MARPOL Annex I

USCG inspectors and industry working together for a cleaner, greener environment.

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The International Convention for the Prevention of Pollution from Ships

The International Convention for the Prevention of Pollution from Ships, commonly known as the MARPOL 73/78 convention, was created primarily in reaction to a major oil spill resulting from the 1967 grounding of the tanker *Torrey Canyon* in the English Channel. Although international conventions to reduce pollution already existed prior to the *Torrey Canyon* grounding, these conventions were aimed at routine shipboard operations, but did little to address accidental pollution discharges. To remedy this, many operational requirements of the existing conventions were left in place, and ship design standards were added during the development of MARPOL 73/78 to reduce accidental discharges. One significant requirement limited the size of cargo tanks on tankers so the effects of single-tank damage would be limited.

By 1983, after much deliberation, the MARPOL 73/78 convention entered into force. MARPOL currently contains six annexes, each of which is concerned with preventing pollution from various shipboard operations. MARPOL Annex I specifies requirements that specifically prevent pollution from oil. As such, Annex I sets forth a comprehensive list of requirements that include control of the vessel's cargo handling operations, the design and construction of the vessel, and equipment specifications to reduce the occurrence of oil discharge.

In the United States, the pollution prevention requirements contained in MARPOL Annex I are verified and enforced on foreign vessels during a Coast Guard port state control (PSC) exam. Coast Guard policy to enforce MARPOL Annex I is contained in G-PCV Policy Letter 06-01 and also in Navigation and Inspection Circular 06-03, Change 2.[1]

Promulgated in January 2006, G-PCV Policy Letter 06-01 outlines MARPOL Annex I examination procedures for Coast Guard port state control officers (PSCO). The MARPOL Annex I exam begins with a review of required documentation, including the international oil pollution prevention (IOPP) certificate, the oil record book, and the shipboard oil pollution emergency prevention plan (SOPEP).

Vessels required to comply with MARPOL Annex I are issued an international oil pollution prevention certificate. The certificate details the ship's arrangement and equipment for meeting Annex I requirements. During a port state control exam, the port state control officer examines the certificate for validity and verifies the vessel's name and registry. Exemptions and equivalencies are carefully noted. The officer then verifies that the vessel's arrangement matches what is listed on the IOPP certificate.

The PSCO also reviews the engineer's oil record book. This book must document all shipboard oil transfer and discharge operations. It must also contain documentation for machinery space operations as well as entries documenting the ballasting and cleaning of oil fuel tanks, disposal of oily residues, and discharge overboard or disposal of bilge water that accumulated in machinery spaces. Additionally, on oil tankers, the oil record book must also contain entries recording cargo and ballast operations, loading and unloading of cargo oil, cleaning of cargo oil tanks, and dis-

Figure 1: This overboard discharge valve should be examined for loose bolts, splattered oil on the valve stem, and evidence of recent work, like greasy handprints and chipped paint. USCG photo.

posal of cargo tank residues.

During a PSC exam, the PSCO checks for irregularities. Common irregularities found in the oil record book include dates out of order, missing pages, repetitive entries, and significant differences in tank levels than were recorded in earlier entries. Oil tankers 150 gross tons and above are required to carry cargo monitors that provide continuous recordings of oil discharges from slop tanks. If the discharge monitor is equipped with an automatic recording device, the port state control officer reviews the dates, times, and concentration of discharges recorded in the oil record book and compares that to the recording from the oil discharge monitor. The port state control officer vigilantly searches for entries that may indicate tampering with the automatic recording devices.

Finally, the PSCO reviews the shipboard oil pollution emergency plan to ensure it is approved by the vessel's flag state. The officer will then verify that pollution response equipment listed in the SOPEP is aboard the vessel and in serviceable condition.

Examination of Required Equipment

Once a thorough review of the required documentation is completed, the port state control officer proceeds to the engine room and machinery spaces to verify the condition of the required equipment. Upon entry to the machinery spaces, a PSCO will form a general impression of the cleanliness of the engine room and all equipment contained within it. Leaking fuel oil lines, excessive oily water in the bilge, and disassembled equipment will often indicate problems with the vessel's oil pollution prevention equipment.

One of the most important pieces of pollution prevention equipment required by MARPOL Annex I is the oily water separator (OWS). All vessels greater than 400 gross tons and oil tankers greater than 150 gross tons are required to have an oily water separator. This is used to make clean water from oil-contaminated bilge and ballast water. The oily water separator can use several methods to clean the contaminated water. Regardless of the method, in order for the OWS to be approved in accordance with MARPOL standards, it must reduce the oil content in the discharged water to no more than 15 parts per million.

During a port state control exam, the PSCO will ask the vessel's crew to perform an operational test of the oily water separator. If the crew has trouble demonstrating the proper operation of the equipment, this could indicate infrequent use. If conditions aboard the vessel indicate that more frequent use of the OWS equipment is required, the PSCO looks for indications of improper disposal of oil-contaminated bilge water (Figure 1). A typical operational test of the oily water separator lasts no longer than 15-20 minutes and should follow the written test procedures indicated by the manufacturer. During the operational test, the port state control officer ensures that the fluid entering the oily water separator is coming directly from the bilge holding tank or rose box[2] and that it is not diluted by an open sea or fresh water connection prior to entering the OWS. The PSCO also makes an effort to verify that the discharge processed by the OWS is visibly clean and that no surface oil is visible.

Ships of 10,000 gross tons or more are required to have an oil content meter, or OCM (Figure 2). This is an electronic sensing device that measures the content of oil in the discharge processed through the oily water separator. Port state control officers witness an operational test of this meter, usually at the same time as the oily water separator test. The PSCO closely examines the oil content meter for signs of tampering such as simple electrical modifications or bypasses. The officer then ensures that the sample analyzed by the OCM is actually oily water separator output by tracing the sample line. An operational test of the oil content meter will never involve tripping of the sensor with sticks, coffee, or tea. Only the equipment manufacturer's specified test procedure or the vessel's written procedure is used to verify the condition of the oil content meter.

A check of the vessel's sludge tank is then conducted to ensure that the level of sludge corresponds to entries made in the oil record book. The sludge tank stores oil residue, sludge, or waste oil that is typically left over from processing oily water through the OWS and from other sources like the fuel oil and lube oil purifiers.

Investigating Violations of MARPOL Annex I

When a port state control officer discovers possible violations of the MARPOL Annex I requirements, there are several options to take depending on the gravity of the violation. Minor deficiencies might include discrepancies on the IOPP certificate or missing signatures

in the oil record book. These discrepancies can often be corrected on the spot or forwarded to the vessel's flag state administration for correction. More serious violations, such as a crew's failure to demonstrate proper operation of the oily water separator, can result in detention of the vessel. In cases where the vessel is detained, it is not allowed to leave port until it rectifies the deficiency. In most situations, vessel operators do not like to have their ship detained, since this can result in significant unexpected delays and financial cost.

In the most egregious of MARPOL Annex I violations—those types that are willful violations of the requirements—criminal charges are pursued (see *Proceedings*, Winter 2004-2005, Vol. 61, No. 4, "The Trail of Environmental Crimes," at www.uscg.mil/proceedings).

In recent years, criminal cases have been pursued against unscrupulous vessel operators and crew who have willfully bypassed the oily water separator and pumped unfiltered oily bilge water directly into the sea. In almost all these cases, fraudulent entries were made in the vessel's oil record book indicating the oily bilge water was processed through the OWS. The fraudulent entries in the official record (the oil record book) represent a false statement when it is presented to a port state control officer. Criminal investigations into willful MARPOL Annex I violations often require a coordinated investigation conducted by the local Coast Guard sector, the Coast Guard Investigative Service, and the Department of Justice.

Measures to Improve MARPOL Annex I Compliance

Commercial vessel owners and operators are using several methods to improve shipboard compliance with MARPOL Annex I. One method involves creating an environmental compliance program (ECP), which includes a comprehensive system to verify MARPOL Annex I compliance. A typical environmental management system (EMS) documents incorporate policies and procedures, establishes the use of outside consultants to access performance, and implements the use of non-regulatory practices.

In most cases, the use of an ECP/EMS is mandated as the result of a conviction in a criminal prosecution for an environmental crime. However, many progressive and environmentally conscious ship owners and operators have proactively implemented an ECP/EMS to improve and ensure compliance with MARPOL Annex I. A successful ECP/EMS contains many elements and usually includes non-regulatory practices. Examples of non-regulatory practices include:

- the use of a numbered seal program to track and record the opening and closing of valves related to the bilge, oil waste, and sludge management system;
- installation of piping modifications that allow full operational testing of the oily water separator and oil content meter without risk of an oil discharge;
- consultation with vessel engineers to determine bilge loads, sludge accumulations, storage capabilities, and the performance of pollution prevention equipment.

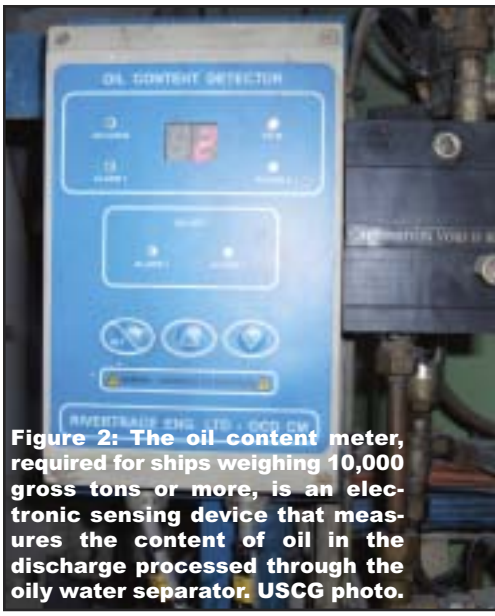

Figure 2: The oil content meter, required for ships weighing 10,000 gross tons or more, is an electronic sensing device that measures the content of oil in the discharge processed through the oily water separator. USCG photo.

If a vessel operator encounters a facility that has inadequate MARPOL reception facilities, the operator should make a timely and detailed report to the local Coast Guard captain of the port (COTP). Per 33 CFR 158.167, any person may report inadequate reception facilities to the local Coast Guard COTP. Reports may be made orally, in writing, or by telephone. Reports may also be anonymous and after the fact. However, the more timely and detailed the report, the better the chance for the Coast Guard to correct the reported inadequacy.

Strict compliance with the requirements contained in MARPOL Annex I is crucial for commercial vessel owners and operators to protect the vast natural resources contained in our world's oceans and seas. Coast Guard port state control officers are trained to conduct thorough examinations of MARPOL Annex I requirements during every port state control exam. When vessels are found to be in non-compliance with the requirements, Coast Guard PSCOs will hold the vessel personnel accountable for infractions and ensure that discrepancies are corrected. Vessel owners and operators are strongly encouraged to ensure their vessels are in compliance with MARPOL Annex I prior to entering the waters of the United States.

About the author:
LCDR Allain has over 16 years of experience in the Coast Guard, with more than 10 years working in the marine safety and security field. His previous tours include Marine Safety Office Tampa, Fla., and supervisor of Marine Safety Detachment Ft. Myers, Fla.

Endnotes:

1. CG-3PCV policy letters can be found at http://homeport.uscg.mil. NVICs are at http://www.uscg.mil/hq/g-m/nvic/.
2. A perforated metal box used as a strainer.