

## Port State Control Enforcement

Port State Control (PSC) is the right of a coastal state to inspect foreign-registered vessels that enter its ports in order to verify compliance with international and national maritime regulations. The primary purpose of PSC is to protect life-saving, prevent pollution, and ensure safe working conditions on board. PSC officers are typically employed by the national maritime authority and conduct inspections based on a risk-based approach, often coordinated through regional agreements such as the Paris Memorandum of Understanding (Paris MoU) or the Tokyo Memorandum of Understanding (Tokyo MoU).

Flag State refers to the country under whose laws a vessel is registered. The flag state holds responsibility for ensuring that its ships meet the standards set out in international conventions. In practice, the flag state issues certificates, conducts surveys, and may delegate inspection authority to recognized organizations. A vessel flying a flag of convenience (FOC) is registered in a country different from the owners' nationality, often to benefit from lower fees, more lenient regulations, or easier recruitment of crew. While FOCs can reduce operational costs, they also raise concerns about the adequacy of oversight, prompting PSC officers to scrutinize such vessels more closely.

Inspection is the core activity of PSC. It can be classified into several types:

1. Targeted inspection – initiated because the vessel has a history of deficiencies, is flagged under a high-risk registry, or is suspected of non-compliance. 2. Random inspection – conducted without prior indication, intended to deter systematic violations. 3. Transit inspection – performed when a ship merely passes through a port without loading or unloading cargo, focusing on safety and pollution controls. 4. Follow-up inspection – scheduled after a previous detention or deficiency notice to verify corrective actions.

During an inspection, the PSC officer examines the ship's documentation, physical condition, and operational practices. Key documents include the Certificate of Registry, International Safety Management (ISM) Certificate, International Ship and Port Facility Security (ISPS) Code Certificate, and the various certificates required under SOLAS, MARPOL, and STCW.

Detention occurs when a vessel is found to have serious deficiencies that pose an immediate risk to safety, health, or the environment. The ship is then prohibited from sailing until the identified issues are rectified. Detentions are recorded in the PSC database and can affect the vessel's future port entry, as many port authorities share detention histories through regional MoUs. A typical detention may involve problems such as non-functioning fire-extinguishing systems, inadequate lifesaving appliances, or illegal discharge of oil residues.

Deficiency defines any shortcoming or deviation from the applicable standards. Deficiencies are recorded

on a Deficiency Notice and are categorized by severity:

- Major deficiency – threatens safety or environmental protection (e.G., Non-operational emergency generators).
- Minor deficiency – less critical but still requires correction (e.G., Worn safety signage).
- Administrative deficiency – pertains to documentation or procedural gaps (e.G., Missing crew certificates).

Each deficiency must be addressed by the shipowner or operator within a specified timeframe, often accompanied by a Rectification Report submitted to the port authority.

Notice of Inspection (NOI) is a formal communication sent to the master of the vessel, informing them of the upcoming PSC activity. The notice typically outlines the scope of the inspection, the documents to be produced, and the time constraints. While the notice is optional in some jurisdictions, providing it helps ensure cooperation and reduces the likelihood of disputes.

Ship's Certificate is a broad term encompassing all official documents that attest to a vessel's compliance with international standards. Important certificates include:

- Certificate of Compliance (COC) – issued under the International Convention for the Safety of Life at Sea (SOLAS) to confirm that the ship meets construction and equipment requirements.
- International Oil Pollution Prevention Certificate – required by MARPOL Annex I to verify that the vessel has appropriate oil spill prevention equipment.
- Ballast Water Management Certificate – mandated by the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) to certify that ballast water treatment systems are operational.
- Marine Pollution (MARPOL) Certificate – covers a range of pollutants, including oil, noxious liquids, garbage, and sewage.

International Convention refers to legally binding agreements adopted by the International Maritime Organization (IMO) that establish uniform standards for maritime safety, security, and environmental protection. The most frequently cited conventions in PSC are:

- SOLAS (Safety of Life at Sea) – sets minimum safety standards for vessel construction, equipment, and operation.
- MARPOL (Marine Pollution) – addresses prevention of pollution from oil, chemicals, garbage, and sewage.
- STCW (Standards of Training, Certification and Watchkeeping) – governs seafarer qualifications and training.
- ISM Code (International Safety Management) – requires shipowners to develop a Safety Management System (SMS) and undergo periodic audits.
- ISPS Code (International Ship and Port Facility Security) – establishes security protocols to protect ships and port facilities from terrorist threats.

Master is the ship's commanding officer, responsible for the safe navigation and overall operation of the vessel. The master must ensure that the ship's documentation is up to date, that crew members hold valid certificates, and that any identified deficiencies are promptly reported to the shipowner. During a PSC inspection, the master serves as the primary point of contact for the inspector, providing access to the bridge, engine room, and other operational areas.

Chief Engineer oversees the engine department and is accountable for the maintenance and performance of propulsion and auxiliary machinery. The chief engineer must demonstrate that the vessel's technical systems comply with SOLAS and MARPOL requirements, such as oil-filtering equipment, sewage treatment plants, and emission control systems. In many PSC inspections, the chief engineer is asked to present logbooks, maintenance records, and calibration certificates for critical equipment.

Shipowner holds the legal and financial responsibility for the vessel. The owner must ensure that the ship is properly registered, that all required certificates are valid, and that the crew is adequately trained. When a PSC detention occurs, the shipowner is typically required to finance the repairs, arrange for a re-survey, and submit evidence of compliance before the vessel can be released.

Port State is the jurisdiction in which the vessel is temporarily located. The port state may enact national legislation that complements or exceeds international standards. For example, a port state might impose stricter limits on nitrogen oxide emissions than those stipulated by the IMO's Tier III standards. When a ship enters a port, it becomes subject to the port state's PSC regime, regardless of its flag.

Port Authority is the governmental agency responsible for managing the port's operations, safety, and security. The authority may delegate PSC duties to a specific department or cooperate with other agencies, such as customs, environmental protection agencies, and coast guards. In many countries, the port authority maintains the official Port State Control Database, which records inspection results, detentions, and ongoing follow-up actions.

Port State Control Officer (PSCO) is the individual authorized to conduct inspections, issue deficiency notices, and enforce detentions. PSCOs are trained in maritime regulations, ship construction, and marine engineering. They must maintain a high level of competence, as their judgments directly affect the vessel's ability to continue trading. PSCOs also play a role in educating ship operators about best practices and emerging regulatory changes.

Inspection Regime describes the systematic approach a port state adopts to plan, execute, and monitor PSC activities. A typical regime includes:

- Risk assessment: Evaluating the vessel's history, flag, age, and cargo type.
- Selection criteria: Determining which vessels will be inspected based on the risk profile.
- Inspection checklist: A standardized list of items to be examined, often aligned with SOLAS, MARPOL, and STCW requirements.
- Reporting: Documenting findings in a formal report that may be shared with other states.

- Follow-up: Ensuring that identified deficiencies are corrected and that any detention is lifted.

Risk-based inspection is a cornerstone of modern PSC. Rather than inspecting every vessel indiscriminately, authorities assign risk scores based on factors such as the vessel's age, flag, previous inspection outcomes, and type of cargo. High-risk vessels are more likely to undergo targeted inspections, while low-risk ships may only be subject to a brief document check. This methodology optimizes resource allocation and enhances the overall effectiveness of PSC.

Common deficiency refers to recurring problems observed across multiple vessels or inspections. Examples include:

- Failure to maintain the Emergency Shut-Down (ESD) system.
- Inadequate Life-saving appliance inspections.
- Improper handling of Ballast Water Management records.
- Non-functioning Oily Water Separator (OWS) alarms.

Identifying common deficiencies allows PSC authorities to develop targeted training programs, issue advisory circulars, and adjust inspection focus areas.

Deficiency notice is the formal document that records each identified shortfall. It contains a description of the deficiency, its severity, the regulatory reference, and a deadline for correction. The notice may also outline the potential consequences if the deficiency is not remedied, such as detention or administrative penalties.

Rectification is the process of correcting a deficiency. Rectification may involve repairing equipment, updating documentation, or providing additional crew training. Once the shipowner has completed the corrective actions, a Rectification Report is submitted to the port authority, often accompanied by supporting evidence such as photographs, certificates, or test results. The PSCO may then conduct a verification inspection to confirm compliance.

Administrative penalty is a non-criminal sanction imposed for violations that do not warrant detention but still breach regulations. Penalties can include fines, suspension of the vessel's certificate, or a prohibition from entering the port for a specified period. The severity of the penalty typically correlates with the nature of the offense, the vessel's compliance history, and the potential impact on safety or the environment.

Seafarer is any person employed on a ship, including officers, ratings, and specialized personnel such as medical officers. Seafarers must hold valid certificates that comply with the STCW convention, covering areas like navigation, engineering, and safety. PSC inspections often verify that seafarer certificates are current and that crew members have received the required training on topics such as fire fighting, first aid, and anti-piracy measures.

Inspection Report is the final written record of the PSC activity. It summarizes the vessel's documentation,

the physical inspection findings, any deficiencies, and the actions taken (e.G., Issuance of a detention order). The report is entered into the regional PSC database, where it becomes accessible to other member states. This transparency helps prevent vessels with known problems from simply moving between ports without addressing the underlying issues.

Transit refers to a vessel's passage through a port without cargo operations. Even during transit, PSC may conduct a brief inspection to verify that the ship's safety and pollution prevention equipment is operational. Transit inspections are particularly important for vessels carrying hazardous cargo, as they provide an opportunity to confirm that cargo containment systems are intact.

Ship-to-Ship transfer (STS) is the exchange of cargo between two vessels while at sea or within a port. STS operations are subject to strict safety and environmental controls, and PSC may inspect the equipment, procedures, and documentation associated with such transfers. Deficiencies in STS procedures can lead to oil spills, fire hazards, or cargo contamination.

Cargo handling encompasses the loading, stowage, securing, and discharge of goods. PSC inspections evaluate whether cargo is stored according to the ship's stability calculations, whether dangerous goods are handled in compliance with the International Maritime Dangerous Goods (IMDG) Code, and whether the crew follows proper procedures for hazardous material handling. Failure to adhere to cargo handling standards can result in accidents, loss of cargo, and environmental damage.

Safety Management System (SMS) is an integral component of the ISM Code. It requires the shipowner to develop documented procedures that address safety, environmental protection, and emergency response. The SMS includes a Safety and Environmental Protection Policy, procedures for reporting non-conformities, and a system for continuous improvement. During a PSC inspection, the PSCO will review the ship's SMS manual, verify that it is being implemented, and assess whether the crew is familiar with emergency drills and reporting mechanisms.

Marine Pollution is a broad term covering the release of harmful substances into the marine environment. PSC focuses heavily on preventing pollution under MARPOL. Key areas of concern include:

- Oil pollution (Annex I) – regulated through oil-filtering equipment, OWS, and oil record books.
- Noxious liquid chemicals (Annex II) – controlled via cargo tank cleaning, discharge standards, and cargo manifest verification.
- Garbage (Annex III) – managed through waste management plans, segregation, and disposal at authorized facilities.
- Sewage (Annex IV) – addressed by onboard treatment plants and proper discharge permits.
- Air pollution (Annex VI) – includes sulfur oxides (SOx), nitrogen oxides (NOx), and ozone-depleting substances.

A PSC officer may examine the ship's Oil Record Book, Garbage Record Book, and Sewage Record Book to verify compliance with logging requirements. Any discrepancy can trigger a deficiency or detention.

Ballast Water Management is governed by the BWM Convention, which aims to prevent the spread of invasive species via ballast water. PSC inspections verify that the vessel's ballast water treatment system is certified, that the Ballast Water Management Plan is on board, and that the crew maintains accurate discharge logs. Common deficiencies include failure to treat ballast water before discharge, malfunctioning treatment equipment, and incomplete record-keeping.

Oily Water Separator (OWS) is a critical piece of equipment that removes oil from bilge water before discharge. PSC checks for the presence of a functional OWS, proper maintenance of the oil-content meter, and the correct operation of the discharge alarm. A non-functioning OWS is a frequent cause of detention because it directly violates MARPOL Annex I.

Emission Control Area (ECA) is a designated sea area where stricter limits on SO<sub>x</sub> and NO<sub>x</sub> emissions apply. Vessels operating in ECAs must use low-sulfur fuel or install exhaust gas cleaning systems (scrubbers). PSC may verify compliance by inspecting fuel samples, checking the ship's fuel oil records, and reviewing the operation of any installed scrubbers. Failure to meet ECA requirements can result in severe penalties, including fines and detention.

Fire-fighting equipment includes fixed systems such as fire pumps, water mist systems, and portable extinguishers. PSC inspections assess the condition, accessibility, and certification of these devices. A common deficiency is the presence of expired fire extinguishers or blocked fire-hose reels. The PSCO will also verify that the ship's fire-drills are conducted regularly and that the crew understands evacuation routes.

Life-saving appliances comprise lifeboats, liferafts, life jackets, and immersion suits. PSC checks for adequate numbers, proper stowage, and up-to-date certification. Deficiencies may involve damaged liferafts, missing life jackets, or insufficient training on their deployment. The PSCO may demand a full lifeboat drill if significant concerns are identified.

Navigation equipment is essential for safe passage. PSC inspections review the functionality of radar, Automatic Identification System (AIS), electronic chart display and information system (ECDIS), and gyrocompass. Calibration certificates, maintenance logs, and software updates must be presented. A vessel with an inoperative AIS or outdated ECDIS charts can be detained, as these are mandatory under SOLAS.

Engine room machinery includes main propulsion engines, auxiliary generators, and associated control systems. PSC officers examine engine performance logs, maintenance schedules, and the condition of essential components such as fuel pumps and cooling systems. Problems like oil leaks, abnormal vibrations, or missing maintenance records are recorded as deficiencies.

Hull integrity is a fundamental safety aspect. PSC may conduct a visual inspection of the hull plating, watertight doors, and sea-chests. The PSCO may also request a Stability Letter or stability booklet to verify that the vessel maintains adequate stability under various loading conditions. Damage to the hull, corroded sea-chests, or compromised watertight doors often result in major deficiencies.

Security measures are mandated by the ISPS Code. PSC inspections verify that the vessel's Security Plan is current, that the Ship Security Officer (SSO) is trained, and that access control systems (e.g., CCTV, door locks) are functional. In high-risk ports, PSC may also assess the vessel's anti-piracy procedures, especially for ships transiting piracy-prone regions.

Training and drills are essential for maintaining crew competence. PSC looks for evidence that the crew has completed mandatory training, such as crowd management, medical emergency response, and fire fighting. Training records, drill schedules, and after-action reports are examined. Inadequate training is often categorized as an administrative deficiency, but repeated failures may lead to more serious sanctions.

Documentation is a cornerstone of PSC compliance. Required documents include:

- Ship's logbook – records daily operational activities.
- Engine logbook – details machinery performance.
- Cargo manifest – lists cargo type, quantity, and hazards.
- Safety Management System manual – outlines procedures and policies.
- Port State Control manual – specific to the vessel's flag state, describing how PSC inspections are handled.

Missing or outdated documents are noted as deficiencies and may result in detention if they pertain to critical safety or environmental matters.

Follow-up inspection is scheduled after a detention or major deficiency to confirm that corrective actions have been effectively implemented. The PSCO may revisit the vessel within a specified period, often 30-90 days, depending on the severity of the issue. The follow-up inspection may be less comprehensive if the ship has demonstrated prompt compliance, but any lingering problems can lead to renewed detention.

Regional Memoranda of Understanding (MoUs) are collaborative agreements among groups of port states to share PSC information and harmonize inspection procedures. The most prominent MoUs include:

- Paris MoU – covers Europe, the Mediterranean, and the North Atlantic.
- Tokyo MoU – focuses on the Asia-Pacific region.
- Indian Ocean MoU – addresses Indian Ocean littoral states.
- Caribbean MoU – serves Caribbean ports.

These MoUs maintain a joint database where inspection results, detentions, and deficiencies are recorded. The shared information enhances transparency and discourages vessels from "port hopping" to avoid compliance.

Detention order is the formal directive that prohibits a vessel from departing until all identified deficiencies are corrected. The order specifies the deficiencies, the corrective actions required, and the deadline for compliance. The vessel's master must acknowledge the order and coordinate with the shipowner to arrange repairs. In some cases, the order may allow limited movement, such as moving to a nearby shipyard for



repairs, but the vessel remains under the port state's jurisdiction.

Challenges in PSC enforcement are numerous and include:

1. Resource limitations – many port authorities have limited personnel and equipment, making it difficult to inspect every high-risk vessel. The risk-based approach helps mitigate this, but gaps remain, especially in developing ports. 2. Flag state cooperation – some flags are reluctant to provide timely information or to accept responsibility for deficiencies, leading to delays in rectification and disputes over jurisdiction. 3. Legal complexities – the interplay between international conventions, regional MoUs, and national legislation can create ambiguities. Shipowners may challenge detention orders in national courts, arguing that the PSC officer exceeded authority. 4. Technical evolution – emerging technologies such as autonomous ships, advanced emission control systems, and digital documentation platforms require PSC officers to continuously update their knowledge and inspection tools. 5. Language barriers – communication difficulties between PSCOs and multinational crews can lead to misunderstandings regarding procedural requirements and corrective actions. 6. Data management – maintaining accurate, up-to-date records in the PSC database is critical for effective information sharing. Inaccurate data can result in missed inspections or duplicated efforts. 7. Corruption and bribery – in some jurisdictions, there is a risk that PSC officers may be influenced by illicit payments, undermining the integrity of inspections.

Addressing these challenges requires a combination of capacity building, international cooperation, and robust legal frameworks. For example, regular training workshops organized by the IMO can enhance PSCO competence, while joint inspections with neighboring port states can pool resources and share expertise.

Practical application: Case study of a typical PSC inspection

A vessel, MV Oceanic Star, a 20,000-gross-ton crude oil tanker flagged in a flag-of-convenience state, arrives at Port Atlantis for loading. The port authority, a member of the Paris MoU, schedules a targeted inspection based on the vessel's history of prior deficiencies and its flag. The master receives a Notice of Inspection 12 hours before the scheduled time, indicating that the PSCO will examine the ship's certificates, ballast water system, and OWS.

Upon boarding, the PSCO reviews the Certificate of Registry, the International Oil Pollution Prevention Certificate, and the Ballast Water Management Certificate. All certificates are valid, but the PSCO notes that the Ballast Water Management Plan is missing a page. This is recorded as an administrative deficiency.

The PSCO then proceeds to the engine room, where the OWS alarm is tested. The alarm fails to sound, and the oil-content meter shows a reading above the permissible limit. The PSCO issues a major deficiency for non-functioning OWS and a minor deficiency for the alarm's failure. Since the OWS is a critical pollution control device, the PSCO decides to detain the vessel until repairs are made.

The PSCO also inspects the lifeboats, finding that one liferaft is missing its inflation bag. This is recorded as a minor deficiency. The master is instructed to submit a Rectification Report within 48 hours, detailing the



repair of the OWS and replacement of the liferaft component. The shipowner arranges for a local marine repair firm to replace the OWS alarm and conduct a functional test. After completion, the master forwards the repair certificates and a signed statement to the port authority.

A follow-up inspection is scheduled for the next day. The PSCO verifies that the OWS alarm now operates correctly, the oil-content meter reads within limits, and the liferaft is fully equipped. The detention order is lifted, and the vessel is allowed to proceed with loading. The inspection results, including the initial deficiencies and the final outcome, are entered into the Paris MoU database, where they become accessible to other member states.

This case illustrates the typical flow of a PSC inspection: Risk assessment, document verification, physical examination, issuance of deficiencies, detention when necessary, rectification, and follow-up. It also demonstrates how the PSC process protects the marine environment and promotes safety while ensuring that ships can continue their commercial operations once compliance is achieved.

#### Practical tips for ship operators

- Maintain an up-to-date Document Library on board, ensuring that all certificates, manuals, and records are readily accessible. Digital copies can be stored on a secure server, but physical originals must also be available for inspection.
- Conduct internal audits regularly, using the same checklists employed by PSC officers. This proactive approach helps identify deficiencies before they are discovered by external inspectors.
- Train the crew on the importance of accurate record-keeping. For example, ensure that the Oil Record Book entries are made contemporaneously with each operation, as retroactive entries are often rejected as non-compliant.
- Establish a clear line of communication between the master and the shipowner, so that any PSC findings can be promptly reported and corrective actions initiated without delay.
- Keep spare parts for critical equipment, such as OWS alarms and fire-pump components, in the ship's stores. Quick replacement reduces downtime and the risk of prolonged detention.
- Review the vessel's performance in the regional PSC database regularly. Understanding past deficiencies helps prioritize improvements and demonstrates a commitment to compliance.

#### Emerging trends affecting PSC

1. Autonomous vessels – As unmanned ships become a reality, PSC will need to adapt inspection protocols to verify the integrity of autonomous navigation systems, cyber-security measures, and remote monitoring capabilities. 2. Carbon-intensity regulations – The IMO's initial strategy on reduction of greenhouse-gas emissions introduces new metrics, such as the EEXI (Energy Efficiency Existing Ship Index) and IMO 2020 sulfur limits. PSC will increasingly check for compliance with these standards, including verification of fuel quality and emission monitoring equipment. 3. Digital documentation – The shift toward electronic certificates (e-Certificates) requires PSC officers to be proficient in verifying digital signatures, ensuring data

integrity, and accessing online registries. 4. Enhanced data analytics – Regional MoUs are integrating big-data analytics to predict high-risk vessels more accurately, allowing for smarter allocation of inspection resources.

#### Examples of PSC successes

- In 2022, the Tokyo MoU reported a 15 percent reduction in oil-spillage incidents among member ports, attributing the improvement to stricter OWS inspections and more frequent follow-up visits.
- The Caribbean MoU's joint inspection program led to the identification of a systematic failure in ballast water treatment across several vessels from a particular flag state. The coordinated response resulted in a fleet-wide retrofit, significantly lowering the risk of invasive species introduction.
- A European port state introduced a "green-port" initiative, requiring all visiting vessels to submit evidence of compliance with the IMO 2020 sulfur cap. PSC officers incorporated fuel-sample testing into routine inspections, resulting in a 30 percent decrease in illegal fuel use.

#### Key takeaways for students of International Maritime Law

- Understand the hierarchical relationship between flag states, port states, and international conventions. While flag states bear primary responsibility, port states have the enforcement power to protect their waters and the global maritime environment.
- Familiarize yourself with the major conventions (SOLAS, MARPOL, STCW, ISM, ISPS) and their associated certificates, as these form the backbone of PSC criteria.
- Recognize the importance of the risk-based inspection model, which allows authorities to focus limited resources on vessels most likely to pose hazards.
- Appreciate the practical aspects of PSC, including documentation review, equipment testing, and the issuance of deficiency notices and detentions.
- Be aware of the challenges surrounding PSC enforcement, such as resource constraints, legal disputes, and evolving technological landscapes.
- Keep abreast of emerging regulatory developments, including emissions reduction strategies, autonomous ship regulations, and digital certification initiatives, as these will shape the future of PSC practices.

By mastering these concepts and terms, students will be equipped to navigate the complex legal framework that underpins port state control, to analyze real-world inspection scenarios, and to contribute effectively to the ongoing effort to maintain safety, security, and environmental stewardship on the world's oceans.