books, documents or records
- Require the master of the vessel to certify a true copy of an entry in a record book
- Examine and take samples of any substances onboard the vessel
- Require a person to answer questions.

Obtaining a surety agreement, including bond

When investigating a vessel that is voluntarily in a port or offshore terminal, detaining the vessel may be considered in accordance with UNCLOS Article 220 or national laws to obtain a bond or surety agreement before the vessel is released. Appropriate national legislation should be in place to allow such action to be taken. The vessels' Protection and Indemnity (P& I) Club may provide a "letter of undertaking" stating the amount of the surety or bond. This letter may also include assurance of legal representation for the vessel's owners, master and other crew members to allow charges/legal documentation to be served on an entity within the jurisdiction.

Some countries may require an actual monetary bond (rather than a letter of undertaking) to be lodged with a local financial institution. These processes are commonly used with foreign vessels that are likely to leave the jurisdiction and not return. The amount specified for financial surety or bond should be based upon the potential maximum penalties under possible charges for violations and also for any potential pollution clean up or other related costs.

When the surety or bond is posted, the vessel should be released from detention. The State that detained the vessel is also under obligation to promptly notify the Flag State of the detention and release, through appropriate channels (usually diplomatic via the Ministry of Foreign Affairs) and, additionally, to advise of any penalties subsequently imposed.[11] Examples of Detention Notices and Letters of Undertaking can be found in Appendices 13 and 14.

Obtaining documentation (copies/originals)

Vessel documentation and records are required to provide evidence of the identity and operations of the vessel. National legislation will provide the authority for obtaining documentation from the vessel. In some countries, copies of documentation certified by the master or other officer in charge of the vessel are sufficient as evidence. However, for some violations, the original documents are required by the courts and national legislation. As already stated, evidence collected should be secured and its integrity maintained to ensure that it cannot be subject to tampering, and Chain of Custody documentation should be maintained.

Investigators must be mindful that certain original documents/records onboard the vessel are the primary method of attesting that the vessel is in compliance with international conventions. If they are not available to Port State Control authorities and other national authorities, the vessel will not be deemed seaworthy. Therefore, if it is necessary for original documents to be removed, the investigator should leave certified copies and a receipt onboard stating the reason for removal. The "IMO MSC-MEPC.4/Circular 1 Retention of original records/documents onboard ships" provides guidance in such circumstances.

Vessel Documentation

MARPOL73/78 and other IMO Conventions require vessels to carry and maintain certain documentation, including certificates and records, relating to the vessels' identification, navigation, seafarer qualifications and operational activities. Certain of these documents

11. UNCLOS Article 73 and 231

are required by law to be kept onboard and available for inspection by Port/Coastal State authorities. In addition to those documents directly required by conventions, there will be further documents, both formal and informal, onboard the vessel which may be useful in pollution investigations and proving violations.

The following list provides guidance on certain documentation that will be useful for oil discharge violation investigations and identifies the potential evidentiary purpose of the information. Note that this list is not exhaustive.

Much of the vessel's operating documentation may be stored electronically and it is advisable to either remove the vessel's computers or to "image", "copy" or "mirror" the contents of those computers.

Accessing some information through multiple sources can verify accuracy or provide evidence of falsification. This is particularly true of electronic devices that store information, often without the knowledge to the operator.

When photocopies are made of documents, it is preferable to make full size copies. This may require taking documents ashore to a plan printer or for similar photocopying, and then later returning the originals to the vessel. Instead of photocopying charts, consider removing them and providing the vessel with new charts.

6.2 DETAILED INSPECTION

When an investigation of an illegal oil discharge violation is undertaken, it is important to perform a detailed inspection of the engine room. Prior to this inspection, investigators should first be familiar with the General Arrangements Drawing or Plan. The General Arrangement is a diagram of the vessel, and can often be found attached to a bulkhead, usually located in the accommodation area of the vessel. Investigators should also ask for and examine all relevant documentation including the IOPP certificate and appendix, piping diagrams (especially the bilge pumping and piping diagram), tank plans, Oil Record Book, tank sounding book and tank calibrations book.

The inspection of the engine room and machinery spaces should begin with making a general note of the standard of maintenance and state of these areas. It should be noted that the conditions examined when a vessel is in port with its main and auxiliary systems shut down, may not actually reflect the conditions when the vessel is operating at sea. Furthermore, the vessel's crew will typically take great care in cleaning the engine room and machinery spaces before arrival in port. Indicators of unsatisfactory maintenance can include the following:

- chronic water and oil leaks
- lack of maintenance and repair
- accumulation of rubbish
- frayed or disconnected quick-closing valve wire
- dirty decks, tank tops and bilges
- corrosion of piping systems, frame members, machinery foundations
- catch pans under leaking systems.

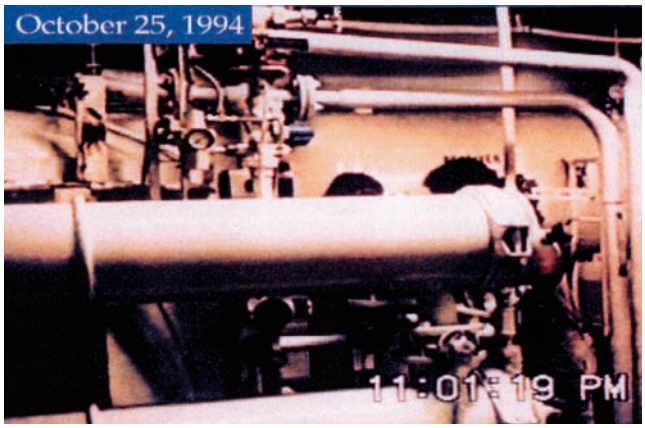
List of documents useful for evidence of oil discharge violations from vessels Certificates and general documents	
Certificate of Registration (Certificate of Registry)	• Identify and authenticate the vessel name, owner name and address, call sign and official number, and port of registry.
Crew list, passports, Certificates of Competency, Seaman's Books	• Identify the master and relevant crew members at the time of the violation(s). • Establish qualifications of master and crew. • Establish experience of master and crew. • Establish employment history of master and crew.
Official Log Book	• Will identify master. • Should show vessel's previous port calls. • May provide details of any unusual incident.
Ship's Deck Log	• Verify position/location of the vessel at or near the time of the violation. • May identify the master and chief officer at the time. • Will identify bridge watch-keepers.
Engine Room Log Book	• Will identify watch-keepers. • May show engine room operations. • May record engine room alarms. • May show tank levels.
International Safety Management (ISM) Safety Management Certificate, ISM Document of Compliance, ISM Safety Management Manual	• Defines the company safety and environmental protection policy. Appropriate ship's personnel should be familiar. • Will identify vessel's operator. • Relevant sections of the ISM manual will provide: job descriptions, record keeping, crew handover and information sharing, maintenance management and record keeping, notification requirements for deficiencies, master's authority and responsibility, vessel operator statement, tank inspection requirements, systems testing requirements, safety and pollution critical operation procedures, crew training, communications with shore management, daily/weekly/monthly status reports.
International Oil Pollution Prevention (IOPP) Certificate and attachments.	• Will identify capacities of oil and sludge storage tanks onboard. • Will identify type and capacity of oil filtering equipment, incinerators, etc., onboard. • Note the validity and any exemptions or equivalencies in pollution prevention arrangements. • Check that the arrangements and equipment listed match the vessel.
Shipboard Oil Pollution Emergency Plan	• Provides the detailed procedures that vessel personnel follow when a pollution incident occurs from the vessel including reports to the nearest Coastal State.
Passage Plan, Charts, Bell Book, GPS Records, Rudder, Course and Position Records	• The voyage plan and charts will identify the position of the vessel around the time of the incident. • GPS and other electronic units may store position information. • Accessing same information through multiple sources can verify accuracy or provide evidence of falsification.
Crew Handover Notes	• May be required or formalized under ISM manual. • May identify crew positions, and dates of joining/leaving the vessel. • May show knowledge of condition of vessel, problems with structure or equipment, and operating limitations of vessel.
Crew employment or engagement contracts	• Crew engagement conditions and duties. Note in particular those responsibilities relating to operation of pollution prevention equipment, etc.
Individual officer's working note-books	• May contain further information not in official vessel documents. For example, daily sounding records, daily work records, oil discharge records, problems with the equipment, directions to do certain duties, etc.
Communications Log Book, telexes and other records	• Note any communications, relevant telexes or Sat-C messages, relating to violation. • May identify master through signature/name. • May establish owner and/or manager relationship with vessel, and level of knowledge of onboard operations.
Maintenance records and work books	• May show details of problems with equipment that produces excess waste liquid. • May show daily activities of individual crew members.
Overtime records	• May show detail of crew activities such as major breakdown or tank washing.
Computer records	• All relevant documents stored electronically on the vessel's computer system. Includes communications/e-mails to/from owners/operators relevant to the violation, work records, purchase records, vessel status reports to owners and managers, handover notes, crew reports, etc.
Certificate of Insurance or other financial security in respect of civil liability for pollution damage	• Identifies the Protection and Indemnity Club for the vessel as well as potentially providing financial security.

Oil-specific documentation	
Oil Record Book Part I (and Part II if applicable).	• Will show oil loading, discharging and waste disposal. • Should show any known or suspected discharge violations. • Routine illegal discharging of waste and falsifying of records may make it necessary to obtain copies of three or more years' worth of entries. A detailed examination of these records will need to be undertaken. Also copy the introductory pages of the record book. If the vessel is an oil or chemical tanker, extracts should be obtained covering a full loading/unloading/ballasting and tank cleaning cycle.
Bunker and Lubricating Oil Receipts	• Will show the volumes of oil received by the vessel. • Compare with oil tank soundings, consumption records and waste discharge records.
Port reception facility usage Receipts	• Will show volumes of oily waste disposed of to shore reception facilities. • Compare with oil tank soundings and waste discharge records.
Oil Filtering Equipment operation manual, Oil Content Monitoring Equipment operation manuals, Incinerator operation manual	• Will detail procedures for the installation, operation and maintenance of the oil filtering equipment, 15 ppm bilge alarm, oil content monitoring and control system (tankers) and incinerator. • Check the manuals' installation instructions against actual installation. • Check the manuals' operating instructions against locally posted operating instructions. • Check the manuals' maintenance instructions against onboard maintenance procedures and records.
OWS Maintenance records	• All routine and repair maintenance should be recorded. Information on how often the filter is cleaned or replaced regular maintenance/replacement items (e.g. filters, solenoids) and receipts for purchase of equipment and associated parts.
UMS Alarm records/printouts	• Printouts may provide evidence of the operation of the equipment when the limits are exceeded, or when the monitor is tested. • Automatic records and/or printouts may prove more reliable than written records.
Purchase orders/receipts	• May show order and or receipt of filters for oil filtering equipment, spares for pumps and electronic components for oil content monitors, etc. • May support maintenance records. • Outstanding orders may show equipment inoperable.
Oil Discharge Monitoring Equipment printouts	• Will show records of use of the monitoring and control equipment (if fitted). • For oil tankers, the record of oil discharge monitoring and control system for the last ballast voyage.
Incinerator Log (if installed). Manual, capacity and usage.	• Provide record of the use of the incinerator. Note any entries for oil sludge burning.
Engine room piping diagrams	• Will show piping to and from tanks and pumps (approved copies available from master. Working copies found in the engine control room may have modifications noted).
Tank plans, Tank soundings tables, Tank calibration records	• Will show tank location and capacities, and allow calculation of tank volumes based on soundings.
Daily Tank Sounding records	• Will show tank soundings or volume on regular basis. • Compare with ORB and other official records.
Stability calculations	• Will show tanks volumes on arrival and departure.
Engineer's daily work record books	• Will show work, operations and maintenance, carried out each day. • May record operational status of equipment. • Compare oil filtering equipment use and maintenance with official and other records.
Cargo record book and other documentation of cargo presently or recently carried	• Will show cargo loading, discharging and waste disposal. • Should show any known or suspected discharge violations. • Routine illegal discharging waste and falsifying records may make it necessary to obtain copies of three or more years' worth of entries. A detailed examination of these records may need to be undertaken.

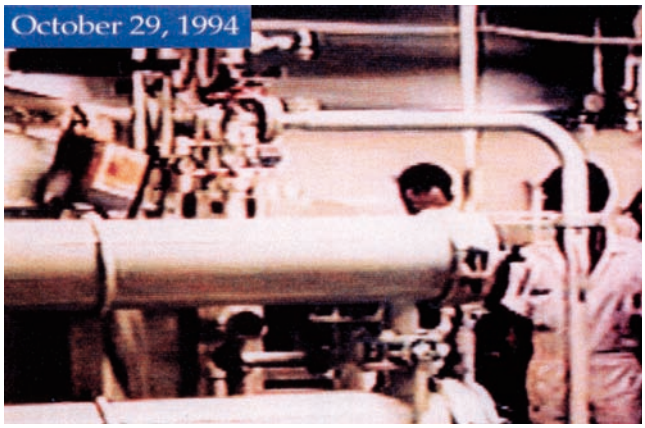
However, appearances can be deceptive and clean engine rooms have often concealed previous violations. It is important to note that some prosecutions have involved very well maintained newer vessels, as well as vessels that were aged and poorly maintained.

Investigators should take photographs and video footage to show the condition of the engine room, and close-ups of specific problems or evidence of discharging. Particular attention should be paid to the bilge piping system and any indications of bypassing of equipment for direct overboard discharges. These indicators include:

- fresh paint
- bolt heads without paint
- hoses or pipes with flanged ends, and
- visible traces of oil within the engine room consistent with a discharge.



31. First inspection of possible illegal oil discharge.



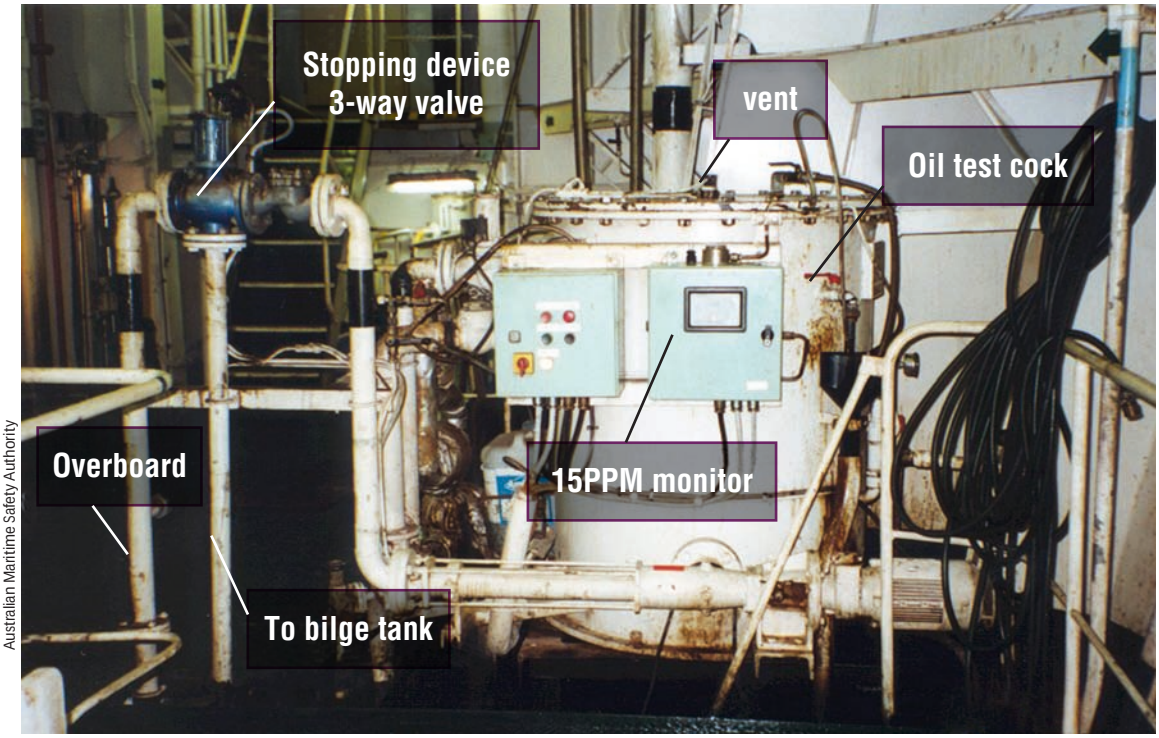
32. Second inspection. Bypass pipe removed and disposed of by crew.

U.S. Coast Guard Investigative Service

If possible, the overboard piping of other systems should be examined closely for evidence of recent disassembly or modifications that could facilitate the connections of hoses and other piping to enable the discharge of wastes.

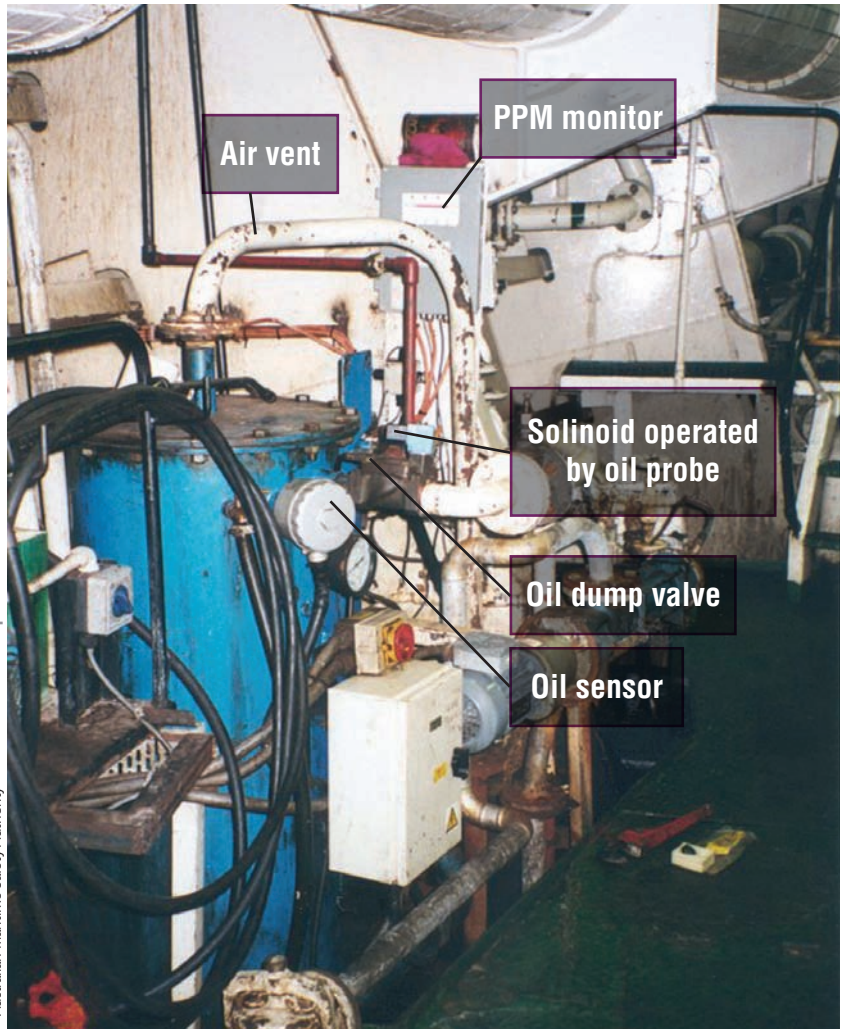
The Oily Water Separator should be closely examined and its configuration compared against its operations manual. A crew member should be requested to describe the proper operation of the Oily Water Separator. Operational testing of it and the filtering equipment may provide further evidence of illegal discharges. This should not take place until after a thorough examination has been made and samples (see section 6.4) have been taken.

If the vessel is an oil tanker, an inspection should also be undertaken in the cargo tank and pump room area of the vessel. See section 4.6 for specific examples of what to look for during an inspection of the engine room. The following photographs show examples of oil filtering equipment and testing of the 15 ppm monitor.



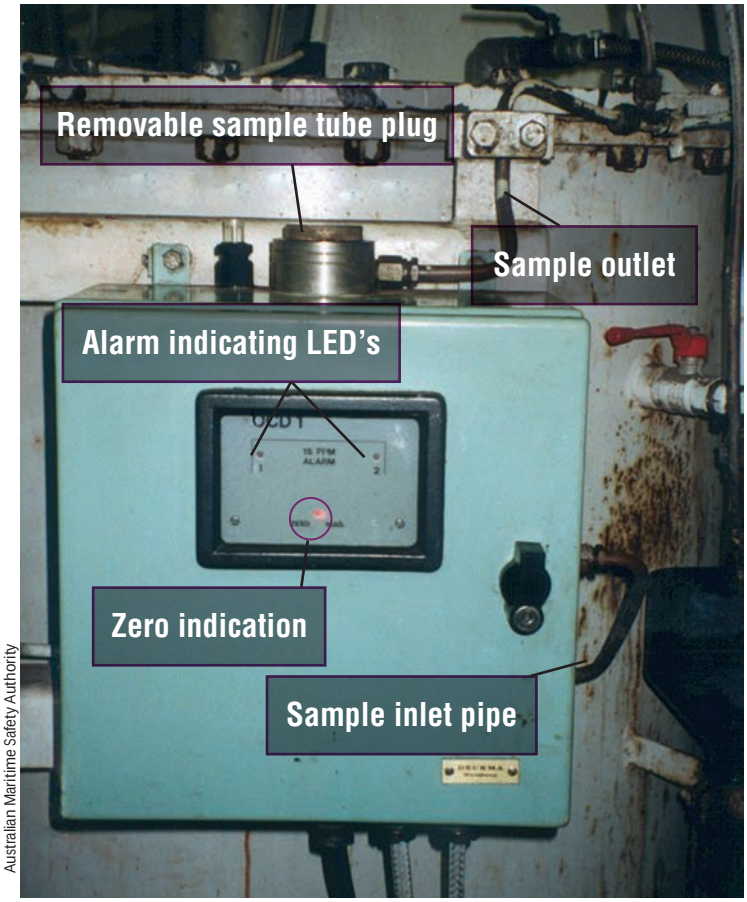
Australian Maritime Safety Authority

33. Example of oil filtering equipment onboard a vessel.



Australian Maritime Safety Authority

34. Another example of oil filtering equipment onboard a vessel.



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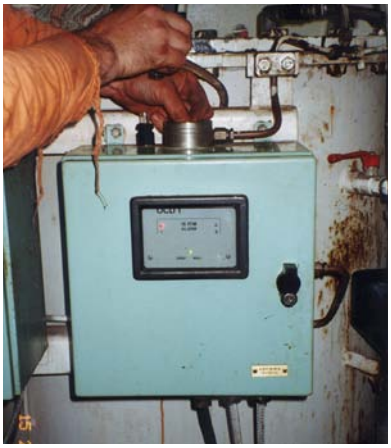

Australian Maritime Safety Authority

35, 36, 37. Example of 15ppm sensor and alarm. The pictures on the right show the testing of the alarm by unscrewing the plug and placing an object inside to block the light so that the equipment goes into alarm mode and the stopping device operates. Note that manufacturers of this equipment do not recommend placing hard objects down the sample tube. The test does not prove that the device is accurately calibrated.

38, 39. 15 ppm turbo scope alarm with sensor underneath.

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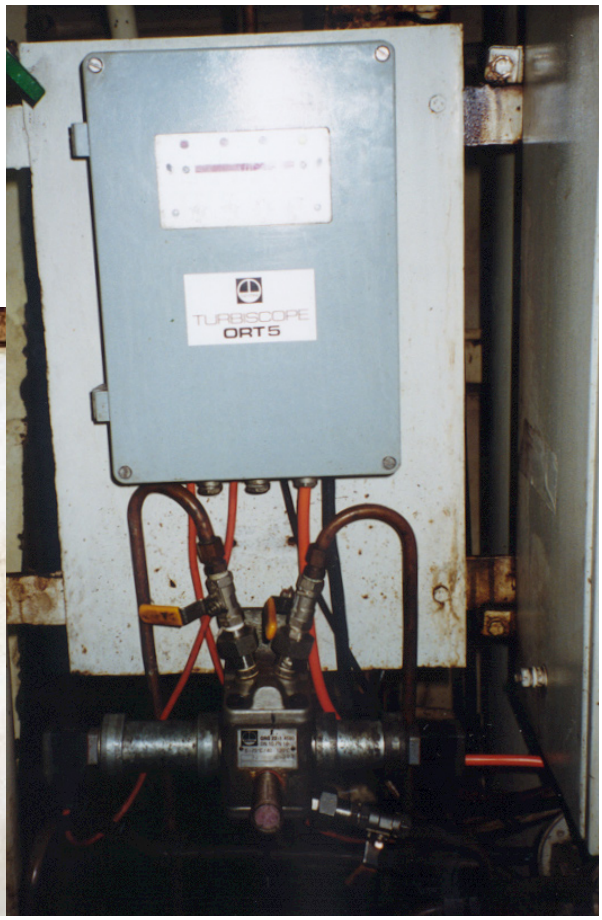

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6.3 INTERVIEWING

Interviewing is a skill that must be developed by the individual investigator through training and practice, rather than simply relying on personal skills alone. This section will mention the most crucial questions that need to be asked by the investigator before and during the interviews. The course of action will depend on factors such as crew composition, number of investigators available, nature of the o□ence, etc. The following list can be used as a guide, noting the need to consider what solutions are best for a particular situation. Investigators also must maintain comprehensive notes of all interviews conducted. See Appendix 10 for more helpful information on conducting interviews.

Interview methodology

Who should be interviewed?

- Captain
- Deck Department personnel
- Engine room o□cer in charge
- Engine Department personnel

When investigating a discharge violation, the relevant crew members may vary and so will the interview process. If the discharge is associated with an engine department activity, then the oilers, motormen, cadets, fourth, third and second engineers are likely to provide important information which may directly lead to orders given by the vessel's Chief Engineer. If the discharge involves a tanker and is associated with deck operations then persons like the able-bodied seamen, the pumpman, bosun and chief mate may be the critical witnesses and have important information to share.

Shipboard culture needs to be understood. Di□erences in crew composition and their nationalities create varying dynamics which may possibly be used to advantage by the investigator. In some circumstances the senior o□cers are of one nationality and the lower levels are composed of individuals from developing countries. There is an apparent economic discrimination based on wages and other factors. As a result, the lower level crew members may be resentful and may prove more likely to be forthcoming with information if their status is recognized.

When attempting to decide the sequence of interviews it is important to have a general idea of what procedures were carried out and led to the discharge. If that information is understood, it may allow the investigator to focus on those who have the least to lose as a result of a prosecution. This then points to the lower level crew members involved in the particular process as they may only be following orders from someone higher in the chain of command.

The lower level crew members will be likely to tell investigators what tasks they were directed to do. However, due to individual level of training and education, they may not be able to tell the investigators the results or intentions of those actions. This should not cause too much concern as additional details will be gathered as the investigation proceeds. It is important to realize that as the investigation progresses starting from the lower level crew member, it becomes more di□cult for the senior personnel to create an alternative explanation.

Another benefit that can be derived by starting with lower level crew members is that, in most instances, the investigator can assure them that they may not be the target of the investigation. The investigator can state his/her understanding of the shipboard authority structure and indicate to the lower level that they were probably only taking orders and were not responsible for making the decisions which violated MARPOL73/78 and other requirements.

It is extremely important for those performing the interviews to have a good understanding of various shipboard processes or procedures involved with violations of MARPOL73/78 and other requirements. If not, the crew members will leverage their specialized knowledge of shipboard equipment and procedures and familiarity with the vessel itself against the inexperience of the investigators. The resulting investigation will be slow-going and investigators may end up with misguided theories pertaining to the circumstances surrounding the discharge.

Information pertaining to the hierarchy of a vessel may be found on crew lists and on the vessel's Station Bill. The following is a generic vessel crew member hierarchy, lowest level to higher level, excluding Stewards department personnel:

Deck Department	Engine Department
Ordinary Seamen	Wiper
Able Bodied Seamen	Oiler aka Qualified Member of the Engineering Department (QMED)
Bosun	Cadet
Pumpman (tank ships only)	Junior Engineer (not all ships)
Cadet	Electrician (not all ships)
Third Mate	Third Assistant Engineer
Second Mate	Second Assistant Engineer
Chief Mate / First Mate	First Assistant Engineer
Captain	Chief Engineer

Note: Names may vary depending on the company and the flag of the vessel.

Regardless of the tactics followed, it is important to prevent collusion amongst those being interviewed. Of course, there is the potential for the vessel's personnel to have agreed a "story" prior to the vessel being boarded. However, once the interview process has begun, those who have already been interviewed must not be allowed to speak with those awaiting interview. If the investigating agency has sufficient resources, consideration should be given to conducting simultaneous interviews of the Captain and the engine room personnel. Subsequently the interview teams can meet, compare notes and, when necessary, re-interview subjects to resolve contradictions and discrepancies.

Where should the interviews take place?

There are two possible strategies for this:

1. Onboard the vessel. In this case, it must be decided where this will be conducted; captain's office, conference room, engine room, bridge or other appropriate area
2. On shore. In this case, they could be conducted in an area controlled by the vessel or by the investigators.

Conducting an interview onboard the vessel may put the person more at ease and seemingly more in control of the situation. This may result in the person trying to hide the truth and deceive the investigator. This can be used to the investigator's advantage, especially

when the investigator holds additional information that contradicts what the person being interviewed says. In some countries, lying to a police officer is a separate crime and the lies told during an interview can be used to charge the person with a separate offence.

Who should conduct the interviews?

- Port State Control or environmental authorities
- Police

A combination of the two takes advantage of the specific knowledge and expertise of each. To work most effectively, the team should meet prior to beginning the interviews and discuss how they will be conducted, agreeing on roles, questions to be asked and note-taking responsibilities.

What questions should be asked and how should they be asked?

- Improper questions can reveal information to the person being interviewed rather than obtaining information
- Open-ended questions versus closed-ended questions.

Open-ended questions allow the interviewees to tell their version of events in their own words and in their own fashion. Later, more specific, detailed questions can be asked, especially those relating to technical aspects of the investigation. These specific questions may also include "yes" and "no" type answers.

At what stage of the investigative process should interviews be conducted?

- Immediately upon boarding the vessel to prevent the opportunity for collusion and destruction of evidence
- After a preliminary physical inspection of the vessel and its records so that more detailed questions can be asked.

There are advantages to both tactics. An immediate interview lessens the chances of collusion amongst interviewees and gives them less opportunity to prepare a false story. Although the interview is conducted prior to the inspection, the opportunity should be left open for a follow-on interview of the same individuals after the inspection. The crew can also be interviewed simultaneously with the inspection of the vessel. At the same time, the officers and crew can be asked to explain and or demonstrate the operation of equipment.

Interview process

In general, there are five steps in an interview process:

1. Introduction

   This step contains identification of:

   - Interviewers
   - Individual being interviewed
   - Purpose of interview.

2. Rapport building
   - To put the person more at ease, talk about a topic of apparent interest to him/her.
   - Look around his/her office or desk to identify something that can be used as a topic of conversation, e.g. photographs, books, posters, memorabilia.

3. Questioning
   - Go from the general to the specific
   - Be persistent – continue a line of questioning until a satisfactory answer has been received.

4. Summary
   - Review with the person what he/she has told you.

5. Closing
   - Answer his/her questions
   - Leave open the possibility for further discussion.

The characteristics of good questions are:

- Short and confined to one topic
- Opened-ended rather than ones that simply result in "yes" or "no" answers
- Clear and easily understood. Use multiple simple questions rather than one complex question.

The Five "Ws" still form the foundation of a good interview:

1. Who?
2. What?
3. When?
4. Where?
5. Why?

Transcribing the interview

It is critical that accurate notes are taken during the interview and that very soon after the notes are used to write a full interview report. The accuracy of the report should be confirmed by all investigating personnel taking part in the interview. The interview report should state the known facts and should not include the investigators' conclusions or suspicions. It is better to include more detail than less. Where specific information is provided by the person being interviewed, it is useful to quote exactly what was said. This can lock in important information. A report that is too general in nature leaves itself open to interpretation.

Tape recording of interviews

The people the investigator believes have information about a violation should be formally interviewed. Your country may have speci□c legislation laying down strict requirements for such formal interviews, and these should be followed. For example, they may include the mandatory tape recording of interviews with suspected o□enders, formal cautions, interview time restrictions and statutory rights for suspects.

Written statements

Sometimes crew members or other witnesses may wish to provide written statements. In accordance with your country's legislative requirements or procedures, statements may be handwritten or typed and be prepared by either the person making the statement or the investigator. The person should sign the statement.

6.4 SAMPLING

One of the most challenging tasks in the investigation of illegal oil discharges is □nding the source, and this may require laboratory analysis of oil samples. From the moment oil enters the marine environment it starts to weather, i.e. evaporation, dissolution, photochemical oxidation, biodegradation and other factors begin to alter the oils characteristics or «□ngerprint». Samples must therefore be obtained quickly from the oil discharge in the sea and also from all the suspect sources. Only laboratory testing can de□nitively identify the type of oil, eliminate potential sources and determine the source responsible.

The integrity of this evidence must be ensured; how and where to take samples must be recorded; delivery to the laboratory must be secure and the chain of custody must be maintained. National legislation or domestic evidence procedures should be consulted and it is recommended that detailed guidance be developed to assist investigators involved in the sampling process.

When there is evidence of a vessel trailing a slick (e.g. witnesses or photographs), it may be easier to prove the source, and samples from the oil discharge are not mandatory to prove the o□ence. If the other evidence is strong enough, then the lack of sample from the discharge should not deter a prosecution. When a "mystery" slick has been detected,

40. Customs officers collecting samples from the marine environment.

Australian Maritime Safety Authority

the investigation may involve a number of suspect vessels and sampling will be crucial for identifying the vessel responsible.

The following provides some guidance on issues relating to the oil sampling process. More detail is available from the International Maritime Organization publication "IMO Guidelines for Sampling and Identification of Oil Spills".[12]

Samples from the marine environment

It can sometimes be difficult to locate the vessel responsible when an oil discharge is first detected in the sea. Illegal discharges are often made at night and these 'mystery' slicks are only discovered in daylight hours at sea or when the oil comes ashore. Samples of the oil need to be obtained promptly.

Obtaining samples out at sea may be facilitated by deployment of a vessel (preferably a government vessel or one chartered by the investigator) to the area of the slick. Samples could also be obtained through the tasking of an aircraft to deploy a specialized sampling buoy at sea for retrieval at later stage. When using aircraft or helicopters in the area of the slick, care must be taken not to disperse the oil while samples are being taken. Commercial trading vessels transiting in the area can also be contacted and asked to obtain samples. They are often willing to assist if it is practical. If used, they will need specific guidance on the appropriate techniques in taking samples (i.e. using clean glass jars) and also in evidence security. Investigators then need to arrange to collect the samples from the vessel.

Samples taken from the sea should include a number taken of the heaviest concentrations of the oil and from different areas of the slick. Samples of the clean seawater outside the discharge area should also be obtained. The samples obtained from the marine environment should be delivered promptly to the laboratory for initial analysis that will establish the type of oil. This assists in identifying a mineral oil or a substance that it may be legal to discharge in the area. Only mineral oil has a rainbow appearance on the sea surface, i.e. such discharges will not be fish or vegetable oil.

Sampling equipment

To ensure an efficient sampling process, appropriate equipment should be pre-purchased and be available to investigators. All oil samples should be taken in either sterilized or clean glass jars, preferably with Teflon lids. Glass jars should be large enough to contain samples of at least 10, and up to 200 millilitres of oil. Plastic containers should not be used due to possible contamination. Other useful equipment includes polymer nets for collecting thin oil slicks (e.g. sheen), tongue depressors or swabs to sample heavy oils within pipes, disposable gloves, security labels, chain of custody forms and other items to assist in this process.

Identifying the source

When samples have been obtained from the sea it is important to identify the potential sources of the discharge. Samples should be taken from all the potential sources so that they can be compared with the discharge sample. At sea, the potential sources may involve all types of vessels known to be in the area of the discharge, oil rigs etc. When the discharge is located close to the shore, samples from other potential sources (such as drains, pipes, boats

12. IMO-578E

Australian Maritime Safety Authority

41. Samples being taken in the engine room.

or vessels in the area) should also be collected for elimination or identification purposes. Even when there appears to be only one vessel involved, investigators need to justify that they have identified any other potential source. It is just as important to eliminate potential sources, as it is to identify the source responsible.

Taking samples from a vessel

National legislation or domestic procedures may require a number of samples to be taken from each sampling point. The sample should be at least 10, and up to 200 millilitres of oil. The sample jars should be filled to about three-quarters. The number of waste oil, bilge and bilge holding tanks will vary depending on the type of vessel, and investigators should examine the vessels plans, the IOPP certificate, Oil Record Book and piping diagrams of the bilge and waste oil tanks to ensure that all tanks and bilge wells are identified and sampled. Samples should also be taken from the fuel oil tanks (settling and service tanks, as well as the bunker tanks used on the particular voyage) and from the discharge side of the Oily Water Separation equipment or other overboard valve that may be the suspected point of discharge. Samples from fuel oil tanks can often be similar from the bunkers to bilges to Oily Water Separator outlet to the sea. In some cases the cargo tanks of a vessel may also need to be sampled. There should not be any elimination of tanks based upon the colour of the oil. It is better to take samples of all the potential internal sources rather than miss the opportunity to do so.

A sample can be obtained from a tank in various ways, such as from a drain tap, valve, through the manhole cover, dipping into a tank with a bucket or other device, or through the sounding/breather pipe. Note that when samples are extracted through a drain pipe/tap, it should be flushed through for a period of time to ensure that the sample obtained is from the tank and not the residues that are in the pipe. Cargo tanks can be sampled through large deck-top openings called ullage ports or through sounding tubes. Samples from empty

tanks or the insides of pipes can be obtained using Te□on swabs or tongue depressors. These should then be sealed in a glass jar or evidence bag.

When sampling bilges, slop tanks or Oily Water Separators you may need to take a number of samples at di□erent tank levels so that a representative sample of the oil is obtained. This is because the composition of the oil in these areas often varies considerably. Also if a vessel has bunkered fuel oil prior to the sampling process, it is important to obtain the sample of the residues in the tank prior to bunkering. Such a sample can often be obtained from the sample provided to the vessel by the bunker supplier. If the investigator is aware that the vessel will be taking on bunkers, he/she should obtain samples from the tanks before they are re□lled.

Taking samples from machinery space systems and piping is critical. If the investigators suspect that a speci□c method of discharge was used, the sampling of □uids should at least correspond to the suspected method of discharge. For example; if a sludge transfer pump was connected with a hose to the Oily Water Separator discharge piping, samples should be taken from all the sludge tanks from which the pump can take suction, from the pump housing, from both ends of the hose if possible, and from the □xed piping to which the hose was attached near the overboard.

If the Oil Content Meter of the Oily Water Separator was tricked and the operator forced sludge through the system then, similarly, samples need to be taken from the source tanks, the pump making the transfers, the drains or vents of the Oily Water Separator, the discharge piping and, lastly, at the overboard or skin valve of the Oily Water Separator.

When samples are obtained from tanks, bilges or other sources, photographs or video footage should be taken of this procedure as it occurs. Photographs of the interior of overboard valves and piping is also important. If appropriate, equipment or piping may be seized from the vessel.

If samples cannot be taken from a suspect vessel, it is important to obtain relevant fuel bunkering documentation. The laboratory may be able to eliminate a suspect vessel by identifying the chemical components of the original source of the oil from the discharge and comparing it to the documentation of the oil that has been bunkered.

Investigators taking samples should keep notes and records of where and how each sample was taken.

Sample Identification and Security

To ensure the integrity of the samples and minimize the risk of tampering, each sample must be sealed, and given a unique label that should include at least:

- Case number/Sample number
- Date and time when the sample was taken
- Sample description (tank or location where sample taken)
- Name of the person taking the sample
- Name of the witness.

Note that national procedures may require more detailed information.

A chain of custody record with information about the samples must be completed and remain with the samples, and in the custody or possession of an investigating o□cer until they are delivered to the laboratory. Anyone who takes custody of the samples needs to sign the custody record. Samples should be delivered to the laboratory, but if this is not possible, they can be stored for a short time. Samples must be stored in a cool and dark environment (refrigerator, cooling bag), preferably 2-7˚C. The samples should not be frozen. Where a cool place is not available, wrap the samples in newspaper or other insulating material and move them to a proper storage place as soon as possible. In some cases the samples will need to be transported to the laboratory via a secure courier service that also keeps a chain of custody record.

Analysis by the Laboratory

The analysis and comparison of oil samples must be undertaken by an experienced laboratory in accordance with relevant standards for the analysis of oil samples (currently these are the NORTEST[13] method or the ASTM[14] Standards). National legislation may require such laboratories to be appointed, authorized or accredited to undertake this work.

The laboratory uses a variety of analytical methods to identify the characteristic properties of the oil and by comparing the analysis results of the slick sample with the vessel samples, can eliminate erroneous suspect sources as well as pinpoint the actual source of the oil discharge. Interpretation of the data is not straightforward with di□erences arising because of the weathering of oil. The analyst must be familiar with the complexities of the weathering processes and their impact on the test methods.

The □nal report from the laboratory should contain an explanation of the processes followed and a summary presenting the results of the analysis in non-scienti□c terms that will be understood by the investigators and the courts. The report should also either attach all the relevant technical data or note where it is available.

Investigators may wish to meet the laboratory analysts to ensure that they understand the processes that have been undertaken and the relevant information in the report.

13. NORTEST, Post box 116, 02151 Espoo, Finland

14. American Society for Testing Materials, 100 Barr Harbor Drive, West Conchohocken PA 19428-2959, USA

7 POST-INVESTIGATION AND COLLATION OF EVIDENCE

Following the completion of the investigation, all the evidence needs to be collated and presented in a coherent form to the officials responsible for prosecution proceedings. A country may have guidelines on the preferred format for an evidence brief or case report. In addition to the primary evidence collected, it may be appropriate to carry out further investigations regarding specific aspects of the case. These aspects may include proving systematic activity by the fleet of vessels, providing supporting information for an appropriate penalty for the actual pollution, and information on prior convictions. If an evidence brief is developed and it is decided that there is not sufficient evidence to prosecute under national legislation, there is the option of providing the evidence to the vessel's Flag State and requesting an investigation and appropriate action. Further information on these issues is given below.

7.1 EVIDENCE BRIEF OR CASE REPORT

An evidence brief or case report is a set of papers containing:

- an allegation and reference to the relevant legislation;
- a narrative of the facts of the case; and
- the evidence obtained relating to the elements of the possible offence.

Briefs must be in an orderly and manageable format so that the prosecutor can easily and effectively:

- understand the allegations;
- assess the evidence in relation to the allegations;
- decide what charges can be laid against whom and whether or not charges should be laid;
- identify what further evidence the investigator should attempt to obtain;
- provide appropriate disclosure of the prosecution case to the defence; and
- prosecute the case in court.

It is the job of the investigator, not the prosecutor, to organize the brief or case report. The following provides some general guidance for the collation of evidence into a brief or case report.

General guidance for collation of evidence

Main Component	Secondary Component	Details
Introduction	Overview Statement	In summary form: - Issue or subject of the investigation - Main outcomes of the investigation - People/companies involved - Main recommendations - Legislation and offences involved
	Scope of the Investigation	A summary statement of: - Investigating team and its authority to undertake the investigation - Time frame over which the investigation progressed and time on task - Sources of and limits to information - Main informants to the investigation
Body	Analysis of Evidence	- Elements of a breach of the legislation - Provide a chronological account of investigation and/or matter under investigation - References to all the evidence (in Appendix) - Reference to specific procedures, standards, policies, legislation and codes - Establish that there is/is not sufficient evidence to support prima facie outcomes - Provide a summary listing of outcomes
Conclusion	Options	- Options and argument for further action - Investigator's preferred option(s)
	Considerations	That there are/are not circumstances to be taken into account in establishing the course of action: - Special claims and mitigation - History - Impact on people/organizations/marine environment
	Recommendations	- Action (charges proposed), responsibility and timing - Summary listing of recommendations
	Appendices	Copy of each Appendix as referenced in text - Statement of facts - Evidence (all witness statements and interview reports) - Witness list - Vessel documentation - List of exhibits - Other relevant information

Statement of facts

A statement of facts should also be provided to the prosecutor with the evidence brief or case report. This is a short summary of the alleged facts that should give the prosecutor an overall appreciation of the case. It is not a summary of the investigation. The prosecutor may also use this to read or present to the court.

The statement of facts should set out a chronology of the alleged facts of the o□ence. The chronology should be of the alleged facts that constitute the physical elements of the o□ence, not of the investigation. The chronology should be factual and objective and cross-referenced to witness statements and exhibits.

Tables, □ow charts and other charts are often useful, especially in complex matters. The investigator should state here whether the suspect participated in the record of interview and whether admissions were made. Where relevant, details of the □nancial repercussions of the o□ence should be included.

All the facts of the o□ence should be supported by written statements from each witness involved, including (as appropriate):

- Statements from observers of the pollution, attaching photographs and other images taken.
- Statements concerning sampling procedures, both of the discharge and onboard vessels. These should include location of and time when samples were taken, identity of person(s) taking the samples and receipts identifying the persons having custody and receiving transfer of the samples.
- Report of the laboratory analysis of samples taken of the discharge and comparison with samples from vessels.
- Statements from investigations onboard the vessel, attaching copies of documentation copied and photographs, etc.
- Statements by persons questioned.
- Statements by any person(s) that has/have examined any evidence and provided expert opinion.

7.2 SYSTEMATIC POLLUTION BY A FLEET OF VESSELS

A vessel found to be releasing oil illegally can be part of a company with a □eet of vessels in which oil discharge is undertaken on a regular □eet-wide basis. The method of discharge may be similar onboard all the vessels in the □eet. For this reason, it is important to consider conducting an immediate follow-up investigation of all that company's vessels. Consideration should also be given to sharing concerns about a □eet-wide problem with other countries, so that they can also conduct immediate inspections of vessels in their jurisdictions. The need for immediate action is based on a concern to pre-empt the destruction and concealment of evidence onboard the other vessels. Evidence of company-wide illegal practices strengthens the prosecution prospects for each individual investigation. Additionally, prosecuting a company that owns a large □eet can have an immediate and dramatic impact on reducing the incidents and amount of illegally discharged oil.

There are many reasons why shipboard crew members make deliberate decisions to violate MARPOL73/78 and other pollution prevention requirements. Often those shipboard conditions, operating procedures and policies or the decisions not to follow such policies and procedures are the direct result of the operating company's lack of oversight and management or direct pressure or in□uence by that management to minimize operating costs.

Poor and ine□ectively implemented Safety Management Systems, poor performance or inadequate sizing of pollution prevention equipment are often not detected. Correctly functioning Safety Management Systems should capture and correct conditions leading to excessive waste stream development, such as leaking pump seals or piping conditions, or insu□cient crew to maintain a deteriorating machinery space.

Some operating companies view the requirements for Safety Management Systems as simply a formality. E□orts are made to establish the system to meet the requirement but it becomes nothing more than "books on a shelf". It is estimated that only 20% of vessel-operating companies fully embrace the systems in their day-to-day operation of vessels.

Proving financial gain

Another common feature often discovered during vessel investigations is that the decision to violate the requirements is based on cutting costs and minimizing vessel operating expenses. In some cases, crew members believe they will be better esteemed by shoreside management personnel and therefore develop ways to cut costs on their own. In others, the effort to minimize operating costs is established by the shoreside personnel. Decisions may be made to not supply additional funding for repairs, vendors, technicians, or spare parts. Vessel management personnel may limit shipboard managers to strict budgets, minimizing overtime which may effect engine room maintenance and impact waste streams. The routine use of shoreside reception facilities to dispose of oily wastes may be discouraged. More information pertaining to the economic factors associated with not complying with MARPOL73/78 may be obtained in the OECD 2003 report "Cost savings stemming from non-compliance with international environmental regulations in the maritime sector" (see http://www.oecd.org/dataoecd/4/26/2496757.pdf).

It is logical for the role of shoreside personnel and their impact (or lack thereof) on vessel operations to be critical in enabling crew members to operate vessels in a compliant manner. The impact of funding and operating budgets remains important, yet those corporate-type decisions are out of the control of the shipboard personnel. Therefore, where such causal factors are identified on one vessel of a fleet, it is likely that the same factors are impacting other vessels of that fleet.

In the penalty phase of a prosecution, it can be important to show the motive for the crime. Some potential motives include saving money on:

- the purchase and installation of best available technology
- the cost of offloading waste oil in port
- the cost of providing adequate staffing onboard the vessel
- the purchase of Oily Water Separator filters and membranes
- time on labour and maintenance of pollution prevention equipment, and
- time on labour and maintenance and repair of other systems whose poor condition contributes to bilge loading.

An additional motive for individuals onboard the vessel is bonuses paid to officers for keeping vessel operational costs within budget.

Demonstrating profit

At the time of trial or sentencing, it is important to demonstrate the amount of profit gained by the defendant as a result of the illegal action. In the case of illegal oil discharges the profit is related to the costs of properly treating and/or disposing of the waste oil. Possible calculations include actions taken by the vessel prior to the discovery of the illegal discharge by the investigating agencies compared to actions taken subsequent to the discovery, including:

- Comparing the number of Oily Water Separator filter membranes purchased
- Comparing shoreside disposal records

- Comparing incinerator records
- Comparing man-hours devoted to running the Oily Water Separator
- Cost of vendor and technician services
- Cost of shoreside disposal of slops and bilge water.

7.3 PENALTY AND DETERRENCE CONSIDERATIONS

One of the primary objectives of law enforcement is deterrence, both speci□c and general. Speci□c deterrence focuses on preventing or persuading the defendant from committing the illegal act in the future, whereas general deterrence attempts to in□uence others in similar situations from committing such acts because of the penalty imposed in the case. In addition to deterrence, law enforcement has a duty to help maintain a level playing □eld for business. The company that saves money by violating the law has an unfair competitive advantage over the law-abiding business that properly treats and disposes of its waste.

Investigators should liaise with prosecutors to collect further relevant information and to assist in in□uencing the courts to impose high □nes with deterrent value. Too frequently, after a lengthy investigation and prosecution, the sentence ultimately imposed does not come close to the gains made by the defendant as a result of the illegal activities, or even cover the costs incurred by the agency in undertaking the incident response and prosecution. Sentences that are not commensurate with the crime not only undercut the objective of general deterrence, but can also potentially be viewed as condoning the criminal conduct. Countries with insu□cient enforcement and penalties risk becoming victims of crimes as there will be a lack of deterrence for vessels operating in their jurisdiction.

42. Property damage from oil discharge.

Swedish Coast Guard

A sentence imposed for a crime is composed of several parts: imprisonment, monetary □ne, restitution to victims (including the environment), and probation (including community service and environmentally bene□cial projects). The monetary □ne should, as a minimum, recoup the economic advantage gained by the defendant as a result of his criminal activity and also attempt to mitigate or o□set the harm caused by the crime. The penalty element should be in addition to the economic recovery. It is important for judges and juries to understand that violations of environmental law are based on the o□ender's belief that □nes he may have to pay if prosecuted will be less than what it would cost him to comply with the law. In other words, it is just an acceptable cost of doing business. Information to estimate the economic advantage that the vessel gained by undertaking the illegal pollution activity should be obtained if possible.

Deterrence is most e□ective when individuals are held accountable for the violation. The decision makers in a company will be less likely to violate the law if they face personal punishment that may include □nes and imprisonment. Culpable individuals at the highest levels of an organization must be held accountable, not just the workers physically carrying out the act.

The degree of environmental damage, whether actual or threatened, is another factor to consider in determining the appropriate penalty. The environment is an economic resource that belongs to society, and damage to the environment can cause serious economic harm to a society, be it contaminated □shing grounds, drinking water or tourism. Some countries use established matrices to determine the economic value of dead or injured wildlife when calculating the degree of environmental damage. Speci□c information and research showing the e□ects of oil discharges on the environment should be obtained.

Information on the prior history of violations by the vessel and its owner is also important for the court to determine a penalty that will provide a deterrent. Such information is currently di□cult to obtain, but most countries do maintain lists of prosecutions and may be approached for this information.

Information on the vessel Port State Control Inspections relating to de□ciencies and/or detentions for MARPOL Annex I should also be obtained through the Port State Control MOUs. Such information provides the court with a view of how the vessel has operated and whether it has been in compliance with the IMO Conventions.

When considering the charges to be brought against those illegally discharging oil from vessels, investigators and prosecutors should consider the full range of national laws available, including false statements and records, conspiracy, failure to report, concealing or obstructing an investigation, tax regulations or other applicable criminal statutes.

7.4 REFERRING EVIDENCE TO THE VESSEL'S FLAG STATE

There may be instances when legal proceedings are not undertaken under the national legislation of the Port/Coastal State. Reasons for this might include:

- the pollution may have occurred outside the jurisdiction of the Coastal State;
- the available evidence falls short of that required to ensure a conviction under the particular legal system in that country;

- technical di□culties, such as where national legislation has not been kept up to date with amendments to MARPOL73/78; or
- prosecutors decide not to proceed due to having higher priority cases, lack of resources, etc.

If there is insu□cient evidence, consideration should be given to seeking assistance from the next port of call or Coastal State, depending on the circumstances of the incident.

If it is determined that legal proceedings will not be taken for any of the reasons outlined above, the Port/Coastal State should consider referring the available evidence to the Flag State in accordance with Article 6 of MARPOL73/78, which speci□es rights and obligations in the detection of violations and co-operation in the enforcement of the Convention. To be e□ective in such co-operation, all States should treat illegal oil discharge violations with appropriate sanctions to ensure deterrence of this illegal activity.

A party to MARPOL73/78 may provide the Flag State with a report containing evidence that a vessel has undertaken a discharge in violation of the convention. Article 6(4) states that, upon receiving the evidence, the Flag State shall investigate the matter and, if satis□ed that su□cient evidence is available to enable proceedings to be brought in respect of the alleged violation, shall cause legal proceedings to be taken in accordance with its law as soon as possible. This is a key obligation for all parties, and such matters should be treated with the same vigour as if the o□ence had occurred in waters within the jurisdiction of the Flag State. The Flag State is obliged to promptly inform the party that reported the alleged violation, and the International Maritime Organization, of the action taken.

The extent to which Flag States ful□l these obligations is known to vary, and some Port/Coastal States no longer refer matters to Flag States because of a perceived lack of action following previous incidents. Reasons why Flag States might not adequately investigate referrals include lack of resources, lack of clear information and/or evidence provided by the Port/Coastal State, and the physical distance to the area in which the vessel is located. However, as parties to MARPOL73/78, Flag, Coastal and Port States all have obligations to be vigorous in enforcement. This manual aims to assist all States to increase their ability to meet these international obligations.

A report to a Flag State should be made in an o□cial letter, with the evidence attached, to the relevant authority (refer to the International Maritime Organization's national contact list). This evidence should be provided in a format similar to that which would be collated for an evidence brief/case report for legal proceedings within the reporting country (see section 7.1).

This referral report should aim to provide the optimal collection of obtainable data and it is important for all the information included to be supported by facts so that, when considered as a whole, it would contribute to the belief that an o□ence has occurred.

When a report is made to a Flag State, the referring country (as a party to MARPOL73/78-Article 11 (1)) reports the matter in the annual statistical report to the International Maritime Organization.[15] The Flag State should also provide information in the statistical report to the International Maritime Organization on the action they have taken with regard to the referral. Unfortunately, not all parties to MARPOL73/78 submit these reports on an annual basis as required.

15. MEPC Circular 318

Receiving and acting on a referral

When a Flag State receives a referral from another party to MARPOL73/78, it is obliged to undertake an investigation. This investigation should involve an assessment of the evidence that has been provided and whether it meets the elements for oil discharge offences under the laws of the Flag State. The Flag State should contact the referring State to ensure that all available information has been provided and also to allow further discussion directly with relevant officers on the matter as necessary. If sufficient evidence is available to enable proceedings, the Flag State shall cause proceedings to be taken in accordance with its laws as soon as possible.

The Flag State investigators may consider it appropriate to contact the owners, operator and master of the vessel at the time of the offence and request further information or require a statement on the circumstances of the offence. The Flag State may also appoint an independent investigator to board the vessel and undertake further inquiries, depending on where the vessel is located.

Maritime administrations in smaller Flag States may not have experience with MARPOL73/78 enforcement, and may need to seek advice and assistance from internal government agencies with responsibility for general criminal and international law matters.

If the evidence is not sufficient to undertake legal proceedings, the Flag State may consider other administrative action. The Flag State should report the action taken to the referring State and as part of the MARPOL73/78 mandatory statistical report to the International Maritime Organization.

7.5 SHARING INFORMATION WITH OTHER PORT/COASTAL STATES

There might also be circumstances in which a Port/Coastal State receives information about a pollution incident and the suspect vessel is about to leave or has already left that country's jurisdiction before any investigation can be undertaken. Typical examples are:

- when a surveillance aircraft reports an oil slick trailing a transiting vessel or a recently departed vessel on a voyage to an overseas port
- oil discovered on a beach and the suspect vessel has transited that country's waters

The Port/Coastal State should advise neighbouring countries of the pollution and that a vessel source is suspected. If a vessel can be identified, the Port/Coastal State should establish the suspect vessel's next port of call, and alert the relevant authorities by providing the time, date, position and full description of the observed incident. The relevant authorities in the destination port will then be in a position to undertake a higher level of surveillance, for example by targeting surveillance aircraft or Port State Control Inspections. Such information is also important in identifying possible sources of any oil discharges that might be observed in the waters of the destination Coastal State.

Two or more countries may wish to co-operate and undertake a joint investigation (such as when one country refers a matter to the next Port State and where the referring country is allowed to participate in the investigation).

In addition, the sharing of prosecutions, leads or information with other interested Port States bilaterally, via Interpol, or through existing MOUs will assist in identifying those vessel that are continuing to undertake illegal activities. This could be done informally or formally. Formal mechanisms may include letters rogatory, Mutual Legal Assistance Treaties, or Interpol notices.

Consideration of international multiple venue prosecutions is a method that could be explored. In some countries, larger penalties have been achieved by prosecuting an unscrupulous operator in multiple ports within that country since there is a crime committed in each. The same thing could be done internationally through sharing of information. This is different from the current approach of referring to another State and perhaps not getting the greatest deterrent impact.

CONCLUSION

It is our hope that you found the information contained in this manual to be interesting, informative and, most importantly, of practical use to you in your work.

Environmental crime investigation is a specialized form of law enforcement, and is generally only a small part of a country's overall law enforcement effort. However, you should be aware that you have numerous colleagues throughout the world undertaking the same investigative work.

Through its Pollution Crimes Working Group, Interpol will provide a medium for assistance, advice or information on oil pollution problems or any other form of environmental crime investigation.

We wish you success in this very important work.

1. USEFUL DEFINITIONS AND ACRONYMS

Bilge	The lowest inner part of a vessel's hull
Bilge water	A mixture including water and oil residues collected in the bilge of the machinery space or cargo oil pump room of a vessel as a result of leakages, drainage, failures or human error involving the wide arrangement of machinery space systems, equipment and components.
Bilge water holding tank	A tank for holding the daily generation of oily bilge water before this water is discharged ashore or discharged through the oily water separation equipment.
Bilge well	A collection area within the bilges of the vessel containing bilge water. They are usually called Port Bilge Well, Shaft Alley Bilge Well, etc according to their location onboard.
Chain of Custody	The series of actions taken in transferring a sample so that the sample cannot be tampered with or altered accidentally. The oil portion is typically a mixture of fuel oils and lubricating oils.
Deck Log Book	Full nautical and cargo handling record of a vessel's voyage, written up at the end of each watch (or duty period) by the officer in charge.
Dirty Oil tanks	Tanks used for the collection of used and contaminated oils. Sometimes includes sludges.
Emulsified Oil	Suspended mixture of two immiscible fluids (water and oil), one being dispersed in the other in the form of fine droplets.
Engine Log Book	A book which all particulars relating to the operation of the propelling and auxiliary machinery are entered by the engineers in charge.
Incinerator	Systems for the incineration of oil sludge and other wastes generated on board the vessel. Such a system for oil sludge processing could be a main/auxiliary steam boilers, heaters of thermal fluid systems, inert gas systems or an appropriate incinerator.
Oil	Any petroleum in any form including crude oil, fuel oil, sludge, oil refuse, and refined products (other than petrochemicals).
Oil Discharge Monitoring and Control System	Equipment that measures oil content in effluent from slops tanks, calculates discharge rate, monitors vessel speed and total volume discharged, and stops discharge when MARPOL73/78 limits for oil tankers are exceeded.
Oil Record Book Part I	A book in which all machinery space operations concerning oil or oily mixtures are entered, compulsory on oil tankers of 150 gt and over, and on vessels of 400 gt.
Oil Record Book Part II	A book in which all oil cargo and ballast operations are entered, compulsory on oil tankers of 150 gt and over.
Oil Sheen	An extremely thin layer or film of petroleum product causing some visible evidence on the water surface.
Oil Slick	A thin film of oil on water.
Oil residue (sludge)	A residue resulting from the purification of fuels and lubricating oil; oil resulting from drainages and leakages in machinery spaces; or exhausted lubricating oil, hydraulic oil or other hydrocarbon-based liquid which is not suitable for use in machinery due to deterioration and contamination.
Oily wastes	A general term refereeing to sludge and oily bilge water
Oil Filtering Equipment	Any combination of separator, filter, coalescer or other equipment that separates oil and water. Commonly referred to as an Oily Water Separator (OWS). This equipment is required to process oily water mixtures and it must be approved to international standards. It is fitted with an Oil Content Meter which prevents the discharge of the processed output if it exceeds 15 parts oil to one million parts water (15 ppm).
Sample	A representative portion of an oil spill or source product which can be transported to a laboratory for identification and analysis.

Cont.

Slop Tank	A tank specifically designed for the collection of tank drainings, tank washings and other oily mixtures.
Slops	Mixture of water and oil residues from cargo tanks in oil tankers that may contain oil/water emulsions, paraffin wax, sediments, and other tank residues.
Sludge	Deposits, generally from the purification of fuel and lubrication oils, consisting of mixtures including oil, paraffin wax, sediments and other tank residues.
Tank washings	Tank washing water containing cargo tank residues including oil, paraffin wax, sediment and other foreign matter such as tank cleaning chemicals.
Sludge tanks	Tanks usually for separated sludge stemming from purifier operations.
Slop tank	Typically found on tank vessels, these are specifically designated for the collection of tank drainings, tank washings and other oily mixtures stemming from cargo operations and the resultant cleaning of cargo tanks. Also sometimes referred to as the "dirty oil tank" when such tank is located in the engine room.
Weathering	All changes in oil composition which take place after a spill or discharge, including evaporation, dissolution, oxidation, biological decomposition, etc.

2. ENFORCEMENT JURISDICTION AND OBLIGATIONS FOR PORT, FLAG AND COASTAL STATES

MARPOL73/78 and UNCLOS contain enforcement jurisdiction and associated obligations relating to the Flag State, Port State and Coastal State. The following tables provide an outline of the enforcement jurisdictions under UNCLOS and MARPOL73/78. It is suggested that each country develop detailed procedures to follow that will be pertinent to the particular situation and legal system.

COASTAL STATE ENFORCEMENT JURISDICTION

MARPOL73/78 offences in the Territorial Sea
1. The Coastal State may request a Port State Control (administrative investigation)
2. The Coastal State may institute proceedings or report to the Flag State
3. If the Coastal State decides to institute proceedings: • it may request the Port State for legal assistance (rogatory letters, judicial investigation) • it may request the Port State to institute proceedings
4. In cases where a Port State has instituted proceedings, the Coastal State may request that Port State to suspend its proceedings.
5. The Coastal State has a right of hot pursuit (under certain conditions).
6. When the suspect vessel is navigating in the territorial sea, the Coastal State may undertake a physical inspection, which can lead to instituting proceedings, including the detention of the vessel.
MARPOL73/78 offences in the Exclusive Economic Zone (EEZ)
7. The Coastal State has the same powers of enforcement as mentioned in points 1. to 5.
8. When the suspect vessel is navigating in the EEZ or the territorial sea, the Coastal State may, depending on the conditions, ask information or undertake a thorough inspection, which can lead to instituting proceedings, including the detention of the vessel.
9. Proceedings shall be suspended upon the taking of proceedings by the Flag State within six months of the date on which proceedings were first instituted (with certain exceptions).

PORT STATE ENFORCEMENT JURISDICTION

MARPOL73/78 offences outside the Territorial Sea + EEZ
1. A Port State can execute an administrative Port State Control upon request of another State, which can lead to a temporary detention of the vessel; the report of this investigation is passed on to the requesting State.
2. A Port State may institute proceedings (if the universal Port State jurisdiction is established in national law), or may report to the Flag State.
3. In cases where the offence takes place in the area of jurisdiction of another State, a Port State may only institute proceedings: • upon request of that Coastal State, • upon request of the Flag State, • upon request of another State damaged or threatened by the offence, • if the offence caused or is likely to cause pollution in its own territorial sea or EEZ.

Cont.

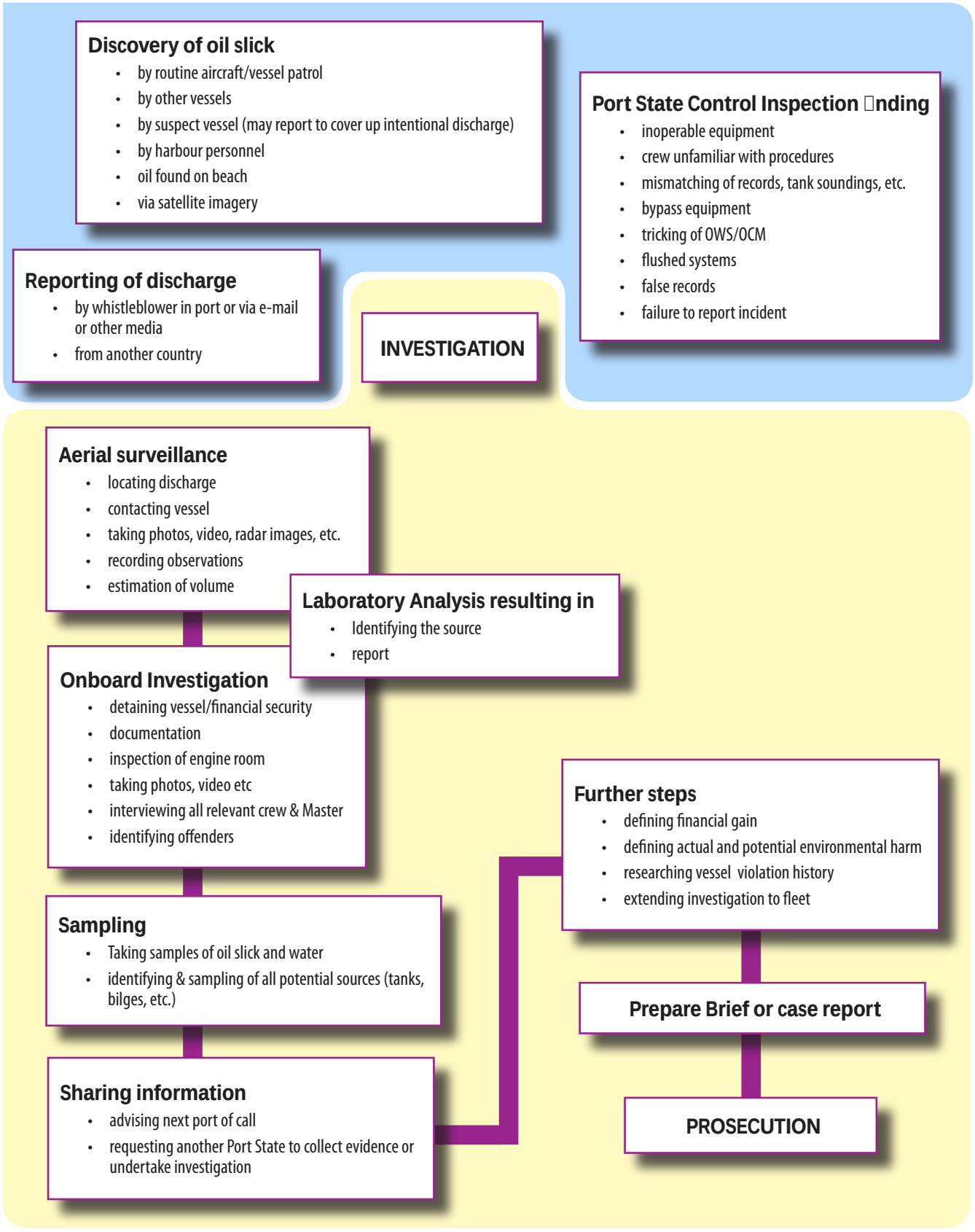
4.	Any proceedings instituted by a Port State on the basis of an investigation may be suspended at the request of a Coastal State.
5.	A Port State shall as far as practicable comply with requests from the Flag State for investigation of an offence (irrespective of location).
6.	Proceedings shall be suspended upon the taking of proceedings by the Flag State within six months of the date on which proceedings were first instituted (with certain exceptions).
MARPOL73/78 offences inside the Territorial Sea + EEZ	
1.	Port State acts as Coastal State

FLAG STATE ENFORCEMENT JURISDICTION

MARPOL73/78 offences, irrespective of location	
1.	A Flag State may request a Port State control.
2.	Flag State shall institute proceedings (if sufficient evidence) when receiving a request/report from another State.
3.	Flag State may request the legal assistance of a Port State and Coastal State.
4.	Flag State may request a Port State to institute proceedings in cases where the offence took place in the area of jurisdiction of a Coastal State.
5.	Flag State can suspend proceedings instituted by a State in respect of an offence beyond its territorial sea, upon the taking of proceedings within six months of the date on which proceedings were first instituted (with certain exceptions).
MARPOL73/78 offences in the territorial sea of a Coastal State	
6.	Flag State cannot suspend proceedings instituted by the Coastal State; however, the flag State has the obligation to institute proceedings if it receives a request thereto from that Coastal State.
7.	If so, then the flag State has the same powers of enforcement as mentioned in points 1. to 4.

(Source: Bonn Agreement. In light of changing legislation please refer to the Bonn Agreement web page for the latest version of this document.)

3. FLOWCHART OF OIL DISCHARGE DETECTION AND INVESTIGATION



4. AERIAL SURVEILLANCE GUIDANCE

Preparation for aerial surveillance

1. Availability of aircraft and capabilities
2. Discussion of tasking with pilot (flight plan)
3. Hand held equipment such as camera, video, GPS
4. Aircraft equipment camera, video, radar, GPS, recording devices
5. Notebooks or records

Particulars of vessel/s suspected of contravention

1. Name of vessel and IMO Number
2. Home port/Flag
3. Reasons for suspecting the vessel
4. Date and time (UTC) of observation or identification
5. Position of vessel
6. Flag and port of registry
7. Type (e.g. tanker, cargo, passenger, fishing vessel), size (estimated tonnage) and other descriptive data (e.g. superstructure colour and funnel markings)
8. Draught condition (loaded or in ballast)
9. Approximate course and speed
10. Position of discharge in relation to vessel (e.g. astern, port, starboard)
11. Part of the vessel from which side discharge was seen emanating
12. Whether discharge ceased when vessel was observed or contacted by radio

Particulars of discharge

Note: An oily mixture with a concentration or 15 ppm cannot be observed either visually or with remote sensing equipment. The earliest detection of oil on the water is around 50 ppm. Therefore, where any visible traces of oil are seen at sea or in waters near a vessel, further investigation should be undertaken as a violation has likely been committed.

1. Date and time (UTC) of observation
2. Altitude of aircraft
3. Position of discharge in longitude and latitude
4. Approximate distance in nautical miles from the nearest landmark
5. Approximate overall dimension or extent of oil discharge (length, width and percentage covered by oil)
6. Physical description of discharge (direction and form e.g. continuous, in patches or in windrows)
7. Appearance of discharge (preferably describe via colours below or else describe as exactly as possible the colours are seen)
   - Sheen (silvery/grey)
   - Rainbow
   - Metallic
   - Discontinuous true oil colour
   - Continuous true oil colour
8. Weather conditions (bright sunshine, overcast, etc) lightfall and visibility (kilometres) at time of observation
9. Sea state
10. Direction and speed of surface wind
11. Direction and speed of current

Cont.

Identification of the observer(s) or witness

1. Name of the observer
2. Organization with which observer is affiliated (if any)
3. Observer's status within the organization
4. Observation made from aircraft/ship/shore/otherwise
5. Name or identity of vessel/aircraft from which the observation was made
6. Specific location of vessel/aircraft, place on shore or otherwise from which observation was made
7. Activity engaged in by observer when observation was made, for example: patrol, voyage, flight (en route from .... to ....), etc.

Method of observation and documentation

1. Visual
2. Conventional photographs
3. Remote sensing records and/or photographs/satellite images
4. Samples taken from discharge on the water
5. Any other form of observation (specify)

Note: A photograph of the discharge should preferably be in colour. Photographs can provide the following information: that a material on the sea surface is oil; that the quantity of oil discharged does constitute a violation; that the oil is being, or has been discharged from a particular vessel; and the identity of the vessel.

Other information if radio contact can be established with vessel

1. Master of informed discharge
2. Explanation of master
3. Vessel's last port of call
4. Vessel's next port of call
5. Name of vessel's master and owner
6. Vessel's call sign
7. Other

5. ONBOARD INVESTIGATION GUIDANCE

BOARD VESSEL

Visual signs

- Prior to boarding note any visual sign of oil discharge on outer hull or superstructure of vessel.

Introducing coast guard - Port State Control personnel

- Investigators identify themselves to the master or o□cer in charge of the vessel.
- Advise the master or o□cer in charge of the purpose of investigation.

Documentation

- Examine and take copies of documentation to identify the vessel, master and crew (see Appendix 6 for a vessel documentation checklist).

INSPECTION OF ENGINE ROOM

General inspection of engine room

- Determine that the vessel arrangements and equipment listed in the IOPP Certi□cate match the vessel and are in accordance with the requirements.
- Examine overboard piping to identify conditions that may indicate the disassembly of piping segments, □anges, blanks or valves tied into any system that lead overboard. This may include other systems such as overboard cooling water systems, drains, boiler blow downs, etc.
- Pay particular attention to loose bolts, blanked □anges, capped pipes, dead-end valves and tees, chipped paint, evidence of work such as handprints against the hull or piping or even fresh paint, oil stains, drippings, splatter oil on valve stems, particularly near systems capable of directing □uids overboard.
- Check portable pumps and hoses for improper tie-in with systems capable of discharging overboard.
- Be alert to independent segments of piping and □ttings stowed, but designed to □t in between certain □anges of equipment capable of discharging overboard.
- Inspect the vessel's equipment according to other documents, such as drawings and log books.
- Look for any visible traces of oil near the outlet pipe for pumping overboard
- Look for visible traces of oil in ballast tanks (especially important on oil tankers)
- Determine levels in the bilges, bilge wells and on tank tops
- Measure contents of sludge and/or holding tanks
- Identify sources of considerable leakage

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Appendix based upon United States Coast Guard document "Guidance for the Enforcement of MARPOL Annex 1 During Port State Control Examinations" by M. B. Karr, Capt. USCG dated January 20, 2006.

Oil Record Book part I – Investigate any irregularities, which may include:

- If oily water amounts processed exceed rated capacity of the oily water separation equipment, compare system through-put to what is indicated in the IOPP Certi□cate. For example, the Oil Record Book indicates 30 m^3 of oily water processed in 3 hours by an Oily Water Separator having a maximum capacity 5 m^3 per hour. See section 4.5 and Appendix 9 for further information.
- Check entries for wrong codes, dates that are not in order and missing pages.
- Look for repetitive entries that may indicate falsi□cation of Oil Record Book activities.
- Determine if waste oil, sludge, bilge and other tank levels noted during the inspection vary signi□cantly from last entries in the Oil Record Book. For example, the Oil Record Book indicates a liquid level in the vessel's sludge tank at the completion of the previous voyage, the sludge tank is currently at a lower level, and the Oil Record Book does not indicate how the vessel disposed of this liquid.
- Be aware of recorded quantities of oily bilge water pumped to holding tanks or processed by Oily Water Separator directly from the bilge wells that do not compare to observed conditions within the machinery space. Recorded quantities should be compared to the observed bilge loads associated with such conditions as leaking pump glands, piping systems, main and auxiliary equipment casing leaks or problems from other systems that cause releases into the bilge.
- The Oil Record Book part I must address ballasting and cleaning of oil fuel tanks; discharge of dirty ballast containing or cleaning water from oil fuel tanks; disposal of oily residues; and discharge overboard or disposal otherwise of bilge water which has accumulated in machinery spaces; equipment malfunction or irregularities.

Oily Water Separator (OWS) Operational Test

- First determine that the Oily Water Separator is approved according to relevant regulations and appropriate administration.
- Identify crewmembers responsible for operation of the Oily Water Separator.
- Consult the manufacturer's operations manual for operating the Oily Water Separator and Oil Content Meter and follow any relevant procedures provided.
- The operational test should last at least 15-20 minutes and it should be generally trouble free.
- Observe and determine the crew's competency with the equipment and associated piping. Crewmembers inability to successfully operate the equipment may indicate that the equipment is not routinely used.
- Ensure that the □uid entering the Oily Water Separator for processing comes directly from the bilge water holding tank and is not diluted by open sea or fresh water connections.
- Ensure that there is no dilution of the processed oily water sample line to the Oil Content Meter. The Oil Content Meter outlet □uid should be visible as well. Some systems use a three-way valve which must be positioned correctly to prevent any dilution of the Oily Water Separator discharge sample to the Oil Content Meter.

Cont.

- If the vessel uses a source tank to supply oily water to the Oily Water Separator, the source tank level should drop proportionately in comparison to the capacity of the Oil Water Separator for the period of time the equipment was run. This drop in tank level is based on the size and con□guration of the source tank and the duration of the test, the level may not drop an appreciable amount.
- Ensure that the Oily Water Separator e□uent is visibly clean. Ask the crew to obtain a sample of Oily Water Separator e□uent in a clear container. The sample should be similar in appearance to the outlet □ow from the Oil Content Meter and should have no visible surface oil.
- If the Oily Water Separator equipment uses consumable □lter elements, coalescing media, recording paper, etc., verify that reasonable quantities of these consumables are onboard. Review the purchase and inventory records for these consumables to determine if su□cient quantities have been purchased to properly operate the equipment.
- Additionally, the Oily Water Separator manufacturer's recommended spare parts should also be onboard.

Oil Content Meter (OCM)/ Bilge alarm (for ships of ≥10,000 gt and ships carrying large quantities of fuel oil)

- While testing the Oil Content Meter, examine the unit closely for indications of tampering. Be aware that personnel easily can bypass or disable an Oil Content Meter. See section 4.6.
- The Oily Water Separator e□uent tested by the Oil Content Meter must activate the alarm and close the overboard discharge valve and direct the discharge back to a tank or the bilge when the oil content exceeds 15 ppm. An oily water sample exceeding 15 ppm can easily be veri□ed since oily water typically produces a sheen at concentrations greater than 80 ppm. Most Oily Water Separator units have a sample valve located before the Oil Content Meter where a sample can be drawn and visually checked.
- Ensure the sample analyzed by the Oil Content Meter is the Oily Water Separator output. Do this by tracing the sample line to the Oily Water Separator output. Verify that the system has no means to dilute the source sampling entering the Oil Content Meter. Ensure that the Oil Content Meter fresh water □ush valve, if provided, is closed when OCM is sampling.
- When testing the Oil Content Meter alarm, do not expect instantaneous performance, Note that some approved Oil Content Meters may activate with up to a 20 second delay after the detection of excessive oil content before sounding and activating the overboard discharge devices.

Sludge Tank

- The Sludge tank stores oil residue, which is left over from processing of oily water through the Oily Water Separator and from other sources like fuel oil and lube oil puri□ers.
- Determine the oil sludge tank level and the rate at which the ship generates sludge and whether the sludge tank has su□cient capacity to store waste oil generated by the ship's machinery operations during its next voyage. In general, the quantity of fuel oil sludge produced should be equivalent to 1-2% of the heavy fuel oil burned. (For

Cont.

example, a vessel that burns 45 m^3 of fuel per day should develop 450-900 litres of oil and oily water each day)

- Con□rm that the sludge tank level is consistent with entries in the Oil Record Book.
- Ask the ship's o□cer how the ship disposes of sludge, ashore or through incineration. Review Oil Record Book entries and verify for method of sludge disposal.
- Be aware that there may be several di□erent tanks used to manage oily bilge water and sludge type wastes. Some sludge tanks are □tted with heating coils that evaporate excess water. Accordingly, these tanks may show less □uid during inspection than the Oil Record Book might indicate.

Incinerator

- Question the ship's crew on how much waste oil and sludge is burnt.
- Verify and compare the capacity of the incinerator against the ship's daily production of sludge oil.
- Examine the vessels engineering log, speci□cally fuel consumption entries, may indicate the accuracy of the quantities expressed in the Oil Record Book.
- Sound and note the level of the source tank. The tank should also be at the proper temperature and circulators if □tted are operating.
- Verify the content of the source tank as sludge. Some investigators have identi□ed the incinerator supply tanks as having been □lled with clean diesel fuel to falsely give the impression of proper operation during testing of the equipment.
- Closely examine the □rebox refractory. Fireboxes that are too clean with minimal deposits may indicate that the equipment is not regularly used. Alternatively, thick carbon deposits throughout the furnace area may indicate excessive heat and running the machine at too high or over capacity. When the unit is used to burn solid wastes, ash and other debris may be indicated on the furnace □oor. The waste oil nozzle should have some carbon deposits which are evidence of use.
- The incinerator should go through its warm-up stage prior to the admission of sludge and pre-sludge burning furnace temperatures are reached.
- Once the proper warm-up temperatures are reached, ensure that the incinerator burns sludge for 15-20 minutes and check for a corresponding drop in the source tank. This drop in tank level is based on the size and con□guration of the source tank, the burn rate of the incinerator, and the duration of the test, it may not be an appreciable amount, but the quantity should be measurable.
- Check the incinerator manual for the manufacturer's list of recommended spare parts inventory. If the ship has few or no spare parts on hand, or if the parts box appears untouched with very old parts in original packaging, it may indicate that the incinerator has not required signi□cant maintenance and may re□ect little usage. Review entries in the Oil Record Book and check for repairs or maintenance done to the equipment.

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Standard Discharge Connection

- Examine the Standard Discharge Connection for evidence of use.
- Review the Oil Record Book for entries indicating shore-side discharge requiring use of the standard discharge connection.
- If the Oil Record Book indicates recent shore-side or barge discharges, then the crew should be able to produce the standard discharge connection quickly and it should show signs of recent use.
- If the Oil Record Book indicates no shore-side discharge and the standard discharge connection shows signs of recent use, such as a clean threaded valve stem, further investigation may be needed.
- Be aware that on occasions, the discharge connection is used with disposable hoses, such as an old □re hose, to pump oily waste and sludge directly overboard. Be concerned if you discover □ttings like a hose barb that would allow a hose without a coupling to be slipped over a pipe section and that would attached to a □ange, or a □ange that adapts the discharge connection to a □re hose coupling. Some investigators have revealed piping segments which extend the connection directly over the side of the vessel and have a special □tting on the outboard end to adapt the hose.

Expanded exam

- Ensure that clear grounds exist to justify a more in depth inspection. It is de□ned by IMO as evidence that the ship, its equipment, or its crew does not correspond substantially with the requirements of the relevant conventions or that the master or crew members are not familiar with essential shipboard procedures relating to the safety of ships or the prevention of pollution.
- Verify that no electrical bypasses, jumpers, or extra switches are con□gured within the Oil Content Meter unit; consult the Oil Content Meter manual and wiring diagram for help in determining this.
- Verify that bilge piping matches approved Oily Water Separator piping diagram to ensure no unauthorized modi□cations. The Oily Water Separator discharge pipe should be opened if illegal bypass are suspected. In such an event, some light residue may be present in the discharge pipe; that is normal since light residues of oil may accumulate in the pipe over time. On the other hand, excessive quantities of oil or build-up of sludge may require further investigation. Bypasses do not always directly involve the Oil Water Separator overboard skin valve. Many creative means have been used to bypass inoperable equipment used in the waste stream. For example, a bilge water bypass to overboard discharge for another system.
- Compare the ship's Safety Management System requirements for Oily Water Separator preventative maintenance against actual maintenance conducted. Request proof /documentation of maintenance completed.
- Check for consumables from Oily Water Separator, receipts of service, technical reports, contractor disposal records, etc.
- Review meter calibration records if available.
- Make note of any cleaning products in the engine room. Some cleaning products may emulsify the oil in the bilge water which may not be compatible with Oily Water

Cont.

Separator equipment, rendering it ine□ective. Consult the Oily Water Separator manual for approved cleaning products.

- Ask crewmembers, preferably not in the presence of the chief engineer, about if/when tank soundings are taken, from which tanks they are taken, and how they are recorded/ transmitted. If the crew provides sounding logs, compare the entries to those recorded in the Oil Record Book for consistency. See 4.5.

INSPECTION OF OIL TANKERS

General inspection of engine room on oil tankers

- Follow description for inspection of engine room above
- Look for control oil on surface of segregated or dedicated clean ballast
- Inspect the condition of pump-room bilges
- Inspect the condition of crude oil washing (COW) system
- Inspect the condition of inert gas (IG) system
- Inspect the condition of monitoring and control system
- Measure the Slop tank contents (estimate quantity of water and oil)

DATA AND COMMUNICATION MEDIA

- Collect data from computers or other ICT equipment on board the bridge or from the captain, mate and ship's engineer
- Seize fax machine records of incoming and outgoing facsimiles of interest
- Collect call signals and telephone numbers on board including any related logbooks.

6. VESSEL DOCUMENTATION CHECKLIST

Documents from Bridge		
1.	Certificate of Registration (Certificate of Registry)	❑
2.	Crew List, Passports, Certificates of Competency, Seaman's Books	❑
3.	Official Log Book	❑
4.	Ships Deck Log	❑
5.	International Safety Management (ISM) Safety Management Certificate, ISM Document of Compliance, ISM Safety Management Manual (relevant sections)	❑
6.	Shipboard Oil Pollution Emergency Plan (SOPEP)	❑
7.	Passage Plan, Charts, Bell Book, GPS Records, Rudder, Course and Position Records	❑
8.	Crew Handover Notes	❑
9.	Crew employment or engagement contracts	❑
10.	Individual officer's working notebooks	❑
11.	Communications Log Book, Telexes and other records	❑
12.	Computer records	❑
13.	Certificate of Insurance or other financial security in respect of civil liability for pollution damage	❑
Documents from Engine Room		
14.	Engine Room Log, including from departure from the last port, Engine Sounding Book (level of oil control), Consumption and stock of oil, Surveillance and control logs according to such equipment onboard	❑
15.	Oil Record Book Part I (and Part II if applicable).	❑
16.	Bunker and Lube Oil Receipts	❑
17.	Port reception facility usage Receipts	❑
18.	Oil Filtering Equipment operation manual, Oil Content Monitoring Equipment operation manuals	❑
19.	Oil Filtering Equipment Maintenance records (Purchase orders/receipts)	❑
20.	UMS Alarm records/printouts	❑
21.	Oil Discharge Monitoring Equipment printouts	❑
22.	Incinerator Log (if installed). Manual, capacity and usage. Incinerator operation manual	❑
23.	Engine room piping diagrams	❑
24.	Tank plans, Tank soundings tables, Tank calibration records	❑
25.	Daily Tank sounding records	❑
26.	Stability calculations	❑
27.	Engineer's daily work record books	❑

Cont.

Documents for tank or cargo control		
28.	Cargo record book and other documentation of cargo presently or recently carried. Drawing of the location of the different tanks and pipelines with their capacities	❑
29.	Oil Record Book Part II - oil/tank cargo - to include the whole cycle for the last cargo (loading/unloading/ handling of ballast/tank cleaning) for at least the last three months	❑
30.	Noxious Liquid Substances Certificate (as appropriate)	❑
31.	Log books including: • Tanker Bill of Lading (last load) • Vessel Survey Report Discharge (last load) • Summary Report (last load) • Shore Tank Reports • Certificate of Quantity • Time Log (last load) • Samples report (for the last load) • Ullage Load port (for the last load) • Ullage Arrival (for the last load) • Residues On Board (ROB)- After discharge • Vessel Experience Factor (VEF) • Letters of protest (for the last load) • Tank Inspections Certificate (for the last load) • Cargo Sounding Book (or Cargo Record Book if not a tanker) • Surveillance and control logs according to such equipment onboard • Cargo specification • Crude Oil Washing (COW) system, general information, advices and log (tankers only) • Receipts/documentation on returned oil/slop • Various other logs from the engine room (bell book, alarm reports, calculation of fuel consumption, etc.)	❑

7. OIL RECORD BOOK PART I – MACHINERY SPACE OPERATIONS

(To be kept on all ships in accordance with the requirements of the International Convention for the Prevention of Pollution from Ships 1973 and its 1978 Protocol, as amended by Resolution MEPC 117(52))

NOTE: Oil Record Book Part I shall be provided to every oil tanker of 150 gross tonnage and above and every ship of 400 gross tonnage and above, other than oil tankers, to record relevant machinery space operations. For oil tankers, Oil Record Book Part II shall also be provided to record relevant cargo/ballast operations.

INTRODUCTION

The following pages of this section show a comprehensive list of items of machinery space operations which are, when appropriate, to be recorded in the Oil Record Book Part I in accordance with regulation 17 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modi□ed by the Protocol of 1978 relating thereto (MARPOL 73/78). 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 Part I, 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 spaces.

Each completed operation shall be signed for and dated by the o□cer or o□cers in charge. The master of the ship shall sign each completed page.

The Oil Record Book Part I contains many references to oil quantity. The limited accuracy of tank Measurement devices, temperature variations and clingage will a□ect the accuracy of these readings. The entries in the Oil Record Book Part I should be considered accordingly.

In the event of accidental or other exceptional discharge of oil statement shall be made in the Oil Record Book Part I of the circumstances of, and the reasons for, the discharge. Any failure of the oil □ltering equipment shall be noted in the Oil Record Book Part I.
The entries in the Oil Record Book Part I, for ships holding an IOPP Certi□cate, shall be at least in English, French or Spanish. Where entries in o□cial language of the State whose □ag the ship is entitled to □y are also used, this shall prevail in case of a dispute or discrepancy.

The Oil Record Book Part I 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 the ship. It shall be preserved for a period of three years after the last entry has been made.

The competent authority of the Government of a Party to the Convention may inspect the Oil Record Book Part I on board any ship to which this Annex applies while the ship is in its port or o□shore terminals 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 certi□ed by the master of the ship as a true copy of an entry in the Oil Record

Cont.

Book Part I shall be made admissible in any juridical proceedings as evidence of the facts stated in the entry. The inspection of an Oil Record Book Part I and the taking of a certified copy by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

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. Cleaning process:
    a. position of ship and time at the start and completion of cleaning;
    b. identify tank(s) in which one or another method has been employed (rinsing through, steaming, cleaning with chemicals; type and quantity of chemicals used, in m^3);
    c. identity of tank(s) into which cleaning water was transferred.
4. Ballasting:
    a. position of ship and time at start and end of ballasting;
    b. quantity of ballast if tanks are not cleaned, in m^3.

(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:
    a. through 15 ppm equipment;
    b. to reception facilities.
10. Quantity discharged, in m^3.

(C) Collection and disposal of oil residues (sludge and other oil residues)

11. Collection of oil residues
    Quantities of oil residues (sludge and other oil residues) retained on board. The quantity should be recorded weekly*: (This means that the quantity must be recorded once a week even if the voyage lasts more than one week)
    a. identity of tank(s)
    b. capacity of tank(s) m^3
    c. total quantity of retention m^3 ;
12. Methods of disposal of residue State quantity of oil residues disposed of, the tank(s) emptied and the quantity of contents retained in m^3;
    a. to reception facilities (identify port) **;
    b. transferred to another (other) tank(s) (indicate tank(s) and the total content of tank(s));
    c. incinerated (indicate total time of operation);
    d. other method (state which).

(D) Non-Automatic discharge overboard or disposal otherwise of bilge water which has accumulated in machinery spaces

13. Quantity discharged or disposed of, in cubic metres***.
14. Time of discharge or disposal (starts and stop).

Cont.

15. Method of discharge or disposal:
    a. through 15 ppm equipment (state position at start and end);
    b. to reception facilities (identify port**;
    c. transfer to slop tank or holding tank (indicate tank(s); state the total quantity retained in tank(s), in m^3).

(E) Automatic discharge overboard or disposal otherwise of bilge water which has accumulated in machinery spaces

16. Time and position of ship at which the system has been put into automatic mode of operation for discharge overboard, through 15ppm equipment.
17. Time when the system has been put into automatic mode of operation for transfer of bilge water to holding tank (identify tank).
18. Time when the system has been put to manual operation.

(F) Condition of the oil filtering equipment

19. Time of system failure****.
20. Time when system has been made operational.
21. Reasons for failure.

(G) Accidental or other exceptional discharges of oil

22. Time of occurrence.
23. Place or position of ship at time of occurrence.
24. Approximate quantity and type of oil.
25. Circumstances of discharge or escape, the reasons therefore and general remarks.

(H) Bunkering of fuel or bulk lubricating oil

26. Bunkering:
    a. Place of bunkering.
    b. Time of bunkering.
    c. Type and quantity of fuel oil and identity of tank(s) (state quantity added, in tonnes and total content of tank(s)).
    d. Type and quantity of lubricating oil and identity of tank(s) (state quantity added, in tonnes and total content of tank(s)).

(I) Additional operational procedures and general remarks

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* Tanks listed in item 3.1 of Form A and B of the Supplement to the IOPP Certificate used for sludge.

** Ship's masters should obtain from the operator of the reception facilities, which include barges and tank trucks, a receipt or certificate detailing the quantity of tank washings, dirty ballast, residues or oily mixtures transferred, together with the time and date of the transfer. This receipt or certificate, if attached to the Oil Record Book Part I, may aid the master of the ship in proving that his ship was not involved in an alleged pollution incident. The receipt or certificate should be kept together with the Oil Record Book Part I.

*** In case of discharge or disposal of bilge water from holding tank(s), state identity and capacity of holding tank(s) and quantity retained in holding tank.

**** The condition of the oil filtering equipment covers also the alarm and automatic stopping devices, if applicable.

8. OIL RECORD BOOK PART II – CARGO/BALLAST OPERATIONS

(To be kept on all Oil Tankers in accordance with the requirements of the International Convention for the Prevention of Pollution from Ships 1973 and its 1978 Protocol, as amended by Resolution MEPC 117(52))

NOTE: Every oil tanker of 150 gross tonnage and above shall be provided with Oil Record Book Part II to record relevant cargo/ballast operations. Such a tanker shall also be provided with Oil Record Book Part I to record relevant machinery space operations.

INTRODUCTION

The following pages of this section show a comprehensive list of items of cargo and ballast operations which are, when appropriate, to be recorded in the Oil Record Book Part II in accordance with regulation 36 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modi□ed by the Protocol of 1978 relating thereto (MARPOL 73/78). The items have been grouped into operational section, each of which is denoted by a code letter.

When making entries in the Oil Record Book Part II, 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 spaces.

Each completed operation shall be signed for and dated by the o□cer or o□cers in charge. Each completed page shall be countersigned by the master of the ship.

In respect of the oil tankers engaged in speci□c trades in accordance with regulation 2.5 of Annex I of MARPOL 73/78, appropriate entry in the Oil Record Book Part II shall be endorsed by the competent port State authority (This sentence should only be inserted for the Oil Record Book of a tanker engaged in a speci□c trade).

The Oil Record Book contains many references to oil quantity. The limited accuracy of tank measurement devices, temperature variations and clingage will a□ect the accuracy of these readings. The entries in the Oil Record Book Part II should be considered accordingly.

In the event of accidental or other exceptional discharge of oil a statement shall be made in the Oil Record Book Part II of the circumstances of, and the reasons for, the discharge. Any failure of the oil discharge monitoring and control system shall be noted in the Oil Record Book Part II.

The entries in the Oil Record Book Part II, for ships holding an IOPP Certi□cate, shall be at least in English, French or Spanish. Where entries in an o□cial language of the State whose □ag the ship is entitled to □y are also used, this shall prevail in case of a dispute or discrepancy.

The Oil Record Book Part II 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 the Ship. It shall be preserved for a period of three years after the last entry has been made.

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The competent authority of the Government of a Party to the Convention may inspect the Oil Record Book Part II on board any Ship to which this Annex applies while the Ship is in its port or offshore terminals 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 Oil Record Book Part II shall be made admissible in any juridical proceedings as evidence of the facts stated in the entry. The inspection of an Oil Record Book Part II and taking of a certified copy by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

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 (state quantity added, in m^3 at 15^oC and the total content of tank(s) in m^3).

(B) Internal transfer of oil cargo during voyage

4. Identity of the tank(s)
    a. From:
    b. To: (state quantity transferred and total quantity of tank(s), in m^3).
5. Was (were) the tank(s) in 4.1 emptied? (If not, state quantity retained, in m^3).

(C) Unloading of oil cargo

6. Place of unloading.
7. Identity of tank(s) unloaded.
8. Was (were) the tank(s) emptied? (If not, state quantity retained, in m3).

(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*.
11. Number of machines in use.
12. Time of start of washing.
13. Washing pattern employed **.
14. Washing line pressure.
15. Time washing was completed or stopped.
16. State method of establishing that tank(s) was (were) dry.
17. Remarks***.

(E) Ballasting of cargo tanks

18. Position of ship at start and end of ballasting.
19. Ballasting process:
    a. identity of tank(s) ballasted;
    b. time of start and end; and
    c. quantity of ballast received. Indicate total quantity of ballast for each tank involved in the operation, in m^3).

Cont.

(F) Ballasting of dedicated clean ballast tanks (CBT tankers only)

20. Identity of tank(s) ballasted.
21. Position of ship when water intended for □ushing, or port ballast was taken to dedicated clean ballast tank(s).
22. Position of ship when pump(s) and lines were □ushed to slop tank.
23. Quantity of the oily water which, after line □ushing, is transferred to the slop tank(s) or cargo tank(s) in which slop is preliminarily stored (identify tank(s)). State the total quantity, in m3.
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, in m^3.

(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****.
31. Tank washings transferred to:
    a. Reception facilities (state port and quantity, in m^3)*****; and
    b. Slop tank(s) or cargo tank(s) designated as slop tank(s) (identify tank(s); state quantity transferred and total quantity, in m^3).

(H) Discharge of dirty ballast

32. Identity of tank(s).
33. Time and position of ship at start of discharge into the sea.
34. Time and position of ship on completion of discharge into the sea.
35. Quantity discharged into the sea, in m^3.
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 e□uent and the surface of the water in the locality of the discharge?
39. Quantity of oily water transferred to slop tank(s) (identify slop tank(s)). State total quantity, in m^3.
40. Discharged to shore reception facilities (identify port and quantity involved, in m^3)*****.

(I) Discharge of slop tanks into the sea

41. Identity of slop tanks.
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, in m^3 and rate of discharge, in m^3/hour.
48. Final quantity discharged, in m^3 and rate of discharge, in m^3/hour.
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, in metres.

Cont.

52. Ship's speed(s) during discharge.
53. Was a regular check kept on the e□uent and the surface of the water in the locality of the discharge?
54. Con□rm 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 tanks.
56. Quantity disposed of from each tank. (State the quantity retained, in m^3).
57. Method of disposal:
    a. To reception facilities (identify port and quantity involved)*****;
    b. Mixed with cargo (state quantity);
    c. Transferred to (an)other tank(s) (identify tank(s); state quantity transferred and total quantity in tank(s), in m^3); and
    d. Other method (state which); state quantity disposed of, in m^3.

(K) Discharge of clean ballast contained in cargo tanks

58. Position of ship at start 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 di□erent from 58.
62. Was a regular check kept on the e□uent 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, in m^3:
    a. Into the sea; or
    b. 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, in m^3, and type of oil.
76. Circumstances of discharge or escape, the reasons therefore and general remarks.

(O) Additional operational procedures and general remarks

Cont.

Tankers engaged in specific trades

(P) Loading of ballast water

77. Identity of tank(s) ballasted.
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 o□cial.

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* 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.

** 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.

*** If the programmes given in the Operations and Equipment Manual are not followed, then the reasons must be given under Remarks.

**** Hand hosing, machine washing and/or chemical cleaning. Where chemically cleaned, the chemical concerned and amount used should be stated.

***** Ships' masters should obtain from the operator of the reception facilities, which include barges and tank trucks, a receipt or certificate detailing the quantity of tank washings, dirty ballast, residues or oily mixtures transferred together with the time and date of the transfer. This receipt or certificate, if attached to the Oil Record Book Part II, may aid the master of the ship in proving that his ship was not involved in an alleged pollution incident. The receipt or certificate should be kept together with the Oil Record Book Part II.

9. EXAMPLE OF WORKSHEETS FOR COMPARISON OF VESSEL RECORDS

As shown on page 26, it can be useful to compare certain records to discover inconsistencies. The charts can easily be created in for example Excel by inserting a set of data as shown below.

Location	Date	Bilge Water Holding Tank (m^3)	
At sea/In port (Optional)	DD/MM/YY	Tank Sounding Sheet	ORB
	01/01/07		
	02/01/07		
	03/01/07		
	04/01/07		
	05/01/07		
	06/01/07		
	07/01/07		
	08/01/07		
	09/01/07		
	10/01/07		
	11/01/07		
	12/01/07		
	13/01/07		
	14/01/07		
	15/01/07		
	16/01/07		
	17/01/07		
	18/01/07		
	19/01/07		
	20/01/07		
	21/01/07		
	22/01/07		
	23/01/07		
	24/01/07		
	25/01/07		
	26/01/07		

Location	Date	Separated Bilge Oil Tank (m^3)	
At sea/In port (Optional)	DD/MM/YY	Tank Sounding Sheet	ORB
	01/01/07		
	02/01/07		
	03/01/07		
	04/01/07		
	05/01/07		
	06/01/07		
	07/01/07		
	08/01/07		
	09/01/07		
	10/01/07		
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	17/01/07		
	18/01/07		
	19/01/07		
	20/01/07		
	21/01/07		
	22/01/07		
	23/01/07		
	24/01/07		
	25/01/07		
	26/01/07		

10. INTERVIEW GUIDANCE

TACTICAL INVESTIGATION – INTERVIEWS

It may be appropriate to wait for the interviews of the personnel on board the ship before taking oil samples. The outcome of the questioning may indicate where the most relevant places to take samples are.

- Interview of the Captain
- Interview of the person in charge on the bridge when the incident occurred. (If other than captain)
- Interview of relevant crew members (either deck department and/or engine department)
- Interview of the cargo owner/client
- Interview of the vessel owner/employer

Information pertaining to the hierarchy of a vessel may be found on crew lists and on the vessel's Station Bill. The following is a generic vessel crewmember hierarchy lowest level to higher level excluding Stewards department personnel. Note that name may vary depending on the company and the flag of the vessel:

Deck Department	**Engine Department**
Ordinary Seamen	Wiper
Able Bodied Seamen	Oiler aka QMED
Bosun	Junior Engineer (not all vessels)
Pump man (tank ships only)	Cadet
Cadet	Electrician (not all vessels)
Third Mate	Third Assistant Engineer
Second Mate	Second Assistant Engineer
Chief Mate / First Mate	First Assistant Engineer
Captain	Chief Engineer

Establish the following:

- owner, captain and the crew's general level of competence, contractual employment relationship, specific knowledge about the vessel and sea duty
- knowledge about the specific route travelled, weather conditions and other circumstances in the period when the discharge incident probably occurred
- knowledge about oil cargo, including loading/unloading and keeping of logs (oil tankers only)

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Cont.

- knowledge about bunkers and other necessary oils on board, including □lling, consumption, slop procedures and return of slop
- knowledge information of other activities on board the vessel (e.g. deck cleaning, using repairing machines containing oil)
- knowledge about the discharge incident, including details on who, what, where, when, how the incident occurred, explanatory models
- knowledge about implemented preventive measures during/after the incident, including details on who, what, where, when and how at all stages

Oil Record Book – Part I, establish or identify:

- whether a discharge (accidental or intentional) occurred at the time indicated on the incident report
- if the bilge discharge is controlled automatically and, if so, identify the times that this system was last put into operation and what times this system was last put on manual mode
- date and time of the last bilge discharge
- date of the last disposal of residue and disposal method
- normal practices for discharge of bilge water directly to the sea, or to store bilge water □rst in a collecting tank (Identify the collecting tank). Whether oil fuel tanks have been used as ballast tanks.

Oil Record Book – Part II, establish or identify:

- state of cargo/ballast tanks on the ship at the time for departure from last port
- equivalent state of tanks when the ship arrived at the current harbour/port
- last loading of the ship, last unloading of the ship, last discharge of contaminated ballast and last cleaning of cargo tanks (date/time and location)
- last cleaning of crude oil and which tanks
- last decanting of slop tanks
- size of the ullage of the slop tanks and the corresponding height of interface which tanks contained contaminated ballast on the ballast voyage (if the ship arrived with ballast) which tanks contained clean ballast on the ballast voyage (if the ship arrived with ballast)

Additional information may also be pertinent:

- details of the present voyage of the ship (previous ports, next ports, trade)
- contents of oil fuel and ballast tanks
- previous and next bunkering, type of oil fuel
- availability or non-availability of reception facilities for oily wastes during the present voyage

Cont.

- internal transfer of oil fuel during the present voyage
- comments on the condition of the vessel's equipment
- comments in respect of the discharge/pollution report.

THE INTERVIEW PROCESS

1. Create a relaxed atmosphere – introduce yourself and shake hands – be polite and friendly, treat witnesses with respect
2. Prepare the witness – describe the purpose of the interview i.e. to prevent accidents and not to assign blame; explain that witnesses can be interviewed more that once; stress how important the facts given during interviews are to the overall investigative process
3. Record information – to avoid you and the witness becoming distracted, rely on another investigator (or some third party) to provide a detailed record of the interview – it's sometimes worth you making a point of recording certain pieces of vital evidence volunteered by the witness i.e. just politely ask "are you saying such and such?" and noting it and the response in your note book
4. Establish a line of questioning and stay on track during the interview – don't keep changing the subject
5. Ask the witness to describe the incident in full (and without you interrupting) before asking a structured set of questions – let the witness tell things in his or her own way - start with something like "would you like to tell me about…?" - if the incident site is safe (say the bridge following a navigational or a near-collision incident take the witness there and ask him or her to describe what happened – being there often jogs the memory)
6. Ask several witnesses similar questions to corroborate facts – also ask questions that explore in more detail what others have said – remember not everyone will know everything and, depending on the viewpoint, will see things in slightly di□erent ways – in addition you may need to probe for missing or scanty information
7. Aid the interviewee with reference points e.g. "how did the lighting compare to this room..?"
8. Use visual aids such as photographs, drawings, maps, and graphs to assist witnesses – it is also useful sometimes to ask the witness to draw his or her own drawing in order to clarify a point
9. Give the witness feedback – restate and perhaps rephrase key points – your own body language must be positive too
10. Observe and note how replies are given - voice in□ections, gestures, expressions – arms folded across the body is surely a defensive sign
11. Ask open-ended questions that generally require more than just a simple "yes" "no" answer
12. Never make promises that you cannot keep i.e. unrestricted con□dentiality – there are no deals to be made.

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ADDITIONAL GENERAL GUIDANCE FOR INTERVIEWING

1. Stop talking – you cannot listen if you are talking
2. Put the witness at ease – help the witness feel that he or she is free to talk and will be listened to and that their view matters
3. Show that you want to listen – look and act interested – listen to understand what is being said rather than concentrating on your next question
4. Remove distractions – don't doodle or jangle change in your pocket, or give the impression you are not listening or that you would rather be elsewhere -
5. Empathise – try to put yourself in the other person's place – hindsight is wonderful but he or she had only certain facts to go on at the time and it is these that you must establish – what made the witness do what he or she did or did not do?
6. Be patient – allow plenty of time and do not interrupt
7. Keep your temper – any impatience or anger can pass the initiative from you to the witness
8. Avoid argument and criticism – this simply causes the witness to become defensive,
9. Try and make your questions □ow responsively – it shows you're listening and that you understand – try not to break the continuity (you can always return to other issues later)

STOP TALKING – this is the □rst and last suggestion.

Use of Interpreters

1. No language translates exactly into another language – while words may have some equivalents, the use of grammar or simple terminology may render a full understanding nearly impossible
2. The lack of a common working language on board a vessel can have serious consequences particularly in a control room environment
3. In investigations too, a lack of understanding brought about by the bi- or multi-lingual nature of vessel's crew's can seriously impede the investigative process
4. It is therefore vital to employ a properly quali□ed translator or interpreter
5. Where possible an interpreter o□cially recognised by a government or other reputable organisation is to be preferred over one who isn't
6. While this may seem obvious, the interpreter must be □uent in both the language and the dialect concerned as well as being absolutely □uent in English
7. The interpreter must be able to grasp technical marine terms and it may be necessary to arrange a pre-meeting at which a list or index of technical terms is agreed and appropriate translations found
8. The interpreter must be able to accurately transmit the information to the witness as well as re□ecting particular nuances of expression
9. Conversely the interpreter must be able to recognise any idiosyncrasies in the answers and draw them to the attention of the interviewer
10. Your questions should be directed at the witness not at the interpreter

Cont.

11. The interpreter should therefore sit to one side of both the interviewer and the witness so that by simply turning his head one way or the other he or she can follow the ebb and □ow of the conversation
12. You should never refer to the witness in the third person or ask the interpreter to "ask him" or "ask her"
13. You should agree with the interpreter the length of phrases that you should use before the interpretation takes place
14. Don't interrupt the interpreter – let him or her □nish then follow-up if necessary

An interpreter should therefore:

- Act as a vehicle between you and the witness
- Imitate your voice in□ection and gestures as closely as possible
- Not carry out any conversation with the witness other than directed by you
- Pass on faithfully everything the witness said, including trivial remarks and exclamations
- Not evaluate the conversation for him or herself

Using an interpreter will often double or even treble the time an interview normally takes. It will also take much additional patience. When the witness has left ask the interpreter's assessment of the witness.

STEPS TO IMPROVE LISTENING SKILLS

1. Concentrate
2. Do not interrupt at any stage
3. Attentive silence – when a witness stops talking and the investigator says nothing it often prompts the witness into thinking that he or she should add more, or rephrase something. This can lead to the disclosure of information the witness was reluctant to divulge.
4. Pay attention to non-verbal cues, body language and how the witness physically reacts to questions
5. Remain utterly neutral – do not pass judgement
6. Listen to everything – from that almost "throw-away" comment often said "under the breath" the investigator may detect the real and underlying reason why someone did something
7. Listen to why the message is being given – listen for underlying emotions, attitudes and prejudices
8. Encourage – use non-verbal methods of communication i.e. nodding the head, leaning forward, making positive eye contact and avoid crossing your arms (that's a defensive stance)
9. Minimise note-taking to allow for concentration – the use of a second member of the team allows the lead interviewer to increase his/her attention span

11. VESSEL SAMPLING CHECKLIST

Note: sampling to be conducted in accordance with national standards or established procedures.

SAMPLING GENERAL		
1	Examine ship Oil Record Book and piping diagrams	❑
2	Identify tanks and bilge well/holding tanks to be sampled	❑
3	Check levels and contents. Compare with consumption and stock of oil/intentional slops)	❑
4	Take samples from all appropriate tanks and spaces: Note: for slop tanks, identify the level of the oil/water interface, the quantity of slop oil and the quantity of water in each slop tank. Also take special care to obtain representative samples from slop tanks and bilges, where the composition of the oil may vary from place to place	❑
	All bilges and bilge wells	❑
	Bilge water holding tank (note if no bilge water holding tank is installed)	❑
	Waste oil and sludge tanks (the ship may have several)	❑
	Empty tanks (swab residues)	❑
	Overflow tank for bunker oil	❑
	Fuel and lube oil purifier sludge tanks	❑
	Empty bunker tanks (which may have been used for water ballast)	❑
	Service tanks (day tanks) for the engines	❑
	OWS outlet piping/Sludge pump outlet piping	❑
	Other pumps outlet piping	❑
	Fuel oil tanks (only fuel used during voyage being investigated)	❑
	Engine room cleaning agents	❑
5	Inspect the bilge water separating/filtering equipment (note the liquid content at the test cocks, request opening of the filtering unit if saturation may be expected).	❑
6	Inspect the tank top for accumulation of oil and sludge.	❑
7	Note the type of cleaning agent used in the engine room and the claimed rate of consumption.	❑
8	Use clean glass jars. Write identification information on jar label	❑
9	Take samples between 10-100mls (at least)	❑
10	Secure lid	❑
11	Write details on continuity documentation matching identification of a ll samples	❑
12	Place in evidence bag or some other secure container	❑
13	Adhere security labels if appropriate	❑
14	Samples handled by authorized personnel	❑
15	Identify where samples are to be sent (e.g. laboratory)	❑
16	If samples transferred, custody records to be maintained	❑
STORAGE/SHIPMENT		
17	Samples stored cool, dark, secure place	❑
18	Evaporative substances or oil/water samples stored in refrigerator or kept cool	❑
19	Arrange for delivery or transport of samples	❑
20	Samples sent to laboratory without delay	❑

12. GUIDANCE FOR INVESTIGATIONS ASHORE

- Analyses of oil samples by laboratory
- Additional information on the vessel, obtained from oil terminal sta, tank cleaning contractors or shore reception facilities may be pertinent
- Examine PSC records for the vessel and identify any de ciencies or detentions relation to MARPOL Annex I
- Where clean up of the discharge has been undertaken, an analysis of the amount of oil recovered
- Identify other vessels in the eet and consider boarding for obtaining evidence of eet wide practices
- Obtain information on the nancial aspects of the owner/company
- Examine vessel documentation for nancial evidence of maintenance activity onboard the vessel
- Collection of any evidence of environmental damage
- Consider plotting the vessel's voyage date (GPS position) on a GIS image to produce a simple map to show the court where the ship has travelled
- Consider undertaking oil spill computer modelling to provide output to show the prediction of the oil movements on the sea

13. EXAMPLES OF LETTER OF UNDERTAKING FOR FINANCIAL SECURITY

Example from Australia

TO: (Relevant Agency)

Dear Sir/Madam

VESSEL: .....

INCIDENT: (Suspected) oil discharge/spill at ..... (port or location) on .... (date)

CLAIM: Recovery of amount of loss, damage, costs and expenses under ..(relevant legislation) and/or Recovery of penalties under the …..(relevant legislation)

In consideration of your refraining from taking any action resulting in detention or arrest of the abovementioned vessel or any other vessel or property in the same ownership, associated ownership or management for the purpose of obtaining security in respect of the abovementioned claim against the Master and/or Owners or another Crew Person of the abovementioned vessel concerning the incident referred to above, we the .... (Club's name) undertake to pay to you on demand such sums as may be mutually agreed or □nally adjudged by a court of competent jurisdiction to be recoverable from the Master and/or Owners or any other Crew Person of the abovementioned vessel in respect of the said claim, interest and costs provided that the total of the Master's and/or Owners' or other Crew Person aggregate liability hereunder shall not exceed the sum of $..... ..... (amount in □gures), ... (amount in words) inclusive of interest and costs.

This undertaking is subject to the Master's and Owners' right to limit liability in accordance with any applicable international convention.

We undertake that we will within fourteen (14) days of receipt from you or your solicitor's request so to do, instruct solicitors to accept on behalf of the Master and Owners of the ..... (vessel) service of proceedings brought by you in a court of competent jurisdiction in (this country). We warrant that we have received irrevocable authority from the Owners of the .....(vessel) and other Crew Person/s to instruct solicitors accordingly.

This undertaking shall be governed in accordance with the laws of the (this country)

Yours faithfully

(P&I Club name)

(Date)

Cont.

Example from United States

Reference: (vessel name)

Alleged Violations of [Relevant legislation]

(date and location)

To Master/Owners

The [Agency, Country] alleges it has reasonable cause to believe that the [Vessel name] violated [Relevant legislation & list of alleged violations].

The [Agency, Country] further alleges that a civil penalty of $……. or more in connection with the Alleged Violations pursuant to [Relevant legislation], may be assessed against the Vessel in rem or its owner or operator in person.

In consideration of the [Agency, Country] not withholding clearance of the Vessel to depart from the port on account of these Alleged Violations, the undersigned Association agrees, vessel lost or not lost, and regardless of its condition, as follows:

1. Subject to any right of appeal, to pay any civil penalty which may be adjudged against the Vessel or her owners or operators, for such Alleged Violations, not exceeding [$…….. amount in words and □gures], or any lesser amount decreed or settled between the parties without □nal decree being rendered, for subject Alleged Violations and referenced laws and regulations.

2. Upon written demand, to □le in any action an approved corporate surety in the form of a stipulation to abide by any award in an amount not to exceed [$……amount in words and □gures]. The undersigned Association may also at its election substitute an approved corporate surety acceptable to the [Agency, Country] at any time hereafter. The selected corporate surety approved by the [Agency, Country] shall be bound by all terms of this agreement in the same manner as the undersigned Association.

3. In the event the surety referred to under Paragraph 2 is □led in said action, the undersigned shall have no further obligation hereunder.

4. This letter, and all assurances provided hereunder, shall expire upon payment of any sum deemed by any court or tribunal to be owed to the [Agency Country] for claims in the action, or upon a determination by said court or tribunal that the [Agency, Country] is owed nothing in the action.

5. ….. is authorized to accept service of any correspondence or legal papers related to these Alleged Violations on behalf of the Vessel, or its owner or operator, who agree to enter appearances in any action brought against them by the [Agency, Country] concerning the Alleged Violations, and to defend the Vessel from any in rem claim asserted against it.

6. This letter is to be binding whether the Vessel be in port or not in port, lost or not lost, and regardless of its condition, and is given without prejudice as to all rights or defenses which the Vessel and/or its owner and/or its operator may have, non of which is to be regarded as waived, except the owner and operator agree to waive any objections to in personam jurisdiction over them, and in rem jurisdiction over the

Cont.

Vessel, with respect to the potential claims of the [Agency, Country] described above, in the [Country] District Court for the District of [Country] .

7. If the owner, or operator, fail to appear as required by Paragraph 5 or fail to waive objections to jurisdiction as required by Paragraph 6, then the undersigned Association agrees to pay to [Agency, Country] the full amount of this letter of undertaking.

8. It is understood and agreed that the execution of this letter by an attorney from …….. Shall not be construed as binding upon him personally nor binding upon the rm of ……., but is to be binding only upon the …… which has authorised …….. to execute this letter on its behalf.

By:

As attorney-in-fact for the

Pursuant to authorization on (date).