WORLD MARITIME UNIVERSITY
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THE INTEGRATION OF EXISTING REGULATORY MEASURES TO DEVELOP AN EFFECTIVE QUALITY SYSTEM FOR THE MARITIME INDUSTRY

By

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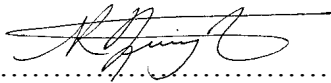
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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred to me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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ABSTRACT

The present dissertation evaluates the role of both governmental as well as private stakeholders participating in the Maritime Industry regulatory framework. The focus of the analysis remains on the measures to eliminate substandard shipping and promote quality ships, however the capabilities for integration with other regulatory measures are also evaluated.

The interaction among the different regulatory organizations as well as the regulatory measures will be evaluated with the focus on the integration for reciprocal support and minimize conflicting interactions. The implementation and improvement of an incentive scheme for quality operators as a measure to compensate for that disruption in the legal competition will be assessed to motivate owners, operators and other stakeholders like Flag States to look at high quality as a profitable competition and thus establish a quality and safety culture in the industry.

The ISO 9000 model is used to set a framework for a Quality Control System concentrating the major stakeholders to unify efforts and optimize the effect of the regulations. At the same time the system will receive permanent feedback from the stakeholders to adjust it and shape it to the needs of the industry.

KEYWORDS   Transparency, Safety Culture, Quality Shipping, Stakeholders, Quality System, Integration

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LIST OF ABBREVIATIONS

AMIS   Abuja MOU Information System

APCIS   Asia-Pacific Computerized Information System

APMIAS   Asia-Pacific Maritime Information and Advisory Services

BIMCO   Baltic and International Maritime Council

BPI   Batch Protocol Interface

BSIS   Black Sea Information System

CDI   Chemical Distribution Institute

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CEFIC   Conseil Européen de l'Industrie Chimique / European Chemical
            Industry Council

CIALA   Centro de Información del Acuerdo Latino Americano

CIC   Concentrated Inspection Campaigns

CLC   International Convention on Civil Liability for Oil Pollution

CMIC   Caribbean MOU Information Centre

DSI   Département des systèmes d'information

EEZ   Exclusive Economic Zone

EQUASIS   Electronic QUAlity Shipping Information System

FOC   Flag of Convenience

FOC   Flags of Convenience

FSI   Flag State Implementation

GAIN   Global Aviation Information Network

GISIS   Global Integrated Shipping Information System

IACS   International Association of Classification Societies

ICS   International Chamber of Shipping

ILO   International Labour Organization

IMO   International Maritime Organization

IMO   International Maritime Organization

IOCIS   Indian Ocean Computerized Information System

ISA	International Shipowners Association
ISM	International Ship Management Code
ISPS	International Ship and Port Facility Security Code
ISPS	International Ship and Port Facility Security Code
ITF	International Transport Workers' Federation
LRF	Lloyd's Register Fairplay
LRF	Lloyd's Register Fairplay
MAB	Paris MOU Advisory Board
MAS	Model Audit Scheme
MedEA	Mediterranean MOU Extranet Application
MISLE	Marine Information for Safety and Law Enforcement
MOU	Memorandum of Understanding
MSC	Maritime Safety Committee
MSIS	Marine Safety Information System
NIC	National Informatics Centre
OCIMF	Oil Companies International Marine Forum
OCIMF	Oil Companies International Marine Forum
OECD	Organization for Economic Co-operation and Development
OUI	On Line User Interface
P&I	Protection and Indemnity
PDA	Personal Digital Assistant
RO	Recognized Organization
RO	Recognized Organization
SAF	Self-Assessment Form
SAN	Storage Area Network
SBW	Segregated Ballast Water
SIRE	Ship Inspection Report Programme
SIRENAC	Systéme d'Informations RElatifs aux NAvires Contrôlés
SOAP	Safety Oversight Audit Program
UNCLOS	United Nations Convention on the Law of the Sea

UNCTAD	United Nations Conference on Trade and Development
USCG	United States Coast Guard
VNC	Virtual National Centre

CHAPTER 1

INTRODUCTION

"Quality shipping" has been the topic of several international conferences such as Mare Forum where both governmental organizations as well as the private industry participate trying to find the way to achieve this goal. Unlike "Quality Shipping", the term "Substandard Ship" has a clear definition:

> "*A ship whose hull, machinery, equipment, or operational safety is substantially below the standards required by the relevant convention or whose crew is not in conformance with the safe manning document*" (IMO, 2001, p. 3).

If we take "Quality Shipping" as the opposite, a well-maintained ship with crew and equipment according to the certificates would be a Quality Ship. However, these concepts can get more complicated and consequently more difficult to achieve. According to Gratsos:

> "*Quality is a long term goal result of a series of well thought initiatives by all parties involved in a particular sector, requiring ground rules that encourage and reward a long term view since people will always act according to their perceived best interest*" (as cited in Haralambides, 1998, p. 53).

In this concept we can see that it is not enough to have regulators formulating rules, it is also necessary to have the regulatees implementing and following them. It is not enough to enforce the regulations but also to encourage and motivate the affected stakeholders because eventually they will tend to weigh the benefits of skipping the rules against the fines and sanctions in the event they are caught (OECD, 1996).

Furthermore, Goulielmos stresses the participation of the human factor and divides Quality into two dimensions, one involving loss of lives and the other involving pollution. Where quality regarding safety should be absolute with zero tolerance because in this dimension the consequences are irreversible (Haralambides, 1998, p. 174). Even though it does not look ethical to measure the value of human life it is

necessary to consider the Economics Law of Diminishing Return. It means that it after a point of equilibrium every increase of input provides reduced benefits (Ma, 2003), so the industry will be ready and willing to pay for Quality up to a certain level but after that, the marginal revenue will reduce so much that the commitment to Quality will become a burden, especially in an environment of unfair competition against substandard ships cutting these expenses. In this sense, quality shipping becomes a complex issue and its achievement requires the participation of all the stakeholders together in an integrated effort.

The objective of this paper is to examine the different regulatory measures in place and integrate them into a system in charge of supporting, monitoring and rewarding Quality Shipping. The developments and strategy of IMO to improve the implementation of conventions and technical support available will be analyzed to establish a framework and criteria for the evaluation of progress towards the Quality Shipping.

Flag States have the responsibility to enforce regulations over their ships ensuring they are seaworthy and appropriately manned. Recent accidents like the Prestige (Bahamas Flag) and Erika (Malta Flag) where the ships broke apart prove that substandard ships are around and the threat they present to the ecology and economy of many countries is unacceptable. Port State control became the defence line against substandard ships, and as such it developed several measures to verify the appropriate implementation of the main conventions on vessels calling to their ports. IMO established the Flag State Implementation (FSI) Sub-committee to assist inexperienced administrations to reach the international standards of safety, security and pollution prevention. This study will present an overview of the FSI sub-committee but it will focus on the development of the Self-Assessment Form, Model Audit Scheme and Technical Cooperation, and other developments both by the Flag and the Port States.

The United States Coast Guard (USCG) started the Qualship 21 programme; which is a new approach towards quality shipping. The objective is to help the authorities to focus the efforts on the ships that really merit permanent control. Besides the USCG, other programmes in the same line like Green Award and the new Paris MOU Reward System will be reviewed.

Finally, an analysis of the information systems, regulatory measures and rewarding schemes will be analyzed from the integrated point of view. The advantages and difficulties will be considered and an integrated system will be proposed with the objective to establish a quality system with self-improving capacity through the effective exchange and recycle of information.

CHAPTER 2
PORT STATE CONTROL REGIME

The enforcement of regulations in order to ensure vessels have an adequate level of seaworthiness is in principle in the hands of the Flag under they sail; however, some administrations due to lack of resources, experience or simply interest have led Port States to take action on this subject (Coles, 2002, p. 21). Port State Control (PSC) is a tool available for governments to ensure that vessels calling at their ports meet the minimum standards set by the international regulations regarding their operation, manning and maintenance. It is also called the last line of defence in the "Safety Net" against substandard shipping; the other elements being: the International Conventions of IMO, Conventions of the International Labour Organization (ILO), Flag State Control, Classification Societies and the Marine Insurance Industry (Özcayir, 2001, p.93).

UNCLOS under Articles 211(3), 218 and 219 recognizes the rights and obligations of a state to impose requirements on vessels calling voluntarily at its ports in order to ensure the seaworthiness of the vessels and protect the state against pollution (UNCLOS, 1997, pp. 103, 107, 108). IMO main conventions like SOLAS 74, Load Lines 66, MARPOL 73/78, STCW 78, and Tonnage 69 contain provisions allowing the control of the port state over the vessels even if their Flag is not party to the relevant conventions.

This chapter will provide a brief review of the Port State Control regime and its integration into the so-called Memorandums of Understanding. The main focus will be made on the mechanisms and developments supporting a future interregional PSC cooperation and interaction with other regulatory measures in order to support an integrated maritime quality system.

2.1   The Memorandum of Understanding on Port State Control

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The effectiveness of Port State Control can be improved if it is conducted regionally. In this way it is possible to achieve a homogeneous environment for the industry instead of vessels having to comply with different standards or procedures in every port at which they call. Different levels in the implementation of regulations in ports of the same region could create unfair competition among them because ships would simply look for the port within the same region but with less stringent requirements. In other words the absence of a homogeneous vessel inspection system in a region could lead to the establishment of "ports of convenience" (Kasoulides, 1993, p. 127).

The European countries looking to implement more stringent measures against substandard vessels and having a special interest in the control of pollution, since 25% of the maritime accident occurred in European waters, established the Paris Memorandum of Understanding (MOU) on Port State Control in 1982 (Kasoulides, 1993, p. 142). This MOU replaced and increased the scope of the previous 1978 Hague Memorandum signed by eight European countries before it came into effect. It intended to establish a regional cooperation to enforce ILO Convention 147 about living conditions on board ships.

The new agreement was extended to cover maritime safety and pollution compliance (Özcayir, 2001, p. 116). In 1991, the IMO adopted Resolution A.682(17) supporting the establishment of PSC agreements in other regions of the world following the initiative of Paris MOU (Hoppe, 1999). With the consolidation of the ninth PSC MOU in the Persian Gulf area the objective of establishing regional agreements at a worldwide level will be a complete success (see Appendix 2.1). Practically all the major ports in the world will be under the control of a PSC agreement.

In order to fulfil its duties the MOU has an organizational structure similar to a Specialized International Organization. It has three main bodies: a Committee composed by representatives from the member states in charge of developing the policies and objectives of the organization, a Secretary in charge of the

administrative tasks of the MOU, and finally an Information Centre in charge of collecting and organizing the data from the inspections and maintaining a database to support the work of the PSC officers (Paris MOU, 2004). The technological advances have increased the importance of the Information Centres turning them into the key to support the new interregional cooperation policies that go along with the different initiatives to encourage quality and eliminate substandard shipping.

2.2 From Regional to Interregional Cooperation

The Memorandum of Understanding has succeeded in the establishment of a consistent and systematic tool to police the implementation of the most important IMO and ILO conventions. The regular meetings among the members of each regime make possible the exchange of experiences and development of procedures according to the requirements and interests of the region.

In spite of the efforts and developments made by the leading Port State Control Regimes[1] substandard ships are still around. Since most of the initiatives like targeting, banning, Concentrated Inspection Campaigns (CIC) and others, are fully enforced by the mentioned leading regimes, the non-compliant vessels try to avoid arriving at the areas under this more stringent control. The measures seem to be just pushing the substandard ships to other trading areas instead of eliminating them.

The problem is that eventually these non-compliant ships will call at some port in the stringent regions or at least will transit their Exclusive Economic Zones or their Territorial Seas using their Right of Innocent Passage in order to arrive at other destinations (Churchill, 1999, pp. 81,82) and consequently endangering the coastal states maritime environment. The initiative taken by Tokyo MOU in establishing bilateral cooperation agreements with other PSC regimes is a step forward towards the global integration of PSC. The participation of some countries in two or more

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[1] The leading PSC Regimes in terms of imposing stringent measures are Paris MOU, Tokyo MOU and the USCG.

MoUs at the same time facilitates the communication and willingness to cooperate with among the regions (see Table 2.1).

Table 2.1 – Countries participating in more than one MOU

Country	Paris MoU	Tokyo MoU	Viña del Mar	Med MoU	Carib MoU	Black Sea MoU	Abuja MoU	Ind. Oc. MoU	Gulf MoU
Australia		X						X	
Canada	X	X							
Chile		X	X						
Cuba			X		X				
Turkey				X		X			
Russian Federation	X	X				X			
South Africa							X	X	

Source: This table was elaborated based on information from the reports presented by the Secretaries assisting to the PSC Workshop in London, 9 – 11 June 2004.

Although there are several obstacles to achieve a Global PSC regime, the main pillars towards this objective are already being developed: well established Information Systems to ensure and facilitate effective end efficient exchange of information, and standardization of regulations, requirements, codes, etc.; the latter is necessary to avoid pushing the substandard ships into the areas with less stringent requirements.

2.3   Development of the PSC Information Systems

At the moment only Paris, Tokyo and Black Sea MoUs plus the USCG have consolidated highly sophisticated Information Systems, the Mediterranean and Indian Ocean MoUs have their systems in the process of implementation and working in a

trial mode, and the last two are in the stage of finalizing negotiations to proceed with the installation of their systems.

2.3.1   SIRENAC

SIRENAC is the acronym for Systéme d'Informations RElatifs aux NAvires Contrôlés (Information System Related to Inspected Vessels). It is the Information Centre for the Paris MOU members (the current members: Belgium, Canada Croatia, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Russian Federation, Slovenia, Spain, Sweden, United Kingdom of Great Britain and Northern Ireland) and it is hosted by the French Information Systems Department (Département des systèmes d'information-DSI). This information system is located in Saint Malo-France and receives information from all the port state control stations, which belong to the Paris MOU. SIRENAC was established in 1998 but it was replaced by a new version in 2003.

The European members of the Paris MOU are bound to provide information and maintain an operational link with SIRENAC under the European Union Council Directive 95/21 (European Union, 1995). As presented in Appendix 2.2, the Database Engine used by the new version of SIRENAC is Oracle, a software capable of managing large amounts of information. It is also highly automated; thus it requires reduced personnel for its operation. The interface to input data into the main database is by means of an on-line application, therefore every PSC officer has access both to consult information and to input or modify data. In the future, the system is also intended to provide remote connection to PSC officers by means of a portable computer and a cellular telephone. (Paris MOU, 2002). This data in principle is made accessible to the Port State Control member countries and PSC Officers, but some of the information is also made public in the Paris MOU Web page (www.parismou.org).

Currently, SIRENAC can be accessed via Internet. The distribution of special software for the users is not needed. This feature gives a good amount of flexibility for the job of the PSC officer since he is the one that inputs the data directly to the system. Among the challenges encountered are that the system has some difficulties in the disconnected module and still needs adjustments. Since the PSC officer inputs the information into the system himself, the update of information rate is permanent; however, the PCS officer must be well trained in order to user the system properly, deal with internet bugs and also be aware of updates and changes in the system itself.

A well-established training program and regular refreshing courses is necessary for an efficient performance of the system. The projects for the future of SIRENAC are that the database will be connected to the Paris MOU webpage; DSI will be hosting this development. The input received during the Concentrated Inspections Campaigns (CIC) will be used to provide feedback to the PSC officers and to enhance the system itself in order to make it more user-friendly (IMO, 2004a).

2.3.2 APCIS

The data produced by the members of the Tokyo MOU (the current 18 maritime authorities members to Tokyo MOU are: Australia, Canada, Chile, China, Fiji, Hong Kong, Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, Papua New Guinea, Philippines, Russian Federation, Singapore, Thailand, Vanuatu, and Viet Nam) is stored and organized in the Asia-Pacific Computerized Information System (APCIS). Initially it was located in Canada in 1998 and operated by the Canadian Coast Guard but at the 7th Tokyo MOU meeting in 1999 the Committee decided to relocate and modernize the system. Finally, on 1 January 2000 APCIS was moved to Vladivostok in the Russian Federation and started to operate with the current characteristics in a productive mode.

Its maintenance and technical support are in the hands of the Asia-Pacific Maritime and Advisory Services under the Ministry of Transport of the Russian Federation's

Maritime Department (IMO, 2004b). For the data exchange process APCIS has two methods: on line user interface (OUI) and batch[2] protocol. The first method OUI gives an individual entrance to each PSC officer, similar to the Paris MOU capability.

For the second method APCIS presents the function "Virtual National Centre" (VNC). In this method the PSC officers submit their inspection reports to a National Database Manager who controls and confirms them to finally send the data to APCIS using the Batch Protocol Interface (BPI) implemented for this purpose. While the records are in the VCN the information is available only locally and it can be corrected, checked or deleted, once it is sent to the main database is becomes visible for all users. The information stored in the central database can be changed only by authorized personnel and after the approval of the authority who provided that piece of information.

The user-friendly interface enables personnel with little computer training to operate the system. According to the Progress Report presented by Tokyo MOU this year an average of 1.584 reports are entered into the system monthly and until 26 April 2004 the database had stored 82.376 inspection reports. A targeting matrix was developed and implemented in the system to provide the vessel's status automatically to PSC officers. Since APCIS is simple and easy to use, it eliminates the requirement of training programs and refreshing courses for operators. The use of the VNC and BPI to send properly verified and approved information increases the quality and reliability of the system. Seven out of fifteen authorities use the VNC system to input information to APCIS therefore the update rate cannot be in real time.

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[2] Term used in the Information Technology environment to describe the processing of groups of data or files with little or no user action.

2.3.3 BSIS

The Black Sea Information System (BSIS) was launched in a productive mode in January 2003. The system is hosted by the Russian Federation and located in Novorossisk. Currently four out of the six members of this MOU (current members to the Black Sea MOU are: Bulgaria, Georgia, Romania, Russian Federation, Turkey, and Ukraine) are connected directly to the database and input the information related to their PSC inspections.

IMO supported this MOU's Information Centre by organizing training courses for National Database Managers in order to speed up the implementation of the system in the region. The technical features are similar to APCIS, the database engine is File Maker Pro, it has three levels of security access, and the system produces monthly statistical reports for the members. The system is also user-friendly, which eliminates the necessity of special training for the users who search for information or input data to be eventually uploaded into the system in a similar way as it happens in the Tokyo MOU (IMO, 2004f).

The two countries that are not connected to the system yet are expected to be online soon; in the meantime the MOU committee decided that all the information about inspections will be stored in BSIS. As mentioned in the last section there is an agreement for exchange of information between APCIS and BSIS, this hyperlink enables BSIS users to get immediate access to inspection related information about any ship in both systems. The information published in the Black Sea MOU webpage regarding inspections comes directly from the main database (IMO, 2004f).

2.3.4 CIALA

The Latin American Agreement Information Centre (Centro de Información del Acuerdo Latino Americano – CIALA) was established in 1999 to facilitate the storage, organization, and exchange of information among the members of the Viña del Mar Agreement on PSC (the Current members are: Argentina, Bolivia, Brazil,

Chile, Colombia, Cuba, Ecuador, Honduras, Mexico, Panama, Peru, Uruguay, and Venezuela). The system is located in Buenos Aires, Argentina and hosted by the Argentinean Cost Guard (Prefectura Naval Argentina), it was launched in the productive mode in July 2001 and since then there were no major modifications.

Although there are negotiations to exchange information with other MoUs, at the moment, CIALA has not established any agreement of this nature yet. An Oracle database engine is being tested in order to implement it and modernize the system. The input of information is via database managers who receive the reports from the PSC inspectors and enter them into the system via internet[3]. The future projects regarding the information centre are: the implementation of the targeting matrix under development, performance of a follow up to the deficiencies to verify the actions taken and the improvement of the system based on the experiences provided by other MoUs (IMO, 2004g).

2.3.5   MedEA

The Mediterranean MOU Extranet Application (MedEA) is the database system for the Med MOU members (the current members to the Med MOU are: Algeria, Tunisia, Israel, Malta, Egypt, Morocco, Turkey, Cyprus, Lebanon, and Jordan) as in the other information systems it is meant to store, organize and distribute the PSC related information to the members. It is located in Casablanca, Morocco and it is still in the process of implementation. The consolidation of this database had some difficulties, mainly financial. The data was provisionally stored by the secretariat using Microsoft Access, which is quite good software but when it comes to handling large amounts of information and possible connection with other systems it is necessary to use another more sophisticated and powerful database.

The Med MOU Secretariat managed the PSC from 1998 to 2001 but the supply of information by the members was interrupted for about two years until the end of

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[3] Eduardo Cutropia, CIALA Assistant Database Manager, electronic mail, 28 June 2004.

2003. Morocco submitted a project to establish and host an Information Centre for the MOU but as mentioned financial problems delayed its implementation. Finally, in 2004 the system started its implementation. The database engine used now is SQL and the capabilities are higher than with the database created with Microsoft Access. The implementation is progressing, issues like the equipment, training, and agreements with other organizations like LRF are in the agenda (IMO, 2004h).

2.3.6 IOCIS

The Indian Ocean Computerized Information System (IOCIS) is a project under development of the IO MOU in order to facilitate the storage and exchange of PSC information among the members of this MOU (the current 12 members to the Indian Ocean MOU are: Sudan, Tanzania, Australia, Eritrea, India, South Africa, Mauritius, Sri Lanka, Iran, Kenya, Oman and Maldives). The implementation of the system is in the hands of the National Informatics Centre (NIC), an Indian Government enterprise. In February 2004 NIC launched the beta version and it is projected to have the productive version at the beginning of 2005.

The system is hosted by NIC Delhi server and under Storage Area Network (SAN) environment. The database engine used is My SQL and is capable of handling the information provided by the members as well as produce reports in several formats (IMO, 2004i). One particular feature in this system is that the Secretariat will have a "super user" access with the capability to amend any inspection data. In other systems, although they have the capability to do these kinds of modifications, they require the authority who provided the information to amend it. This avoids conflicts between data provider and administrator. However, the system is still in the trial mode and some changes will be made before it is ready to be launched in the productive mode.

2.3.7 CMIC

The Caribbean MOU Information Centre (CMIC) is still in the negotiation process and will manage the PSC information for the members of the Caribbean MOU (the current members are: Antigua & Barbuda, Aruba, Bahamas, Barbados, Cayman Islands, Cuba, Grenada, Guyana, Jamaica, Netherland Antilles (Curacao), Suriname, Trinidad & Tobago). The proposed location for the system is Surinam, at the moment the Secretariat assumed the tasks of collecting the information from the members to keep record of the inspections; however, only 8 authorities have submitted inspection reports to update the current database (IMO, 2004d). In May 2004 the first proposal was presented by Transport Canada who will be the contractor to implement the system, the MOU has a positive attitude towards the Canadian project and it is likely to be accepted[4].

2.3.8 AMIS

The Abuja MOU Information System (AMIS) will be the database managing the PSC information for the Abuja MOU members (the current members are: Angola, Benin, Cameroon, Cape Verde, Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, Ghana, Guinea, Liberia, Mauritania, Namibia, Nigeria, Senegal, Sierra Leone, South Africa, The Gambia, and Togo). The Committee is aware of the importance and necessity of this important tool in order to generate a good source of information for the members. Unfortunately, the political situation in Cote d'Ivoire delayed the progress of the project since the host city was Abijdan in this country (IMO, 2004j).

Since it is important to have the system in place as soon as possible, the Committee decided to temporarily locate the Information Centre in Nigeria, the same location of the Secretariat. The contractor in charge of developing the system is the Asia-Pacific Maritime Information and Advisory Services (APMIAS) of the Russian Federation. The temporary host country has already provided the facilities, equipment, personnel

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[4] Statement by the Delegate of the Caribbean MOU to the Third Workshop on PSC in London, June 2004.

and initial budget to start the implementation of AMIS. The training of the PSC officer in the use of the system is scheduled and it is projected to have the initial tests by mid-August and to have it fully operational shortly after (IMO, 2004k).

2.3.9   MISLE

The Marine Information for Safety and Law Enforcement (MISLE) system is the database managing the data for the United States Coast Guard (USCG). This is a late generation information system launched in December 2001 in replacement for the Marine Safety Information System (MSIS) developed for the USCG in 1995. The initial focus of the system was safety but after the events in September 11, 2001 the security measures were implemented in the new system. The system works directly with the Coast Guard intranet system. In this regard, the security is improved because it is not possible to get into the system outside of the USCG intranet.

Besides the log-in into the intranet every user needs a user account and a password, so this is another security feature to protect the database. The US flagged vessels are inspected and the data entered into the system, for the non-US flagged vessels the data is entered and updated with the information provided by the PSC officers (Tiron, 2002).

Even though MISLE is very sophisticated and capable of fulfilling the expectations about its performance it is not advertised as is a system in a normal MOU because it has to satisfy only one government.

2.4   Harmonization and Standardization.

Another key development of the MOU regimes is the standardization of procedures and codes used in the inspection reports. The Contact Group appointed during the second workshop on PSC[5] at IMO highlighted three major areas of consideration for

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[5] IMO hosted three Workshops on PSC MoUs (Agreement) Secretaries and Directors of Information Centres in London, the first in year 2000, the second in 2002 and the last in June 2004.

the interregional exchange of information: (1) Development of common coding for various data used in PSC activities like vessel particulars, deficiencies, vessel types, inspection/detention actions taken and others. (2) Data provided by every MOU to IMO in two sets: first the number of inspections per port, flag and calendar, and second the standardization of the format to transmit the data to the Secretariat. (3) The establishment of a network of qualified personnel in PSC matters to disseminate relevant information among the members of the PSC regime.

This network was intended to be established by the use of a chat room taking advantage of the new established computerized information centres, unfortunately the technological limitations in some countries moved the Contact group into another option which is the designation of contact points in every MOU. These designated persons would be in charge of providing help in implementation and PSC matters (IMO, 2004l). In order to optimize the PSC resources the use of a targeting matrix to select vessels to be inspected was developed by the main PSC regimes.

The USCG uses a Boarding Priority Matrix of five columns containing the assigned points to the following items related to the vessel: Owner, Flag, Class, History and Ship Type. The point assigned to each item is based on performance and information within the United States. The system is simple and any operator or owner can easily find out whether his or her ship is targeted. Paris MOU uses a more elaborated targeting matrix consisting of two parts: a Generic and a History Factor. The Generic Factor considers the items related to the vessel like in the USCG Boarding Priority Matrix, but the system uses a "yardstick of 7%" as the limit of percentage of detentions for the flag, according to this the yardstick is adjusted in steps of 3% to locate the flag in the white, grey or black list.

The matrix also considers other factors like the flag status of conventions ratification, class detention ratio, type and age of the ship. The History Factor considers whether the vessel visited any Paris MOU port within 12 or 6 months, and detention ratio of

the vessel. Paris MOU in order to help the owners and interested parties makes available in its Webpage (http://www.tokyo-mou.org/) a targeting factor calculator. The Tokyo MOU adopted a targeting matrix based on the Paris MOU criteria, the difference is that in this MOU an excess factor is applied considering the number of inspections and detentions in a period of three years in the region. A binomial calculus is performed using a statistics formula:

$$u_{black-to-grey} = N \cdot p + 0.5 + z \cdot \sqrt{N \cdot p \cdot (1-p)}$$

$$u_{white-to-grey} = N \cdot p - 0.5 - z \cdot \sqrt{N \cdot p \cdot (1-p)}$$

N = Number of inspections

p = Allowable detention limit "Yardstick" 7%

z = significance requested (z = 1.645)

u = Allowable number of detentions for either white or black list

The excess factor defines how many times the yardstick needs to be adjusted. Figure 2.1 presents the relation between the number of inspections against the number of detentions (Tokyo MOU, 2003, pp. 40-42).
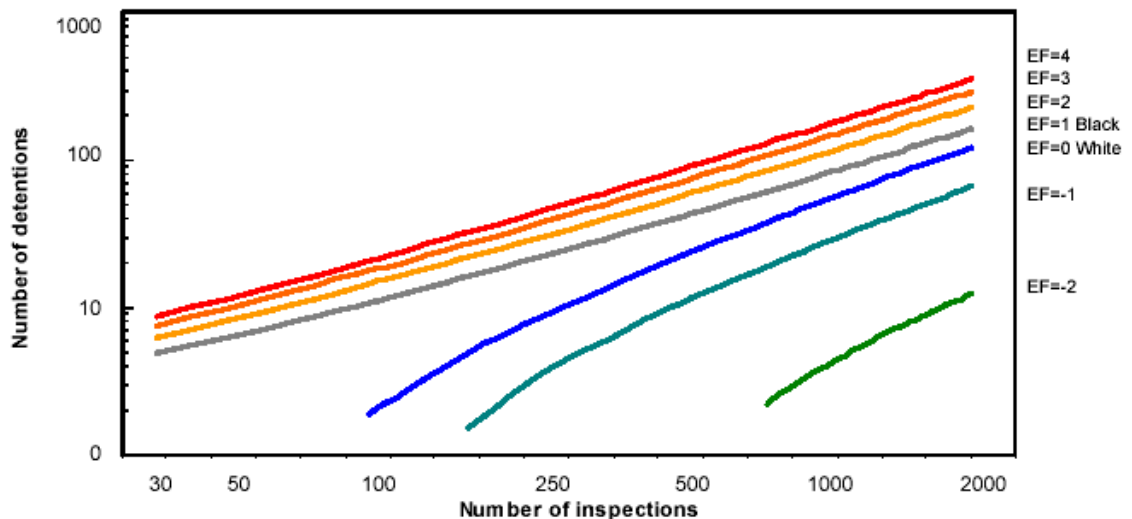
Figure 2.1 - Relation between number of inspected ships and number of detentions
Source: Tokyo MOU (2003). Annual Report 2003. Tokyo: Author.

The other PSC regimes do no apply Targeting Matrixes for the inspections, but the trend is to follow either the Paris or Tokyo MOU and implement it into the system. Since some of the MoUs were recently established it is considered premature to implement a targeting matrix. As these new organizations get established the application of a common Targeting Matrix will be necessary in order to harmonize the inspection procedures and prevent the substandard vessels to move to these areas and compromise the safety of life and protection of the environment in this areas. As presented in Table 2.1 several countries are members to two or even three MoUs, this situation favours the dissemination of information and the development of similar approaches in the implementation of policies and regulations.

2.5   Support to other Regulatory Measures

The PSC tools presented in the previews paragraphs (inspections, targeting matrixes, blacklisting and banning) have a good level of interaction and support within each PSC MOU. The interaction between different MOUs is limited in terms of cooperation but the development of the information systems and harmonization of codes and procedures will facilitate the mutual cooperation between the different PSC regimes worldwide.

The interaction between PSC and Flag States is limited; the only information the PSC officers receive from the Flag State is through the certification checked during the inspections and sometimes from appeals to detentions. On the other hand, currently the inspections and especially the detentions of vessels are published in the public websites of the major PSC regimes, so the Flag State can keep track of the inspection history of their vessels at least when they call to ports under the control of the USCG, Paris MOU, Tokyo MOU, Black Sea MOU and Viña del Mar Agreement. The other MOUs are still implementing their information systems and the availability of information related to their inspections is still limited.

IMO has been hosting PSC workshops where the different regimes get together and discuss common issues. These workshops give the opportunity to involve the initiatives of the PSC regime into the IMO activities and thus acquire input from this area in the development of regulations.

The classification societies are the private organizations with the highest interaction with PSC since they can be targeted and blacklisted as the vessels and flags. The class related deficiencies are relayed to the relevant classification society so that it will take the necessary actions in this regard. Paris MOU decided to collect information about the charterer in the same way as the other parties responsible for the operation of the vessels (Paris MOU, 2002). This measure is very important since the charterers are the ones actually funding and allowing the persistence of substandard shipping. Also, the charterers have the PSC information to provide important information about the vessel's history and profile before they charter it.

2.6   Conclusions

The PSC regime's roles and different initiatives have been successful in the reduction of substandard ships. In the period between 1994 and 2003 the number of detentions by the USCG have decreased 70% (USCG, 2003). The requirement of the IMO Self Assessment Form by the USCG to participate in the Qualship 21 programme shows the potential of the PSC regime to support IMO initiatives. The improvement in the cooperation and interaction with other regulatory bodies like the Flag States, IMO, and the industry will put important safety and security information detected during the inspections in the hands of organizations that make good use of it such as insurance companies.

The International Transport Workers' Federation already detected that some shipping companies are reallocating their operations centres to ports outside the jurisdiction of the labour unions (ports of convenience) in order to manipulate the prices of the crew contracts (Marges, 2004). The proper integration and exchange of information and

support among the different MOUs will prevent the spread of the port of convenience concept to safety, security and environmental fields.

CHAPTER 3
INFORMATION SYSTEMS

This chapter will describe and analyze the principal information systems in place and engaged in the activity of recollecting data about vessels, storing it and finally making this data available to the interested parties. There seems to be an overlap of functions among the systems but we will see that instead of being redundant, the systems complement each other. The trend to integration is on the agenda at IMO and the PSC meetings, there are some obstacles of different nature like technological, economic, etc., but the trend is moving forward.

The difficult accessibility to shipping information and sometimes the lack of transparency create an environment convenient to substandard shipowners and operators. In general, the better and higher quality of the vessels, the more willing their operators are to advertise themselves by providing as much information about their businesses as they can. The accessibility to information about ships and operators is hampered by factors like the restricted access imposed by some administrations, and more specifically bureaucracy. This difficulty in the access to the information is by no means lack of information. From the moment it is built, the ship starts a paperwork process in order to produce information that governs its legal status. Examples of documents are: Bills of Sale, IMO number[1] for ships over 100 GT, registration certificates, statutory certificates, class certificates, etc.

Lloyd's Register Fairplay (LRF) issues the IMO number for every seagoing vessel of 100 GT and above, these vessels are entered into a database detailing their particulars; however, the LRF webpage for this feature is restricted to subscribers. Information about Class is usually restricted by the Classifications Societies to the pertinent shipowners, flag state and insurers. Finally, the registration information

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[1] IMO ship identification number was adopted on the 19th November 1987 in accordance with IMO Resolution A.600(15).

processed by the different administrations some times requires a lengthy paperwork process to reply to inquiries.

These difficulties, which may not prevent the interested parties access to the information certainly delay the process and as we know, "Time is Money" in the maritime industry. Organizations like IMO, the different Memorandums of Understanding on Port State Control (MOU), and other organizations have identified this problem and established Information Centres on the Internet. This chapter will present you a brief description of the main ones and an analysis of the features that could improve their performance.

3.1   MOU's Information Centres.

The Information Centre is one of the three institutions that form the base of a Port State Control Memorandum of Understanding. Its purpose is to assist authorities in the collection, organization and availability of information about the vessels inspected in their ports. The data managed by the Information Centres can be used in different ways according to the needs of the members. In principle this information is used to help in the selection of ships to be inspected, but also can provide a wide range of statistical data in order to perform studies, analysis and even development of policies for the organization.

The greatest advantage of such an information system is the possibility to have a service available 24 hours a day, 7 days a week and all year round. Appendix 2.2 details a summary of the MOU's Information Centres with the main features and status of every one. At the moment, of nine Port State Control Regimes, only six have fully operational Information Centres. One is running a Beta version and the last two are in the process of establishing their own. From this group, the most advanced regarding technology and information availability are Paris MOU (SIRENAC), Tokyo MOU (APCIS) and the USCG (MISLE). Generally the

initiatives regarding PSC policies, new regulations and implementation of new technology are taken by one of these PSC regimes.

3.2   Exchange of Information

The issue of the exchange of information between PSC regimes is starting to increase in importance. The Tokyo MoU has taken a leading role in this field with the development and implementation of an exchange of information between the information systems of Tokyo and Black Sea MoU's, using hyperlinks to connect some fields of both databases and avoid duplication of efforts (IMO, 2004c, p. 3). This achievement succeeded not only because the modern information systems in place but also due to the fact that both APCIS and BSIS are hosted by the Russian Federation[2].

APCIS in this leading role is looking forward to expanding its coverage by a bilateral agreement with the Viña del Mar Agreement system (CIALA) where the exchange of information is in the step of reviewing technical issues. There are also negotiations for this type of agreements with the USCG (MISLE) and the Paris MoU (SIRENAC). The initiative of APCIS makes it possible for the major PSC regimes to be integrated. Since the Russian Federation is offering to develop the information system for the Abuja MoU, it is also likely to have this new system integrated (IMO, 2004e, p. 8). The participation of some countries in two or even three MoU's at the same time creates a favourable environment for this kind of interregional agreements (Table 2.1). At the moment Tokyo MoU is the agreement with more members[3] participating in other MoUs and the Russian Federation is the country member to more MoUs.

3.3   EQUASIS Database[4].

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[2] The Russian Federation is Member to Paris, Tokyo and Black Sea MoUs.
[3] Tokyo MoU's dual participation members: Australia, Canada, Chile and the Russian Federation.
[4] The details about structure, functions and projects were provided by the Management Unit of Equasis.

3.3.1 General Aspects.

The Electronic Quality Shipping Information System (EQUASIS) is an effort made by the public authorities to promote quality and transparency in the maritime transport sector. It was created to provide and assist the maritime industry stakeholders with a tool that would facilitate the access to important information about the history and performance of ships (Equasis, 2004).

The lack of transparency in the maritime industry has been spotted as an obstacle to the improvement in the quality and a responsible self-regulation, but this lack of transparency is not due to lack of information but to the difficult access to it. The objective of EQUASIS is to gather data from different sources which is disseminated and in some cases restricted, organize it, and make it public in a free, user-friendly, and accessible website. The system was established in May 2000 with the signature of the Memorandum of Understanding on the establishment of Equasis Database. Initially seven maritime administrations signed the agreement: Japan, Singapore, Spain, United Kingdom, France, United States Coast Guard, and the European Commission; Singapore recently withdrew from the Memorandum due to financial reasons[5].

These Administrations in the Memorandum, called the Participants, provide the funds to bear the expenses of the organization. Since the database was launched in 2000 it looked like it was part of the measures included in the Erika Packages, but the idea of a website of these characteristics started three years ago in the Quality Shipping Campaign leaded by the European Commission and UK (Özcayir, 2001, p.235). The idea was being discussed until 1998 when the maritime industry stakeholders[6] called for this system as a tool to help them into their efforts to fight against substandard shipping.

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[5] Albert Bergonzo, Deputy Director of Equasis, interview by author, Paris, France, 15 March 2004.
[6] The stakeholders: shipowners, cargo owners, insurers, brokers, classification societies, agents, etc. Most of them have signed the Maritime Industry Charter on Quality
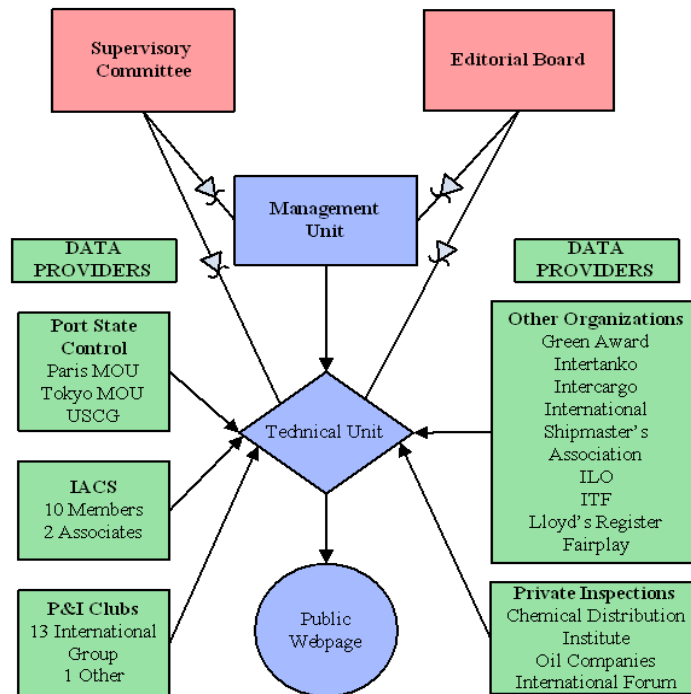
Figure 3.1 – Equasis Organizational Chart

Source: This is not the official organization chart for EQUASIS, it was elaborated based in the information retrieved from the Management Unit in order to illustrate this study.

3.3.2 Organization.

There are two bodies performing a supervisory function and other two with the administrative and operative ones (Figure 3.1). The Management Unit is located in Paris, France and handles the daily functions of Equasis such as financial, marketing, relations with data providers, users, and control of the Technical Unit. It also writes the annual report and performs other activities necessary to keep the website running. The Technical Unit operates and performs maintenance to the database, receives the information from all the data providers and verifies that it is according to the format

and requirements to be entered into the system, and elaborates reports for the Management Unit.

The Supervisory Committee is formed by representatives from the Participants. The Editorial Board is composed by representatives from the Participants and the Data Providers. They supervise and advise the Management and Technical Unit about the provision, quality and accuracy of the information. They have normally two meetings a year but they can schedule more extraordinary meetings if necessary. A member of the Management and one of the Technical Units attend these meetings.

3.3.3   Technical Information.

The Technical Unit is located in Saint Malo-France, and hosted by DSI. There are personnel handling the database permanently but there is also a team of technicians from DSI who perform mainly maintenance to the system on request. Since the Equasis system is hosted by the same authority as SIRENAC, the technology and capabilities of both systems are similar. The big difference is that Equasis does not receive information directly from individuals (as SIRENAC does) but from organizations. The update rate of the information is not fixed, this is due to the different Data Providers. Since most of the Data Providers support Equasis voluntarily it is not possible to regulate or harmonize the frequency they send information.

The data about one single ship is the amalgamation of information from several sources, which combine to give a complete picture. The only Data Provider who is not voluntary is Lloyd's Register Fairplay. Equasis purchases the service of LRF to provide information especially regarding the IMO Number and ship particulars when the information about the vessel is not provided by the PSC regimes. The use of Oracle database makes this system capable of importing files in different formats. This feature is very important considering the diversity of Data Providers. The access to the information is free to the public but there is a restricted area were only PSC

authorities have access to some information like the Chemical Distribution Institute (CDI) and Oil Companies International Marine Forum (OCIMF) private vetting schemes for oil and chemical tankers respectively.

3.3.4   Achievements Vs. Difficulties.

Although Equasis is a very young organization it has become an important source of information in the maritime field. Since the start of the Quality Campaign in 1997 and during the subsequent meetings and forums related to the same topic this organization was mentioned as the source to improve the transparency in the maritime field. In Figure 2 and 3 we can see the great increase both in the amount of users as well as the number of visit this webpage receives. In a period of about three years the number of users grew from 922 to 9,115, the visits in the same way increased from 21,069 in July 2000 to 254,790 in December 2003.

These figures clearly show that Equasis was what many stakeholders of the maritime industry were waiting for. As far as the difficulties mentioned in the previous chapter most of the data providers send information to the database voluntarily. This means that Equasis is forced to rely on the good will of them to have the information as updated as possible. The Tokyo MOU, one of its main data providers failed to provide the agreed information since early 2004 (Warner, 2004).

July 2000-December 2003
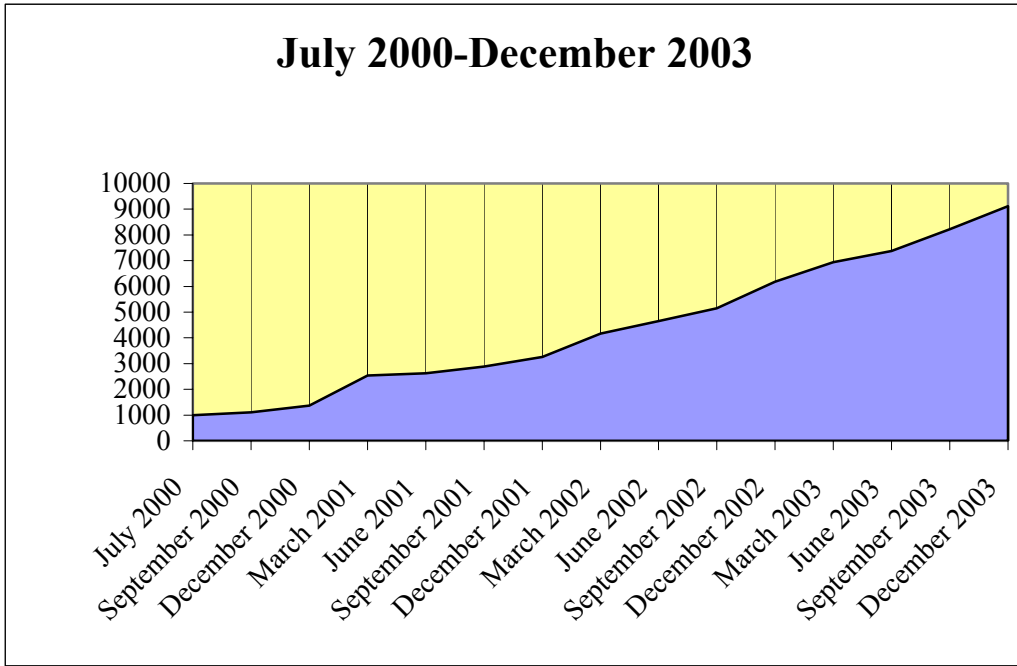
Figure 3.2 – Equasis Active Users
Source: This chart was elaborated based on statistical data provided by the Equasis Management Unit.

July 2000-December 2003
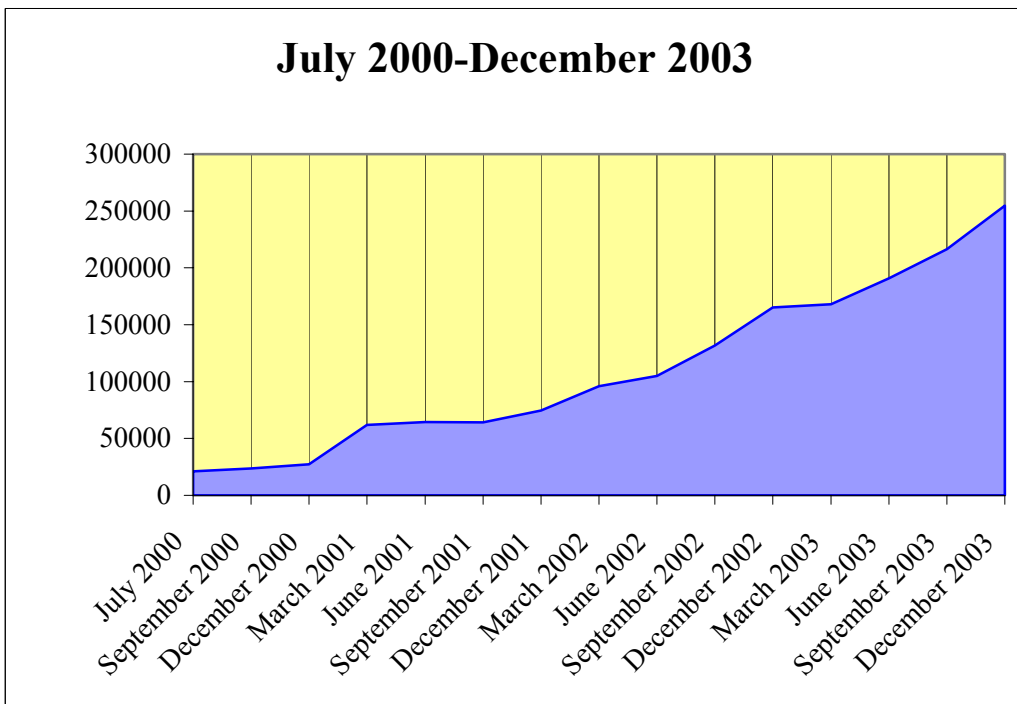
Figure 3.3 – Number of hits to Equasis webpage
Source: This chart was elaborated based on statistical data provided by the Management Unit of Equasis.

The users of Equasis are diverse, in Figure 4 shows the charteres, insurers, brokers, shippers and banks have the largest share in the pie. Since these members of the industry are the ones financing shipping it is important to keep them informed about the history and performance of their potential clients in order to help them take appropriate decisions and succeed in the fight against substandard ships.
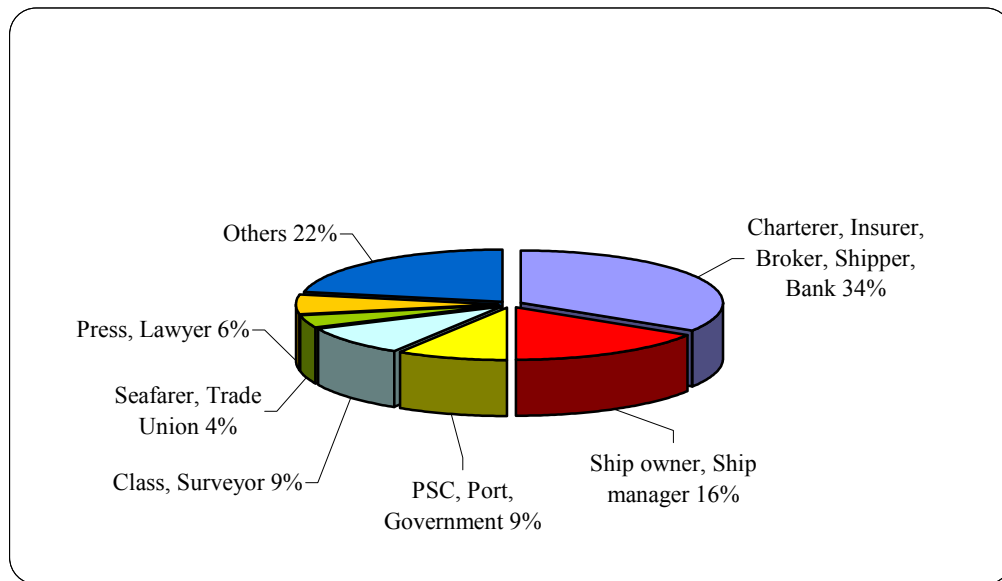
Figure 3.4 – Percentage of users by business sector
Source: Albert Bergonzo, interview by author, Paris, France, 15 March 2004.

3.3.5   Current and Future Issues.

The management of Equasis is actively working in the establishment of the database as a reliable source of information to the industry. They participate in the IMO meetings regarding to Port State Control and it was mentioned the interest of increasing the range of data providers to other PSC MOU regimes, provided they are capable of generating the information with the technical and quality specifications demanded by the database system. The Deputy Director of Equasis mentioned in an interview that they have received requests for more detailed information about other aspects besides the one available at the moment[7].

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[7] Albert Bergonzo, Deputy Director of Equasis, interview by author, Paris, France, 15 March 2004.

Since the industry has shown their interest in the information provided by this organization it could be possible for the management unit to establish agreements with new Data Providers to fill the new areas of information. It was also mentioned that in the future it could be possible to generate "value added information" which would be restricted to certain users with particular interest on it. The data provided at the moment aimed to spot substandard and highlight quality vessels will remain free, as the main objective of Equasis is to bring transparency about ships in the industry and it will remain that way[8].

3.4   IMO GISIS[9]

3.4.1   General Aspects.

The International Maritime Organization (IMO) since its establishment in 1958 has been the main source of regulations about the maritime field, but it also provides the most important forum for governments to gather, discuss and produce the policies which regulates shipping. These activities also make IMO the best place to collect the information produced by the member states. The amount of information produced not only in the many conferences, seminars and workshops hosted or supported by IMO but also by the feedback and reporting of the different stakeholders of the industry is huge. The information arrives at IMO in several formats ranging from hard copies to reports in electronic formats, after it gets to the organization it is distributed to the areas where it is addressed and finally it ends up in a database mostly available to the users of area of destination.

More than ten different databases store the information for the various units and sections of IMO. This valuable information, although it is analyzed and properly filed, is difficult to reach by other person who is not directly related to this area and even more difficult to personnel outside the organization. The large amount of information stored in several databases within the units slows down the processing

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[8] Ibid.
[9] Details about GISIS were provided by the Information Technology Staff of the International Maritime Organization.

and redistribution of the data. In order to solve the problem of the managing of information the Information Technology (IT) Section of IMO were instructed to develop a central database to concentrate all the information and speed up the administrative process and distribution to the areas were it is required. The outcome was the development of the Global Integrated Shipping Information System (GISIS).

3.4.2   Technical Information.

A progress report about the developments of GISIS was presented during a PSC workshop at IMO where the following details were presented (IMO, 2004b). The database is built under Microsoft.Net framework, which is a database engine of the latest generation. Practically there are no limitations to the amount of information it can handle and the system can support as many fields as necessary. The only fact that has to be taken into account is that a "pivot" is needed, meaning a common datum to all the fields to get the connection between them. In this regard the IT team decided to put in the centre of the system the vessel (Figure 5), and connect it to the nine Modules that GISIS has at present:

- Ship Details (SHIP)
- List of Services (LoS)
- Reported Casualty Incidents (RCI)
- Port State Control (PSC)
- ISPS Code Implementation (ISPS)
- Reported Piracy Incidents (RPI)
- Reported Stowaways Incidents (RSI)
- Reported Illegal Immigration Incidents (RII)
- Condition Assessment Scheme (CAS)
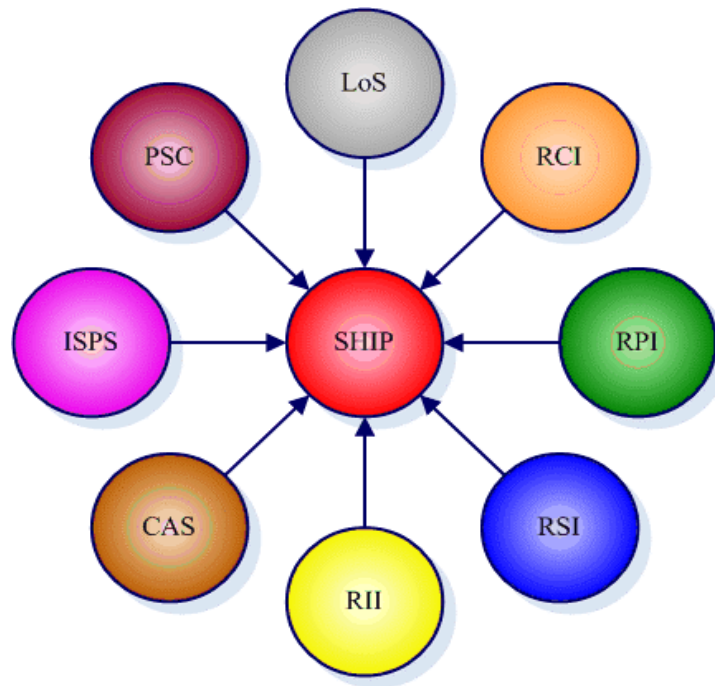
Figure 3.5 – Modules of GISIS
Source: Christo Mirchev, IMO database manager, interview by author, London, 17 June 2004.

With the advance of the technology establishing GISIS does not mean the creation of a unit or section with many operators managing the information. It was mentioned that IMO was flooded with information distributed in several databases within the sections; the new system will just integrate them. The information will flow through this new central database and will reach its destination rapidly, it will be stored and made available for other users. The data providers will be the same ones that currently forward reports, forms, statistics, and others to the organization. The great advantage of this system against others with a similar objective is that Flag States are an excellent source of information. With the input of the administrations the update of information can be greatly increased.

Another feature of the system is that it can import and receive files in several formats. This allows flexibility regarding the resources available to the maritime administrations. According to the module there are two options to provide the information, direct on-line access via log-in and password and via batch protocol

were sets of information are batched and sent to the central database where the information is uploaded into the system.

3.4.3 Current and Future Issues.

GISIS is still in the development stage, however it is possible to access the ISPS Code database part of the integral system running in a trial mode. According to the Database Administrator[10] only between two and four people will be needed to run the system once it is in place. There will be also a need to achieve a certain level of harmonization of standardization in the format of the information received. In this regard IMO has started this process with the ISPS database format to forward security information (IMO, 2004d).

3.5 Are the Systems Redundant?

From the three Information Systems presented in this chapter, it is not correct to say that they are redundant or they are working on the processing of the same kind of data. They actually generate different layers of the same item and furthermore they provide more features about this data according to the providers they have.

The MoU information systems are the ones who produce the data about the performance and maintenance status of the world fleet. Unfortunately, not all the PSC regimes have the capability to support a sophisticated system as the major PSC MoUs. The implementation of the GISIS at IMO will definitely incorporate this MoUs into a global system where they will be able not only to upload and update their information but also access to the information generated by other MoUs, this will help their PSC officers board the vessels calling their ports with some backup and not go "blind" into the inspection[11]. With the development of the information exchange between Tokyo MoU and other four MoUs the concept of the interregional MoU agreements is on the agenda. Another important outcome of the last PSC

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[10] C. Mirchev, IMO Database Administrator, interview by author. IMO, London, UK, 17 June 2004.
[11] Remarks by the Caribbean MoU delegation during the PSC Workshop in London, 9-11 June 2004.

workshop was the proposal of establishing the "IMO Focal Point" where a dedicated unit at IMO would be in charge of coordinating meetings, recommendations, workshops and other of interest to the different MoUs but it can also be the link to create a complete integration of all the PSC regimes worldwide (Figure 3.6).
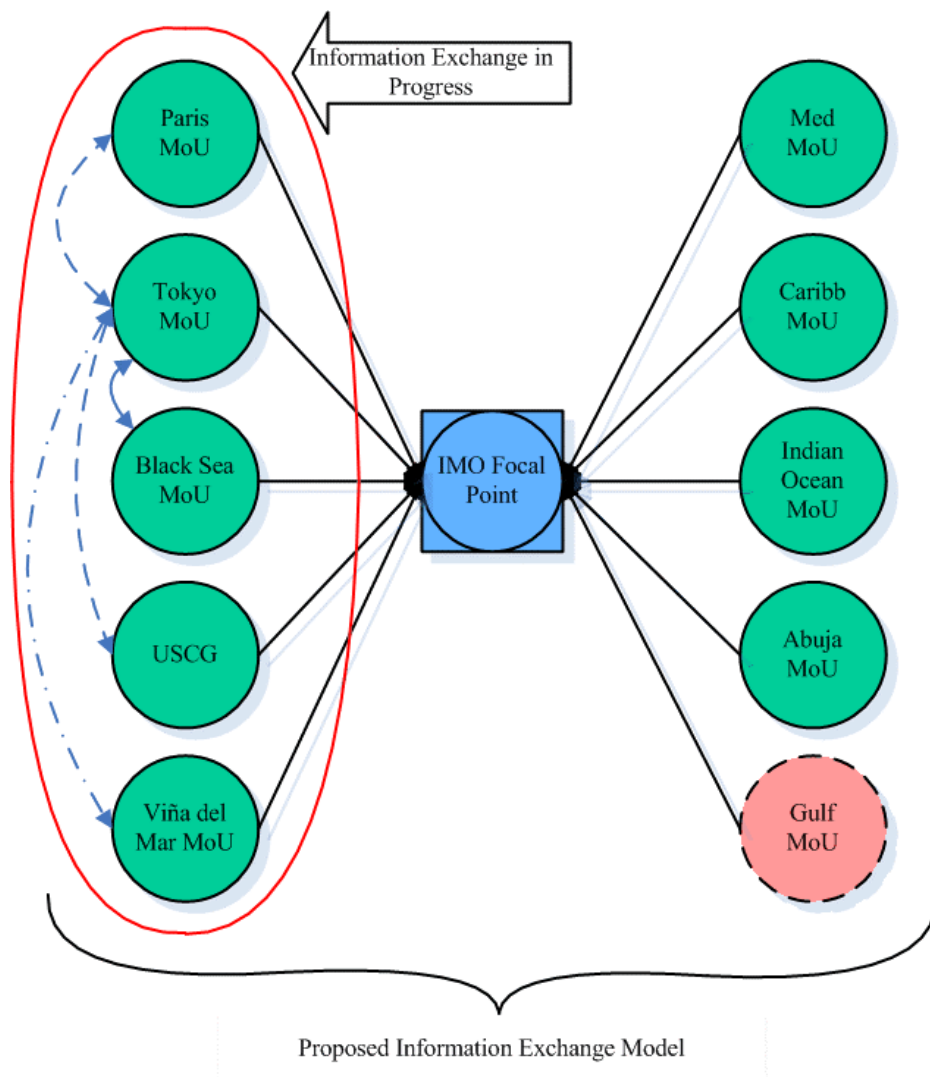
Figure 3.6 - Information Exchange between PSC Regimes
Source: This Chart[12] was elaborated based on the information presented by the PSC MOU delegates during the Third Workshop of PSC in London, 9-11 June 2004.

GISIS and EQUASIS are the systems with similar functions; they collect data from various sources, organize it and finally make it available to the users. Although they

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[12] In this chart Gulf MoU is included. Although the establishment of this MoU is still in progress the Proposed Model will cover each and every one of the PSC regimes in the future.

have some common data providers, mostly providing basic information about the vessels, it is possible to enhance the basic data by adding other fields of information. According to the comparison diagram in Figure 3.7 it is clear that most of GISIS data providers are governmental organizations especially maritime administrations acting as Flag States and Port States. On the other hand EQUASIS is strong in gathering information from the industry and other organizations. EQUASIS with its policy of receiving quality and reliable information into the system puts some technical and quality requirements to the data providers which cannot be fulfilled by all the MoUs, whereas GISIS being part of IMO looks for integration and tries to make the participation of every PSC regime possible.
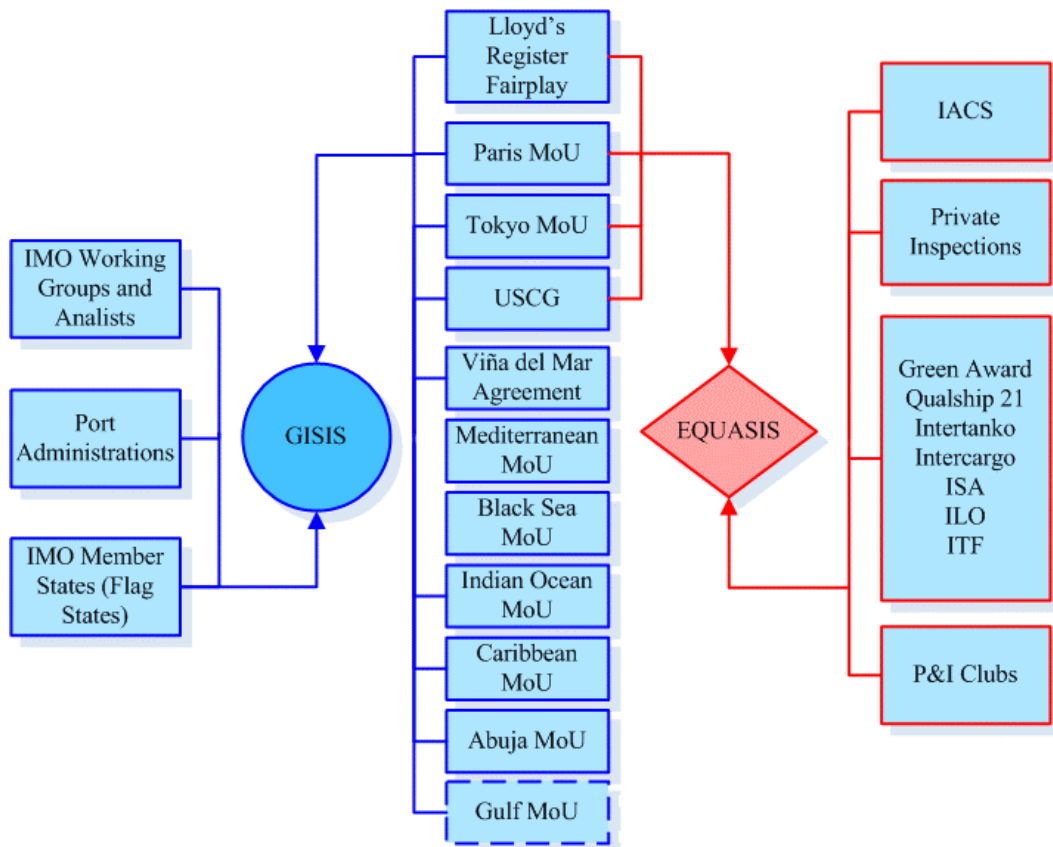
Figure 3.7 - Comparison Diagram between GISIS and EQUASIS data providers
Source: This Diagram was elaborated based on information provided by the Management Unit of EQUASIS and the IMO Information Technology Department.

Having in mind the strengths in both systems, it is better to have them both working together. The importance of the Flag States as data providers is key to increase the

update rate of the information. Lloyd's Register Fairplay, the organization that provides most of the information about ship particulars to both EQUASIS and IMO is developing bilateral agreements with several Flag States in order to improve its information system. Communication between PSC regimes is taking place and the industry is showing its support.

3.6   Conclusions

The different regulatory organizations produce important information on their own. The PSC regime, with the development of the MOU information centres, are sharing information about their inspections and deficiencies detected but other information like the one produced by some private organizations through their vetting inspections is kept reserved. Since information is vital in the decision making process the lack of it can lead to wrong decisions.

The establishment of a central information system where not only PSC inspection reports but the input and feedback from Flag States and other private organizations is necessary to integrate and avoid duplications of efforts by the different organizations trying to improve the quality of shipping. The commitment of every stakeholder to provide and use the information will make the system effective. In spite of the large investments in technology by the MOUs the systems still have same failures, but the cooperation and full participation of more stakeholders both from the regulatory side as well as the industry will make the information generated by the system more accurate and reliable.

CHAPTER 4
FLAG STATE PERFORMANCE

The high seas are all parts of the sea not included in the territorial or internal waters of a state. According to Article 2 of the High Seas Convention (1958):

> *"The high seas being open to all nations, no State may validly purport to subject any part of them to its sovereignty. Freedom of the high seas is exercised under the conditions laid down by these articles and by the other rules of international law. It comprises, inter alia, both for coastal and non-coastal States"*

According to this article, any country in the world whether coastal or landlocked has the right to have ships sailing on the high seas without restriction provided they comply with the international regulations. However, a ship with no nationality or stateless without the protection of the International Law would not be able to trade legally because ports would deny her entry (Coles, 2002, p. 1). Now, a Flag State is the country whose Flag is flown by the vessel and Flag State Control is the control and jurisdiction exercised by the Flag State over the vessel in administrative, technical and social matters (UNCLOS, 1997, Article 94).

UNCLOS also gives the states the right to decide the conditions under which to register vessels and regulate them using their national legislation based on the international conventions. The fact that there is no direct international legislation and control on these safety and environmental matters has given the opportunity to small states to establish maritime administrations without the proper personnel and facilities to enforce the international regulations on their vessels (Drewry, 1975, p. 53) and become part of the Open Registries or Flags of Convenience.

Many survey and certification tasks have been delegated to Recognized Organizations (RO), not only by FOCs but also by National Registries. The objective of using of ROs is to provide the administration with the expertise and means to

control the effective compliance of the regulations from the technical point of view, but the number of ROs has grown as much as the FOCs. If we consider that many of the new ROs do not have appropriate personnel, administrative and technological capacity to perform its duties and the Flag Administration does not exercise effective control over this organizations as detailed in the guidelines for this subject (IMO, 1993), the probabilities to register substandard vessels is greatly increased. The list of "rustbuckets" or remarkably substandard vessels published in Paris MOU webpage confirms that some administrations are not fulfilling their duties properly. This chapter will describe briefly the development of the Flags of Convenience and the efforts made by IMO and the industry in order to assist and monitor countries having difficulties in the proper implementation of the international conventions.

4.1   Flags of Convenience

According to Metaxas Flags of convenience (FOC) are the national flags of those states with whom shipping firms register their vessels with a view to maximizing their private benefits and minimizing their private costs by avoiding economic and other regulations as well as the conditions and terms of employment and factors of production that would be applicable if the vessels were registered in their countries of origin (1985, p. 14). The use of FOCs can be traced even to the eighteenth century when Genovese ships sailed under French flag in the Peloponnesian area until the French government increased the dues and the Genovese ships moved to another flag. The FOC fleet grew both in absolute and relative terms after World War II, as examples Panama from 159 vessels (0,72 Million GRT) in 1939 went up to 5316 vessels (34,67 Million GRT) in 1983; at a worldwide level the FOC fleet grew from 1,2% in 1939 to 26% in 1983 (Metaxas, 1985, pp. 8-16, 23). Among the features that make FOCs attractive for many shipowners are: political, economic and also the minimum requirements to get in and get out of the Registry.

The economic factors attracting shipowners to FOCs are regarding to the income taxes they would have to pay in their original countries. Instead the FOCs charge an

annual fee usually according to tonnage. Other important money saving area is crewing. According to Stopford, 32% of the total operating costs of a vessel is spent in manning (1997, p. 160). About this subject there are two items to consider. First, the number of crewmembers is not fixed and can vary from one register to other. Second, the level of wages paid to the crew (whether they are nationals or non-nationals) can represent huge savings to the shipowner. To illustrate the amount of money that can be saved just by hiring different crew we will use an example of a 50,000 DWT tanker taking oil to USA (table 4.1).

Table 4.1 - Comparison table of wages paid to crew from different nationalities.

50,000 DWT TANKER with 32-Man Crew (wages per year)			
USA Flag		**FOC (Liberian)**	
US Crew	**$ 1,7 Million**	Italian Crew	$ 600,000
		British Crew	$ 500,000
		Spanish Crew	$ 450,000
		Greek Crew	$ 325,000
		Chinese Crew	$ 325,000
		Philippino Crew	$ 250,000
		Motley Crew[1]	**$ 200,000**
Difference between a US flag vessel with US crew and an vessel in a FOC with the cheapest crew		**$1,5 Million savings a year**	

Source: Kasoulides, G. (1993). Port State Control and Jurisdiction. Dordrecht; Boston: Martinus Nijhoff, p. 77

These figures clearly show the economic advantages of hiring foreign crew, but with this practice there is a higher risk of compromising the safety and security of the vessel.

Just three years ago Mr. David Cockroft, the head of the International Transport Workers Federation, managed to "purchase" a Panamanian First Mate license (ITF,

2001). This incident raised the awareness of the fraudulent seafarers certificates circulating and how easy was to get them. IMO developed within its main webpage a seafarer's certificate verification point, which provides a link to the online verification system of some administrations and contact addresses for others. In addition, IMO receives reports about fraudulent certificates detected by the administrations (IMO, 2002). Since the qualifications of the forged certificate's holder are not assessed, he or she is more likely to cause an accident, especially if he receives duties of responsibility in the ship. Besides, the true identity of this "seafarer" is not guaranteed anymore.

There are FOCs developing initiatives to improve the security of the seafarer's identification like the Liberian Biometrics ID card (Grey, 2003). So far the verification of authenticity with the administrations is a good safety measure provided that the administration itself is not the source of the forged documents whether by corruption or an involuntary mistake. Although FOCs do not always mean substandard ships, these administrations are more prone to have difficulties with forgery, not only with seafarer's documents but also with vessel's documentation. On February 2000 the PSC authorities in Salerno-Italy inspected the general cargo vessel M Trans I, with IMO number 8866311. The vessel was unseaworthy so the PSC contacted the vessel's Flag (Cambodia) and its classification society (International Naval Services Bureau) to report the detention. Both, the flag and the class society declared that the vessel was not registered in either of them. Later the PSC authorities found out that the IMO number was forged as well as the rest of the documentation on board (Paris, 2004).

Although there are several FOCs making efforts to implement the regulations and improve the standards in their fleets others do not have the same capacity or interest. The limited registration requirements and the absence of an effective monitoring capacity by the Flag State create a sort of deregulated environment attractive to

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[1] Motley Crew, refers to a crew made up of people from different nationalities.

operators looking for cutting costs by avoiding the regulations and people engaged in illegal activities (Winchester, 2003).

Panama, one of the major FOCs in the world, is facing a possible defection of Japanese tonnage from its fleet due to the difficulties and delay in the implementation of the International Ship and Port Facility Security Code (ISPS) (Chambers, 2004). The ease to get in and out of the registry is an attractive feature for the shipowners, but it is also a great weakness for the administration. The FOC is vulnerable to external factors that can reduce the advantages they offer to their customers and they can easily loose tonnage in a competitive market.

4.2 The International Maritime Organization

The United Nations adopted a convention creating the International Maritime Organization with the purpose of providing an international forum to find solutions and develop regulations for the maritime industry. IMO recently adopted Resolution A.944(23) approving a Strategic Plan for the Organization in order to accomplish the organization objectives stated in Resolution A.900(21) where the main objectives are: Universal Implementation of the Conventions, Improvement of Quality and Transparency, and importance of the Human Element in the Industry (IMO, 2003a).

To achieve its objectives IMO has established three Strategic Directions:
  a. Enhancing the status and effectiveness of the organization;
  b. Developing and maintaining a comprehensive framework for safe, secure, efficient and environmentally sound shipping; and
  c. Enhancing the profile of shipping and instilling a quality culture and environmental conscience.

During the IMO 20th Assembly in 1968 the classic amendment procedures used to update the main conventions were criticized as excessively slow. They were found to limit the ability of the organization to respond to the technological and social

changes in shipping (IMO, 1998, pp. 8-9). During the discussions about the subject the delegation of Canada made the following statement:

> *"unless the international maritime community is sufficiently responsive to these changed circumstances, States will once again revert to the practice of unilaterally deciding what standards to apply to their own shipping and to foreign flag shipping visiting their ports"*

The solution to this issue was the implementation of the "Tacit or Passive Amendment Procedure". This new procedure applied only to the technical content of the conventions and it proved to be effective since the amendments adopted with this procedure took about two years to enter into force. Currently most of the IMO technical conventions have incorporated the Tacit Amendment. In recent years the authority of IMO and the international conventions were challenged when France and Spain took unilateral measures to force out from their Exclusive Economic Zones (EEZ) single hull tankers regardless they were in compliance with MARPOL, going against the UNCLOS Right of Innocent Passage (McLaughlin, 2003). These unilateral actions are mainly consequence of major accidents, and impose higher standards and new regulations to vessels calling to their ports. However, as Salvarani says, "… if substandard operators ignore present rules why should they bother with new ones?" (as cited in Haralambides, 1998, p. XXXIII).

In this situation, new regulations only increase the gap between Quality Operators who invest money in following the standards and Substandard Operators who save the money that would be used to implement the new regulations. Although it is necessary to update the conventions to keep them consistent with the technological developments the main focus should be the assistance to administrations that are unable to enforce the regulations as required. With the growing number of FOCs, especially non-traditional maritime countries without the necessary expertise, the level of enforcement of the conventions can be very different from one flag to another.

IMO established the Flag State Implementation Sub-Committee and the Technical Co-operation Committee to assist and monitor these inexperienced flags in meeting the standards. IMO recently reorganized the Maritime Safety Division and added a new sub-division for Implementation and Coordination, also settled the Internal Oversight Services to work directly in coordination with the Secretary General (see Appendix 4.1). These changes and the new Strategic Plan show the growing importance of the FSI work in the policies of IMO. The Technical Cooperation Sub-Committee has been supporting training courses for Flag State and Port State inspectors trying to improve the knowledge and expertise in different regions of the world.

4.3   The Flag State Implementation Sub-committee

This IMO body was created in 1992 with the objective of identifying the necessary measures to ensure the effective implementation of IMO instruments worldwide with emphasis in the developing countries. The efforts were intended to be mainly to the administrations in their functions as Flag States, but this Sub-Committee also worked to support Port State and Coastal State functions. The core of the job in this unit has been the development of Guidelines in several fields such as: the implementation of IMO instruments, ISM Code implementation, procedures and operational requirements for PSC, survey and certification, authorization of Recognized Organizations, Casualty Investigations, Formal Safety Assessment, and others (IMO, 2003c).

One of the scheduled tasks for the FSI sub-committee is the Conditions for the Transfer of Ships between Flags. This development will make it more difficult for substandard shipowners to move from flag to flag freely trying to fool the PSC Regime. To develop these guidelines, FSI appointed a Working Group of professionals who have the expertise in the relevant subjects, which is missing in many countries. However, the guidelines provide only advice to the administrations and do not have a binding power, therefore the level of use and application of these

guidelines is not uniform. In addition, as the time goes by and technology and other factors affecting the shipping industry change, the guidelines produced need to be changed and updated as well. The best source of information to evaluate the effectiveness of this work is by feedback. In this regard FSI implemented the Self Assessment Form (SAF) and the Model Audit Scheme (MAS) to get information from the Administrations about convention implementation issues.

4.3.1 Self-Assessment Form

FSI's main objective is to ensure that all the member states give full and complete effect to the provisions established by the organization. Even though the working groups have the necessary knowledge and experience, they are not familiar with the political, economic and any other factors that can influence and hamper the implementation of the IMO instruments, even with the assistance of guidelines. It is necessary to have information from the users of the mentioned guidelines and regulations in order to consider additional factors in future developments and also to focus the efforts of other means of assistance like Technical Co-operation. Although it is clear that having better information would really help the organization in the allocation of resources, the use of the SAF is not mandatory and is not considered a requisite to provide assistance to the requesting Administration.

The Self Assessment Form (SAF) is a set of 28 questions (see Appendix 4.2) elaborated to diagnose the performance and capabilities of an Administration to fulfil its mission and was approved during the 42nd session of the Maritime Safety Committee (IMO, 1998). Later FSI subcommittee issued the Guidelines to use this document and also performance indicators to assist them in their self-assessment (IMO, 1999; IMO, 2000). There are two types of questions in the Form, a set of YES/NO questions and a group of open questions requiring a more detailed explanation. The group of YES/NO questions makes the job easier both for the person who is filling the form and for the reader to see whether the objective of that item is reached or not, but many of these questions have expressions like

"appropriate" which leaves to the judgment of the administration to be lenient or demanding on its own performance. These answers can be misleading and give a different profile of the evaluated State at the end.

As the SAF is used and forwarded to IMO by more countries the feedback received with it will also help improve the SAF itself. Still, the information collected through the SAF should be used only as a starting point for a verification procedure like the Model Audit Scheme. So far 54 out of the 164 IMO member states representing 79% of the world gross tonnage have submitted their SAF (IMO, 2004m).

4.3.2   Model Audit Scheme

IMO adopted Resolution A.946(23) approving the establishment and further development of the "Voluntary IMO Model Audit Scheme" to provide a tool for measuring the level of implementation and enforcement the organization instruments by the member states and assist them in improving their performance (IMO, 2003b). The Internal Oversight Services manages the development of the Model Audit Scheme and as presented in Appendix 4.1, it works directly with the Secretary General. At the moment, the scheme is still being developed but the application will be voluntary. An audit of a Maritime Administration would reveal its weaknesses and probably defects in the structure and procedures.

Among the issues that need to be solved in order to have the final guidelines for the implementation of the audit it is the composition of the Auditing Team in terms of skills and expertise. About the source of these experts; will they be part of the IMO staff or they will come from different administrations. Who will pay for the audit if they are appointed within the administrations? The country providing the experts or the country being audited? The logical procedure should be to have the audited state pay for the audit but it could represent an obstacle to get the participation of small non-traditional maritime states. In this case IMO, through Technical Co-operation, would have to bear the costs otherwise the administration that need the most of the

assistance would be left aside. According to Barchue[2], the PSC Regimes could be key players in the success of the scheme by providing incentives to the countries participating in the audits.

The auditing of members has been established by the aviation industry in 1996 as a voluntary measure to improve safety in the operation of commercial airplanes. The project received the appropriate support and the findings uncovered so many important problems that this voluntary scheme was transformed into the mandatory Universal Safety Oversight Audit Program (SOAP), 96% of the members have been audited (Sasamura, 2003). The main problems detected by SOAP in the aviation industry were related to the following points:
- Lack of adequate regulatory frameworks (including basic aviation law as well as specific regulations)
- Inadequate administrative structure and organisation
- Lack of appropriate certification and licensing systems
- Lack of control and supervision capabilities

These are very similar to the problems faced by many of the emerging FOCs. One of the key points in the success of the aviation SOAP is the purpose and use of the information gathered. The primary objective for the aviation is to improve safety and they are very careful in avoiding blacklists and sanctions as a result of the findings, since it could have negative impact on the improvement of their audit scheme. In the maritime industry, as mentioned, the countries supporting the MAS insist on sanctions to achieve improvement. As observed in the aviation experience, it is better to avoid sanctions and provide rewards.

4.4   Industry

The Round Table of International Maritime Associations (BIMCO, ICS, Intertanko and Intercargo) has elaborated a Guidance Booklet on Flag State Performance in

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[2] L. Barchue, Head of the Member State Audit and Internal Oversight Section, interview by the author, London, United Kingdom, 17 June 2004.

order to let know the Maritime Administrations they work with what they are expecting from them in terms of performance, responsibility fulfilment of international regulations, etc. In summary, they are expecting the Flags to maintain a good reputation. How ever these guidelines are designed for Flags willing to work with quality operators (Round Table, 2003). These statements limit the scope of application of the guidelines and at the same time advertise the flexibility in the choice of Flags by the others members of the industry which are not part of these Round Table Quality Operators.

The International Association of Classification Societies (IACS) has started a program to assist Poorly Performing Flags States. As a Pilot Case IACS and Cyprus reached an agreement where IACS assess the procedures of the administration and provides recommendations in areas related to Flag Surveys, Surveys after PSC detentions or without detention but with deficiencies, International Ship Management (ISM) Code, exchange of information between Flag Administration and ROs, etc (IACS, 2004). Although at the moment the positive effects of this new approach of the industry into improving the performance of the Flag States cannot be asserted, it is a good start and also it shows the interest of important stakeholders like the classification societies to participate actively and with a positive attitude in the improvement of the Flag State Performance.

The Oil Companies International Marine Forum (OCIMF), and the European Chemical Industry Council (CEFIC) in an effort to improve safety on Oil and Chemical Tankers, developed the Ship Inspection Report Programme (SIRE) and the Chemical Distribution Institute inspections (CDI). These inspections look to technical, operational and management features of both the tankers and their companies in a similar and parallel way as the Flag State Control (OCIMF, 2004). On the one hand, the development of ships inspections by the industry is positive because it improves the safety by adding another layer to the Safety Net against substandard shipping, but on the other hand, it shows that the industry is starting to

loose confidence on the capabilities of the governmental organizations to keep adequate standards in the shipping industry.

4.5   The Insurance Regime

Other very important player in the maritime industry is the group of insurers. In the insurance regime there are two groups with different responsibilities and scope of coverage in shipping, the Hull & Machinery (H&M) on one side and the Protection and Indemnity (P&I) Clubs on the other. The OECD presented in June this year a study into the possibilities for insurance removal for substandard shipping. Although both Hull and P&I insurers are keen and willing to collaborate in the efforts to eliminate substandard shipping there are several facts revealed by the study that make difficult a direct action from this important stakeholder.

To understand the difficulties in the participation of the insurance regime in the improvement of quality shipping Table 4.2 summarizes the main characteristics of both groups.

The main difference between the groups is that H&M works with private funds and must generate profits for the investors, otherwise the capital can be withdrawn. At the moment the capital for maritime insurance in the market is huge and an intensive competence is created (OECD, 2004b). P&I clubs work with capital generated by the shipowners, in this system there is no need to generate profits, therefore the P&I clubs have more capacity to be stringent in the requirements to allow new member into the club. The H&M instead forced by the competition and necessity to generate profits for the investors sometimes need to be flexible in the requirements.

Another important factor obstructing the participation of the insurance regime into the fight against substandard ships is that they classify the vessels according to their claims record. In 1997 a UK Club analyzed the insurance claims over USD 100,000 for a period of ten years. The obtained results represented 2% in number but 72% in

value of the total amount of claims. The analysis also showed that in this small number of claims both substandard and quality ships had similar shares.

As mentioned the insurance regime is willing to support the fight against substandard shipping but the reduced accessibility to the vessels' history force them to rely mostly on their insurance claim records. With the insurance regime included in an integrated system with the other regulatory measures would provide the underwriters with the necessary information to categorize the vessels according to quality and performance.

Table 4.2 - Comparative table of characteristics between Hull & Machinery insurers and P&I clubs.

Hull & Machinery	P&I Clubs
Not part of the shipping industry: private organizations.	Part of the shipping industry: owned by shipowners
Source of capital: Private Funds	Source of Capital: Shipowners
Profit: Necessity to generate funds for capital owners	Profit: No necessity to generate profits. Just enough to provide coverage and bear expenses
Coverage: vessel's hull and machinery, ship's portion on salvage and general average, expenses aimed to minimize looses recoverable under the policy	Coverage: liabilities to which members are exposed; loss or damage of cargo; death or injury of the crew, stevedores and passengers; collisions with other ships, docks or other structures not covered by H&M insurance; wreck removal, pollution by oil or other substances, some oil pollution fines (provided they are not due to deliberate breaches)
Coverage: shared by several H&M	Coverage: 100% coverage by one single

insurers	club
Size of claims: Agreed value for the ship (i.e. a large modern passenger ship is up to USD 800 million, a latest generation container ship up to USD 100 million	Size of claims: can be up to USD 4,5 billion for a single accident

Source: Elaborated with data from OECD report (OECD, 2004b)

4.6   Conclusions

The role and jurisdiction of the Flag State in the maritime industry has been negatively affected by the presence of substandard ships. Although most of the Administrations fulfil their duties properly and with a proactive attitude towards safety, some of them do not. This weakness in the Flag State regime has given growing importance to the Port State Control regime as well as other stakeholders like private industry initiatives. The development of targeting matrixes and black lists on one side and the private industry vetting Inspections on the other, threaten to replace the Flag State functions instead of supporting and reinforcing them.

The insurance regime with a better exchange of information with the regulatory organizations would get the information they need to have a proper risk assessment at the moment of providing insurance to new vessels. They can support quality shipping both in restricting covering substandard vessels and rewarding with reduced premiums to quality ones.

It is necessary to strengthen the role of the Flag States and redirect the efforts of other governmental as well as private organizations into supporting the administrations rather than challenging their competences. A better communication between Flag States and the rest of the stakeholders will help all of them to have a clearer and more complete picture of the vessels status and risks and it will also restore the confidence of many industry members in the regulatory capacity of the governmental organizations.

CHAPTER 5
THE INCENTIVE SCHEME

Most of the activities and strategies implemented by the regulatory bodies towards the improvement of the maritime industry have been directed to detect and eliminate substandard ships. IMO works actively in the development of regulations and standards to achieve a safe, secure and environmentally sound industry. Flag States, to different degree, adopt and enforce those regulations developed by IMO and the Port State Control regime verifies or perhaps polices to ensure that those regulations are properly implemented.

The PSC regimes, in order to improve the effectiveness of their inspections and allocate their resources where they are needed started to use targeting matrices. These Matrices have one thing in common, which is identifying substandard ships to inspect them with priority and more frequently. Many countries welcome IMO's new initiatives like the Self-Assessment Form and Model Audit Scheme, but there is still a need for motivation to speed up the adoption of these initiatives by more countries and have a real impact on the quality at global level. This chapter will focus on the "Incentive Scheme" which is already used by the United States Coast Guard Qualship 21 and in progress for adoption by Paris MOU. It will also present the advantages and objectives of rewards in the success of the Quality Shipping and Safety Culture establishment.

5.1 Unfair Competition

In 1996 the Organization for Economic Co-operation and Development (OECD) carried out a study on the financial advantages obtained by shipowners as a result of non-observance of international standards and regulations. In this study, OECD identified five levels of compliance for the regulations with the associated costs of implementation. The first level was the highest expenditure and the fifth was a substandard vessel where the owner spends just enough to keep it working. The

fourth level is the minimum acceptable to consider a vessel standard, but between the fourth and the fifth levels some owner have created a sixth level where they can operate a substandard vessel with low probabilities of being detected.

In Appendix 5.1 there is a summary of the levels of implementation of regulations and related expenditures for a bulk-carrier and a tanker. Another example presented in the report show the profit made by a substandard shipowner keeping the vessel in the shaded area: a 25 year-old bulk-carrier can save up to US$ 500 per day, hence US$ 182,500 per year. This amount represents 13 percent of the annual running cost at the normal minimum acceptable level (OECD, 1996). With this amount of savings, the substandard shipowners are capable of offering better prices than the regular ones and thus create an unfair competition damaging the efforts of the different organizations in improving the industry.

Recently, OECD elaborated another study on the topic of the unfair advantage where it recognizes three pillars for the substandard Shipping: safety requirements, anti-pollution regulations and crew safety and certification (OECD, 2004a). From these three areas of non-compliance, structure and construction regulations are easier to inspect than the operational ones (see Figure 5.1). A clear example for a construction regulation can be the new double hull tankers requirement, which has been the hot issue after the Prestige disaster. Operational requirements like the verification of crew training on MARPOL equipment operations can be more difficult to survey especially if the vessel does not give clear grounds to perform a more detailed inspection (OECD, 2003)
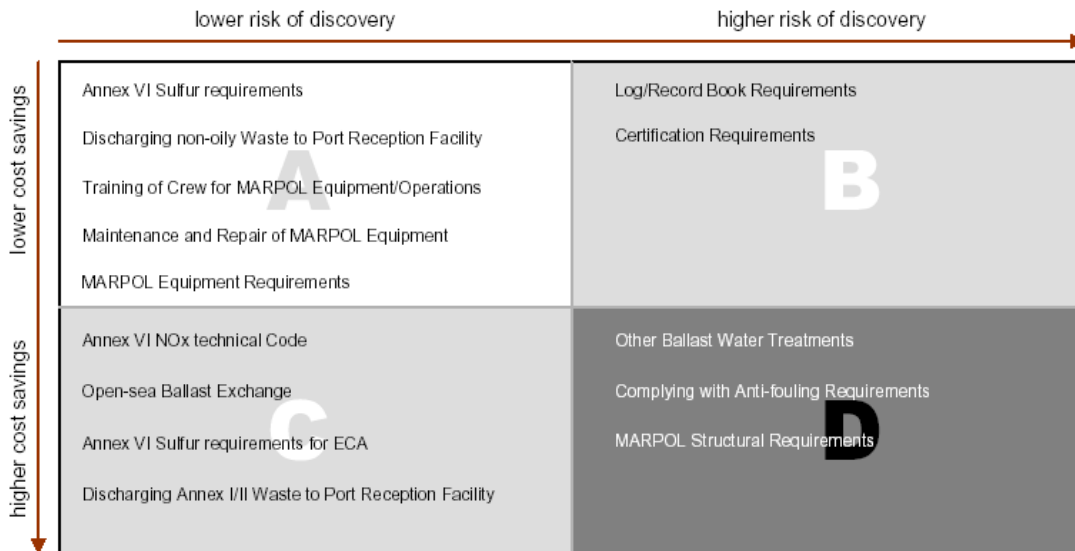
Figure 5.1 - MARPOL regulations relative cost and risks of non-compliance
Source: Organization for Economic Co-operation and Development. (2003). *Cost savings stemming from non-compliance with international environmental regulations in the maritime sector*. Paris: Author

5.2   The USCG Qualship 21

The use of a boarding matrix helped the USCG to better allocate resources and direct their efforts to inspecting the vessels that really need to be inspected and monitored. However, according to the USCG inspection policies, every non-US flagged vessel calling to US ports must be inspected at least once every year (USCG, 2003). The USCG Boarding Matrix criteria for targeting vessels consider the poor performance of the following stakeholders: the Flags, Classification Societies, Owner, and vessels' detention history. But as presented in the OECD reports the implementation of appropriate standards require investment, which in a competitive market provide economic advantage to the ones investing just enough to receive the same level of control as the ones investing more.

In 2001 the USCG started to use the same items of the Boarding Matrix to establish a motivation scheme where the same stakeholder but with good performance were listed in a program called Qualship 21. The eligibility criteria is as simple as the boarding matrix and considers features in Table 5.1:

Table 5.1 – USCG Qualship 21 criteria to select qualified vessels

No	CRITERIA
1	Must be a non-US flagged ship
2	No substandard vessel detentions in the U.S. within previous 36 months
3	No marine violations or serious marine casualties, and no more than one ticket in U.S. within previous 36 months
4	Successful U.S. PSC exam within previous 12 months
5	Not owned or operated by any company that has been associated with any PSC detention in U.S. waters within the previous 24 months
6	Not classed by, or have their statutory Convention Certificates issued by a targeted class society
7	Not registered with a Flag State that has a detention ratio greater than or equal to 1,0% and vessel's Flag State must have at least 10 distinct arrivals in each of the previous years
8	Vessel's Flag State must have submitted their Self-Assessment Form to IMO and provided a copy to the USCG

Source: United States Coast Guard. (b) (2004). US Coast Guard – Qualship 21 Initiative. Retrieved July 25, 2004 from: http://www.uscg.mil/hq/g-m/pscweb/qualship.htm

The reward provided by the USCG to the Qualship 21 vessels is reduction of inspections from the annual mandatory inspection to a biennial for cargo vessels, for tankers a biennial inspection plus an intermediate inspection with reduced scope. However, for passenger vessels, there is no reduction in inspections. Besides this reduction in inspections the USCG publishes the list of qualified Qualship 21 vessels as well as the Flag States both in the USCG webpage and Equasis. This qualification is becoming a marketing tool for the vessels and even for the Flag States. Last year the Maritime Administration of Vanuatu published an article in its homepage announcing or better said advertising that two Vanuatu flagged vessels qualified for Qualship 21 (Vanuatu, 2003). At the moment 15 Flag Administrations (Table 5.2) were found eligible for the program:

Table 5.2 - List of Flag States Eligible to participate in the Qualship 21 Programme in 2004.

Barbados	Greece	Norway (NIS)
Bermuda	Hong Kong	Singapore
Denmark (DIR)	Isle of Man	Sweden
Germany	Luxembourg	United Kingdom
Gibraltar	Netherlands	Vanuatu

Source: United States Coast Guard. (b) (2004). US Coast Guard – Qualship 21 Initiative. Retrieved July 25, 2004 from: http://www.uscg.mil/hq/g-m/pscweb/qualship.htm

The participation in this scheme is creating a healthy competition among Flag States since the benefits come from implementation rather than cutting corners as in the substandard shipping.

One of the most important requirements to participate in the programme is the submission of the Member State Self-Assessment Form (SAF) to IMO. One of the problems for the success of the SAF and other proactive initiatives started by IMO do no succeed or take longer to do it is because there is a lack of motivation. At the moment 54 IMO Member States and Associate Members (79% of the world gross tonnage) have submitted the SAF among them 22 of the 30 biggest fleets in the world (IMO, 2004p). Besides the support to IMO the SAF gives the USCG an idea of the organization of the Flag State in order to include it in the programme. The accuracy of the information in these forms relies only on the honesty of the administration but still is a good reference to consider.

5.3   Paris MOU Reward System

The Paris Memorandum of Understanding on Port State Control during its 34th meeting decided to establish a reward system in the same way as the USCG Qualship 21. The Eligibility Criteria covers the following points:

- The vessel has not been detained within the previous 36 months.
- The vessel has been inspected at least one time within the previous 12 months.

- The vessel has no inspections recorded with more than 0 deficiencies.
- The vessel must be registered with a flag appearing on the White List published by Paris MOU.
- The vessel must be classed with a Recognised Organization that have a detention rate below average.
- The vessel's Flag State has sent its Self-Assessment Form to IMO.

According to this criteria 1,290 vessels would be eligible for the reward. The implementation of the Reward System is still in progress and at the moment the rewards are similar to the ones in Qualship 21, reduced PSC inspections and publication of the rewarded vessels as a marketing tool. Both rewards are in the same way as in the USCG, hence passenger vessels do not have less inspections, only the publication of the qualification.

During the development of the system, two proposals were presented. One included the submission of the Self-Assessment Form in the eligibility criteria and the other did not. The following debates took place during the Paris MOU 36th meeting in the adoption of the eligibility criteria for the reward system. The calculations with the information available in the database for the option without the submission of the SAF showed that 2,043 out of 16,000 vessels calling to Paris MOU ports were eligible for the reward. These figures represent 12.7% of the total number of vessels were going to be inspected once every two years. This reduction would have a serious impact on some ports looking to accomplish the target of inspecting 25% of the arriving vessels.

A new calculation was made including the requirement of the SAF submission and this time the number of vessels went down to 1290 and was accepted by the meeting (Paris MOU, 2003). These discussions make clear that there could be a conflict between the reduction of inspections and the minimum percent of inspections

required to each member of the MOU, perhaps in the future the Committee could set a reward quota were only the eligible vessels with the best profiles will be rewarded.

5.4 The Green Award

The Green Award is a private organization established in 1994, which provides a service of inspection and quality certification to tankers and bulk carriers. Although it is a private organization, it was the first in implementing an inventive scheme for quality ships. What attracts shipowners to participate in this programme is that Green Award established bilateral agreements with several organizations and port authorities to provide incentives to the certified vessels as presented in tables 5.3 and 5.4:

Table 5.3 - Ports with agreement supporting the Green Award Scheme

PORTS			
No	Country	Port	Incentive
1	Belgium	Ghent	6% port fees (oil tankers, bulk carriers)
2	Lithuania	Klaipeda	5% vessel dues (oil tankers)
3	New Zealand	Taranaki	5% on marine tariff
4	Portugal	Sines	5% tariff on port use (oil tankers)
5	Portugal	Douro e Leixoes	3% tariff on port use (oil tankers)
6	Portugal	Lisboa	3% tariff on port use (oil tankers)
7	Portugal	Setubal	3% tariff on port use (oil tankers)
8	South Africa	Richards, Bay, Durban, East London, Elizabeth, Mossel Bay, Cape Town, Saldanha	5% dues rebate if not enjoy 5% double-hulled/SBT scheme
9	Spain	Bilbao, Santander, A Coruña, Huelva, Bahia de Cadiz, Bahia de Algeciras,	Vessels charged 93% of T1 tariff (oil tankers)

		Malaga, Cartagena, Valencia, Castellon, Tarraagona, Barcelona, S.C. de Tenerife and other ports	
10	Netherlands	Amsterdam	6% port fees (oil tankers)
11	Netherlands	Rotterdam	6% port fees (oil tankers)
12	Netherlands	Dordrecht	6% port fees (oil tankers)
13	Netherlands	Moerdijk	6% port fees (oil tankers)
14	Netherlands	Zeeland	6% port fees (oil tankers)
15	U.K.	Sullon Voe	5% port fees (oil tankers)

Source: Green Award. (a) (2002). *Green Award Foundation Annual Report 2002*. The Netherlands: Author.

Table 5.4 - Other Organizations supporting the Green Award Scheme

OTHER INCENTIVE PROVIDERS			
No	Organization	Country	Incentive
1	Dirkzwager's Coastal & Deepsea Pilotage	Netherlands	5% on published tariff
2	Dutch Pilotage Organization	Netherlands	
3	Euroshore International	Netherlands	5% discount by 87 members in 9 countries
4	GAUSS mbH-Institute for Env. Protection and Safety in Shipping	Germany	7% discount on training courses
5	George Hammond Plc, Dover UK	U.K.	5% on pilotage
6	Maritime Simulation Rotterdam b.v	Netherlands	5% training fees
7	Royal Boatmen Association Eendracht	Netherlands	Free assistance mooring/unmooring boats 200 m and above
8	Smit International	Netherlands	Free attendance to Emergency courses

9	Van Esch International	Netherlands	7.5% rebate on port services w/crane-barges

Source: Green Award. (a) (2002). *Green Award Foundation Annual Report 2002*. The Netherlands: Author.

The Green Award Scheme offers its services worldwide and advertises itself as a Global Scale organization and indeed the Certificate Holders currently are various regions of the world: Canada, Cyprus, Denmark, Egypt, Finland, Greece, Hong Kong, Iran, Kuwait, New, Zealand, Norway, Singapore, Sweden, United Arab Emirates, United Kingdom, and the United States of America (Green Award, 2002b). However, as presented in tables 5.3 and 5.4, most of the rewards are provided in Europe and the operators participating in the programme have direct business in this area, which limits its scope from a global scale to a regional organization.

About the procedures and operations, Green award starts the process of entering vessels into the system by an application form. The organization appoints a team of surveyor to inspect the ships in a similar way as the Flag State Control; hence they check the vessels from the technical, operational, managerial point of views based on the relevant international conventions. During the structural inspection the surveyors do not go too deep into the subject and thus do not perform the job of a classification society. After the inspections are concluded, the vessels receive a three-year certificate, which is subject to annual verifications (Green Award, 2001). The costs of the Green Award Certification are in three categories, inspections and audits, application fees and annual fees (Table 5.5). The agreements established by the organization compensate and provide profits to the operators in the long run.

Table 5.5 - Certification Tariff for Crude Oil Tankers-adopted by the Green Award Committee 18-11-2003

	Office Audit fee	Application fee	Annual fee
20,000-50,000	€ 3340	€ 4690	€ 2920
50,000-150,000	€ 3340	€ 5320	€ 3340
150,000-250,000	€ 3340	€ 6155	€ 3755

250,000-350,000	€ 3340	€ 6790	€ 4170
>350,000	€ 3340	€ 7820	€ 4590

Source: Peter C. van Hattum, Surveyor Green Award, personal communication by author, Rotterdam, The Netherlands, 27 July 2004.

Although the name of the scheme "Green Award" suggests that it only or perhaps mainly deals with environmental matters, the inspections cover the safety features as much as the environmental prevention ones. At the end we can see that it is a Quality Certification enterprise with the advantage of a network of supporters, which give economic benefits to the users.

5.5   Conclusions

In a market where substandard shipping pays off, quality operators are forced to bear the costs of overregulation that in principle is intended to eliminate unseaworthy vessels. The establishment of vetting inspections show that the industry is loosing confidence in the regulatory capacity of the governmental organizations. Even the Green Award Scheme, which main characteristic is rewarding outstanding operators with discounts in several fields according to the agreements developed, performs its own surveys and audits leaving the Flag and Statutory Certification in a secondary position.

The recent developments by IMO regarding FSI are unfortunately still as yet, recommendatory. The USCG Qualship 21 programme has shown that establishing incentives that can provide some economic benefits for the operators will motivate them into following the regulations properly. The inclusion of the Self-Assessment Form in the requirements for the Qualship 21 and the future Paris MOU Reward System will become a strong support for the success of this initiative and it could be the way to motivate the members to follow other ones like the Model Audit Scheme.

At the moment the rewards provided by the USCG are only reduced inspections and publishing the list of qualified vessels but in the future there is a possibility to get

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reduced fees in port dues (USCG, 2004c). The Green Award Scheme showed that it is possible to get support from the industry to promote quality; therefore, both the USCG and Paris MOU could establish their own agreements to increase the scope of incentives and motivate the Quality operators. We can observe that at global level the three principal PSC Regimes are the USCG, Paris MOU and Tokyo MOU, these organizations take leading roles in the development and implementation of different measures to improve the efficiency and effectiveness of their tasks as it happened with the Black Lists and Targeting Matrices. About this new approach to achieve Quality Shipping it is possible to predict that in the future Tokyo MOU could develop its own incentive scheme.

CHAPTER 6

THE QUALITY SYSTEM

The previous chapters described some of the current regulatory measures intended to eliminate substandard shipping. Lack of transparency and inaccurate and out-of-date information increase the chances to operate substandard vessels with low probabilities of detection. The reviewed regulatory bodies produce and store information about ships that sometime overlap with the information of other organizations. In this regard, lack of communication between regulatory bodies makes more difficult the task of achieving transparency in the industry.

Although there is a movement towards integration and harmonization to promote an interregional approach to take actions against substandard ships in the PSC regime it is still necessary to extend this cooperation to the other governmental and private sectors. To establish a Quality System, we will review the problems found in the maritime industry as well as the factor originating them (Cause and Effect). In order to get an efficient system we will use the Pareto's Principle to define the areas and items that the system will address directly and some items that will be affected indirectly.

6.1   Pareto's Principle

The Italian economist Vilfredo Pareto introduced an economics principle known as "The 80-20 Rule" in 1906. Pareto developed this principle based on the observation that eighty percent of the wealth in his country was owned by twenty percent of the people (Hafner, 2001). If this theory is applied to the Maritime Industry we could say that a reduced amount of the current regulatory measures are able to affectively eliminate or at least control a large amount of the problems affecting the maritime industry, also a large amount of the safety, security and environmental deficiencies that hamper the international trade and damage the image of shipping would be

caused by a reduced number of practices and procedures that need to be changed or improved.

6.2   Regulatory Measures Interaction Analysis

Before establishing an integrated system it is necessary to evaluate and analyse how compatible or conflicting are the current regulatory measures among each other, otherwise we could be putting together organizations with conflicting interests and consequently worsening rather than improving the shipping industry. Table 6.1 presents an interaction matrix based on the regulatory measures evaluated in previews chapters. To elaborate this matrix sixteen items were identified as relevant in the maritime industry regulatory framework and classified in six areas as follows: Port State Control, Flag State Control, IMO, Information Systems, Reward Scheme, Industry. Three parameters were used to define the interaction relation among the indicators as follows:

-       P = Complementary Interaction
-       N = Conflicting Interaction
-       O = There is no interaction between the measures compared

(A→X) how the item affects the others, (X→A) how item is affected by the others.

6.2.1   Port State Control.

The PSC activities are the ones with the highest level of interaction with other regulatory measures. The PSC inspection results, especially the ones leading to sanctions like targeting, blacklisting and banning are factors considered in the risk-based decision making process used by several stakeholder of the industry through the increased vetting inspections, and during the conduct of casualty investigations to provide background information about the status of the vessel. The results in table 6.1 show the growing importance of the PSC regime, which unfortunately is leaving the organization with the primary responsibility for enforcing and implementing the regulations of the vessels, the Flag State, in a secondary position. The downside of this situation is that there will be a conflicting interaction between PSC and FSC, if

we consider that the PSC inspections cannot be as detailed as the FSC due to time constraints the risk of having vessels with dangerous structural deficiencies undetected is increased.

6.2.2 Flag State Control

The activities performed by the Flag State have less interaction with the rest of the regulatory measures than the PSC ones. The interactions with IMO activities has the highest number of complementary relations, but as presented in Chapter 4 only 54 out of 164 IMO members have submitted the Self-Assessment Form. The Model Audit Scheme is still in the process of development and the level of implementation will probably be lower than the SAF since it involves a physical assessment of the administrations performance, but these measures are key to restore the confidence, especially from the industry, on the regulatory capacity of the Flag Administrations. The Flag State casualty investigation process has little interaction and needs to be integrated to the rest of the regulatory bodies to raise awareness about these accidents that very often produce structural damage to the hull which is difficult to detect by PSC inspectors.

6.2.3 IMO

Although there are not too many complementary interactions between IMO and the rest of the regulatory areas, IMO provides the international forum to develop the necessary regulations. Most of the interactions are in the areas related to Port State and Flag State. However, the industry stakeholders still participate during the IMO activities in an observer status so the industry point of view and input is not absent during the new regulatory developments.

6.2.4 Information Systems

The highest level of positive interactions in this area is related to the output of the information. Both governmental and private organizations find in the different information systems a good source of information to support the decision making

process. The problem in this area is the interaction related to the input of information. Since the PSC Regime developed these systems the best interaction is with them, but the interaction with the Flag States is very reduced. Other area with reduced participation in the input is the industry, where the Classification Societies are the mayor participants. The information systems are still being developed and they are widely accepted by governmental and private organizations, but they need the more support of all the industry stakeholders to produce reliable and accurate information.

6.2.5   Reward Scheme

The Reward Schemes have a good level of complementary interactions with the industry and the PSC Regime. The relation with the Flag State regime is much lower but the interest in this area is growing. It was mentioned in Chapter 5 the advantages not only for vessels but also for Flag States in terms of publicity and reputation. The interaction improvement in the information systems area is necessary to ensure its success in supporting the establishment of a quality culture. This scheme has also a great potential to motivate and accelerate the implementation of new initiatives like the IMO Self-Assessment Form. The schemes under the PSC control may become a new approach to phase-in regulations and turn them from the voluntary implementation to a mandatory PSC requirement.

6.2.6   Industry

The interaction matrix presents a good level of participation of the industry in the regulatory framework but the relation with the Flag State Regime is becoming conflicting since most of the industry stakeholders established the vetting inspections as the major factor in the decision making process. This practice leaves the Flag State system of survey and certification as a routine paperwork with low level of reliability.

A→X / X→A		PSC Inspections	Target Matrix, Blacklist, Detentions, Banning	FSC Inspections, Cont. Synopsis Record	Casualty/Incident Investigation Reports	Comments PSC det.	SAF, MAS	Regs. Development	MOU Info. Centre	Equasis	GISIS	Qualship 21, Paris MOU	Green Award	Insurance	Classification Societies	Charterers	Vetting Inspections
Port State Control	Inspections		P	O	P	O	O	P	P	P	P	P	P	P	P	P	P
	Target Matrix, Blacklist Detentions Banning	P		O/N	P	P	O	P	P/O	P/O	P	P	P	P/O	P/N	P	P
Flag State Control	Inspections, Cont. Synopsis Record	P	O		P	O	P	P	O	O	O	O	O	O	O	O	O
	Casualty/Incident Investigation Reports	P	P	P		O	P	P	O	O	O	P	P	P	P	P	P
	Comments PSC det.	O	P	O	P		P	O	O	O	P	O	O	O	O	O	O
IMO	SAF, MAS	P/O	P/O	P	O	O		P	O	O	O	P	O	O	O	P/O	O
	Regs. Development	P	O	P	O	P	P		O	O	O	O	O	O	P	O	P
Info. Systems	MOU Info. Centre	P	P	O	P	O	O	O		P/O	P	P/O	O	O	P	P	P
	Equasis	P	P	P	P	O	O	O	P/O		O	P	O	P	P	P	O
	GISIS	P	P	P	P	P	O	P	P	O		P	O	P	P	P	P
Reward Scheme	Qualship 21, Paris MOU	P	P	P/O	O	O	P	O	P/O	P	O		O	P	P	P	O
	Green Award	P	P	O	O	O	O	O	O	P	O	O		P	P	P	P
Industry	Insurance	P	P	O	P	O	O	O	O	O	O	O	O		P	P	P
	Classification Societies	P	P	P	P	O	P	P	P	P	P	P	P	P		P	P
	Charterers	O	O	O	P	O	O	O	O	O	O	O	P	O	P		O
	Vetting Inspections	P/O	O	O/N	O	O	O	O	O	P	O	O	O	P	P	P	

KEY: P=Complementary interaction; N=Conflicting interaction; O=No interaction

Table 6.1 - Regulatory Measures Interaction Matrix

6.3   The Quality System

The diversity of the stakeholders in the maritime industry, the dangerous nature of shipping and the disastrous consequences of major disasters require an integrated approach to not only reduce substandard shipping but also to establish a Safety and Quality Culture where high standards take shipowners to success and low standards are faced-out by the industry.

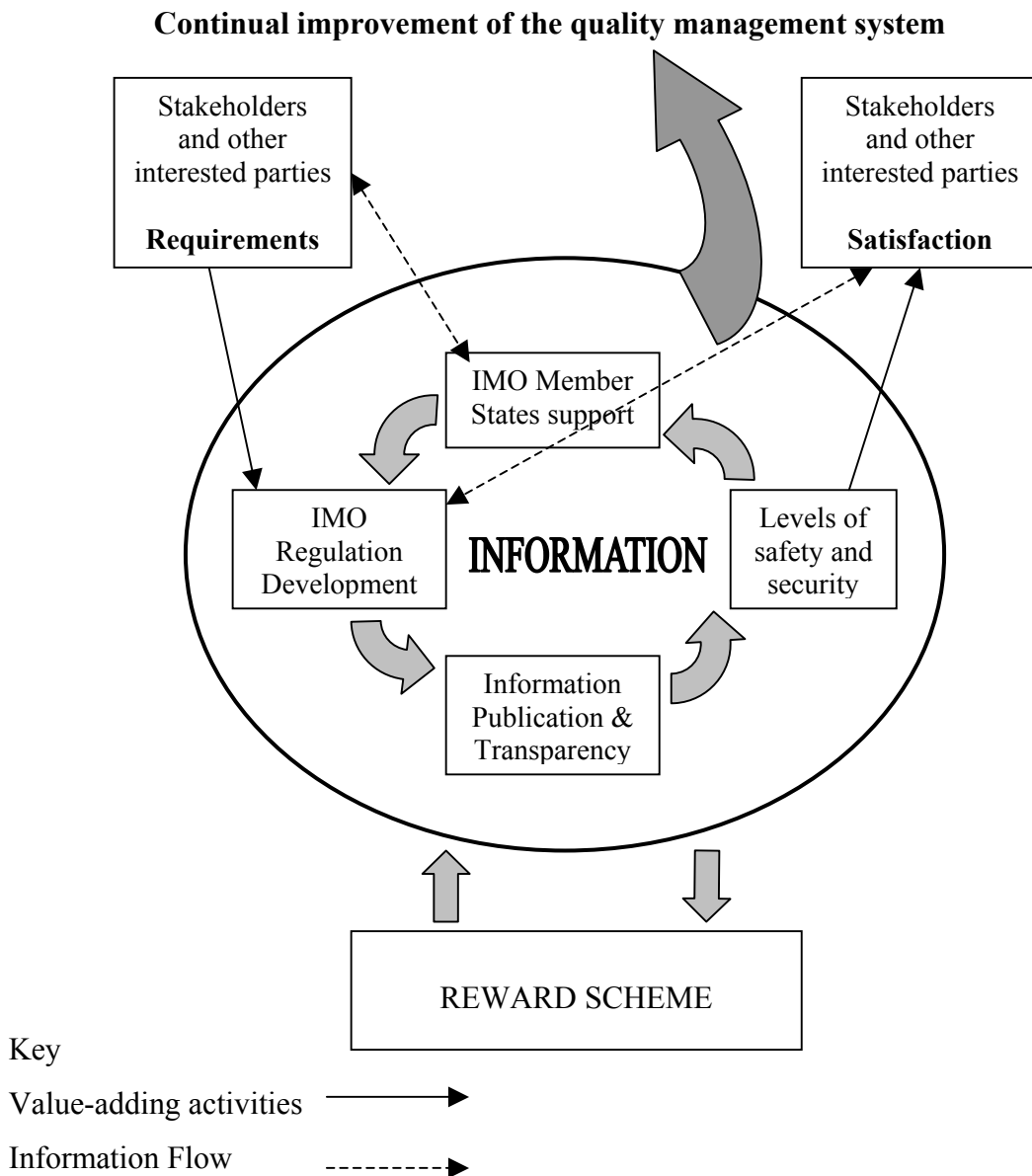**Continual improvement of the quality management system**

Figure 6.1 - The Maritime Industry Quality System
Source. Adapted from the ISO Model (ISO, 2003, p. 15)

The most important feature in a Quality System for the Maritime Industry is the information. It is not enough to gather and store data but the processing distribution and feedback is essential to really learn from the accidents, near misses and in summary experiences acquired. The interaction matrix presented in Table 6.1 shows that at the moment there are several measures acting on their own or having little cooperation and interaction with other measures, it is possible to put together a system where the efforts can support each other and increase their effectiveness.

There are three factors essential for the success of the Quality System: Full commitment and participation of the maritime industry stakeholders, effective and efficient process and exchange of information, and finally a reward system capable of reverting the benefits obtained by substandard operators by avoiding regulations towards the high quality operators investing in safety and security measures.

The Maritime Industry Stakeholders not only refer to the governmental regulatory organizations engaged in developing, implementing and enforcing the regulations, but also involves the private industry. As presented in the interaction matrix although in different degrees all of them have more complementing than conflicting interactions with the regulatory framework.

The development of the MOU information Centres and the Global Integrated Shipping Information System (GISIS) provides an adequate structure to set up the system. The capabilities of GISIS allow managing the information from different sources. The release of technical data to feed the main information system (GISIS) from different sources helps to cross-reference and verify the accuracy of the data to have an updated profile about the vessels in matters of safety.

In this area is where the principles of Quality Management are needed to recycle the information and process it to redistribute it to the stakeholder and users. The interaction of the system as a whole with the stakeholder both in the stage of data

providers by facilitating technical data and requirements in matters of safety and productivity as well as in the stage of stakeholders as users of the system by providing feedback about the accuracy and usefulness of the information received.

The last factor is the Rewarding Scheme necessary to keep the system moving. Chapter 5 presented the OECD study about the advantages obtained by substandard shipowners by cutting corners in regulation compliance. The PSC measures to detect and increase the inspections to these high-risk vessels have developed an unfair competition where the substandard operators succeeding in fooling the system get the economic reward. It is necessary to revert this situation into a competition for Quality where the vessels with higher standards get an economic reward.

The establishment of Green Award shows that the industry is willing to participate in an incentive scheme. The potential of the PSC Regime to establish similar schemes (USCG Qualship 21 and soon the Paris MOU Reward System) give the governmental organizations an excellent tool to accelerate and motivate the implementation of new regulations. The globalization of the reward scheme, not in terms of a unique worldwide incentive scheme but with the establishment of similar schemes in the other MOUs like it happened with the targeting matrix and the information centres will increase the power and persuasion capacity of the PSC Regime in the whole industry.

6.4   Conclusions

At the moment the maritime industry is highly regulated and controlled, nevertheless accidents are still happening. The efforts of several regulatory measures like the PSC inspections and the many vetting inspections are directed to the same area becoming redundant and making the industry unnecessarily over-controlled. The integrated approach will help the already established regulatory measures support each other and thus improve their performance. This means concentrate the efforts that really have an effect on reducing the threats.

The establishment of the Universal Safety Oversight Audit Programme in the aviation industry is a good example of an integrated approach in matters of increased safety and security by monitoring proper implementation of the international regulations. The main feature of such a system is to use the information to produce regulations and at the same time make sure these regulations are followed accordingly. The maritime industry with the development of the FOCs has difficulties in implementing this type of system since for many countries it is difficult to monitor their large fleets.

The integrated system will allow the whole PSC Regimes, Flag States and industry to be aware and keep track of this risky vessels and at the same time to promote the quality ships that pose a reduced risk to the environment and the safety of the vessels and cargo. The exchange and process of information by more participants also is intended to turn the Maritime Industry from an "error prone" to an "error tolerant" environment. In this sense it is accepted that it is impossible to eliminate completely the risk of accidents but it is possible to have a system where isolated faults cannot lead to major disasters. In other word to address the cause of accidents as described by reason: accidents are always caused by a combination of latent and active mistakes on several levels (1990).

CHAPTER 7
CONCLUSION

Substandard vessels are per se a threat to the safety of people, environment and cargo. But lately, the presence of these ships in an unseaworthy condition has damaged the image of the maritime industry to the public and other stakeholders. To safeguard their interests, these stakeholders have developed a parallel inspection system (Vetting Inspections) that they can trust in order to make safe investments.

In addition to the mentioned risks, substandard shipping damages the economy and balance of the whole shipping industry by presenting unfair competition to operators who invest in maintaining the standards. The profits obtained by avoiding the regulations allow these non-compliant operators to offer better prices to the charterers and as a consequence, the compliant operator must reduce their prices to remain competitive in the market. In the long run the compliant operators suffer the consequences of the substandard shipping since the regulatory bodies develop new regulations to address the emerging problems caused by the substandard ships.

The more regulations are produced the bigger the gap between the economic benefits of the substandard and the economic looses of the compliant gets. This unfair competition discourages the improvement in the quality and at the most the compliant operators invest the minimum to maintain the vessel up to the standards and increasing the temptation of developing an attitude prone to look for illegal profits, and taking the ships from the minimum safe standards to the grey area where the vessels' deficiencies are difficult to detect.

Since the primary jurisdiction over a vessel is in the hands of the Flag State, the failure or insufficient performance of this organization in the fulfilment of their duties has a negative impact on the shipping industry as a whole. The movement of the fleets from the traditional maritime countries (very often developed countries) to

the emerging Open Registries or Flags of Convenience (often developing countries) added to the unwillingness or incapability of some administrations to exercise a more strict control over their vessels undermined the credibility of the Flag State survey and certification regime.

The growing importance of the Port State Control regime in the elimination of substandard shipping has also asserted some responsibilities over these organizations, a situation not envisioned by the "authors" of the PSC regime. The PSC Regime was created to support the Flag State in the enforcement of regulations but at present they have become responsible for detecting failures that are even out of their scope like the structural weakness leading to the Erika and Prestige disasters.

The PSC regimes started to establish inter-regional cooperation agreements and also started a process of standardization of procedures and codification. Even though these initiatives were started by the major regimes like the USCG, Paris MOU and Tokyo MOU, the rest of the agreements take advantage of their developments to improve their own performance. The recently established MOUs are usually supported technically by one of the major regimes, thus the initiatives of standard procedures and codes developed by the more experienced are established in the new regimes from the beginning.

The latest development, the information centres, is a clear step towards the integration of the whole regional PSC authorities and eventually achieve a global and unified PSC regime. In the same way as globalization, the economic differences among the participants of this regime requires assistance from the most developed to the developing countries to enable them to fulfil their obligations according to the global regime.

As presented in chapter 2, out of 9 PSC regimes 8 have already implemented information centres and the missing one (Caribbean MOU) is expecting to have its

information centre established before the end of this year. Although most of the systems use advanced technology they still present some flaws like full participation of all the MOU members. But the fact is that there is indeed a system capable of facilitating the information exchange, it only needs to be improved and supported.

The establishment of incentives schemes in all the PSC regimes like the already established Qualship 21 and Paris Reward System in progress will expand the success of this initiative into a worldwide reward system where the benefits for maintaining quality standards would outweigh the economic advantages obtained by substandard vessels. Besides, the current "minimum compliance culture" investing the minimum necessary to become standard would be turned into a "safety and quality culture" where the highest standards would become the objective of the competition.

The Green Award initiative shows the positive effects of the incentive scheme. Not only in supporting and motivating quality operators but also in getting the active participation of several industry members in the quality chain. Although the Green Award provides a series of economical benefits for the participants in the programme it cannot make a real impact on the quality of shipping as a whole since most of the supporters are concentrated in some areas in Europe.

The benefits provided by the PSC incentive scheme are at the moment reduction in the PSC inspections and probably in the future some other incentives like reduced fees in a similar way as the Green Award. The USCG Qualship 21 is an incentive scheme already in place and also announced the intentions of increasing the scope of incentives through agreements with some port authorities in the US. But the major benefit for the owners is the reputation and publicity that attracts major charterers.

An integrated system gathering most of the stakeholders in the maritime industry will facilitate the development of global policies where the support of industry members

is required. As it was presented in chapter 4, the maritime insurance regime is willing to support the improvement of quality standards in the shipping industry but the restricted access to the necessary information about the vessel's history and performance has driven the insurers to develop their own evaluation system considering claim records rather than quality standards.

The Quality System proposed is intended to ensure the minimum risk to safety and security by the proper implementation of the international instruments. The input of information and feedback through continuous audits and performance control of the authorities as well as the rest of the stakeholders will permit adjustments and changes to the regulations based on analysis rather than knee-jerk reactions to unexpected problems. Quality standards are an on-going issue that needs a proper follow-up to verify its effectiveness and adjust when necessary to remain effective, which, without a proper quality control system in place, is not possible.

Each one of the measures whether intended to regulate, control, enforce or motivate quality shipping are very positive but their effects do not make a significant impact in eliminating substandard ships yet, in some cases due to its limited implementation or low level of participation. Gathering all these initiatives together will make available the necessary means to support each other and make the implementation of initiatives truly global not only in the sense of geographic application but also diversity of stakeholders. The most important objective of this integrated system is to restore the reputation and confidence on the government regulatory capacity and prevent the unilateral measures that undermine the important achievements at international level. The structure of the system is already in place; the next step is the participation and support of each one of the maritime industry stakeholders to make it work.

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Appendix 2.1

Distribution of PSC MOUs worldwide
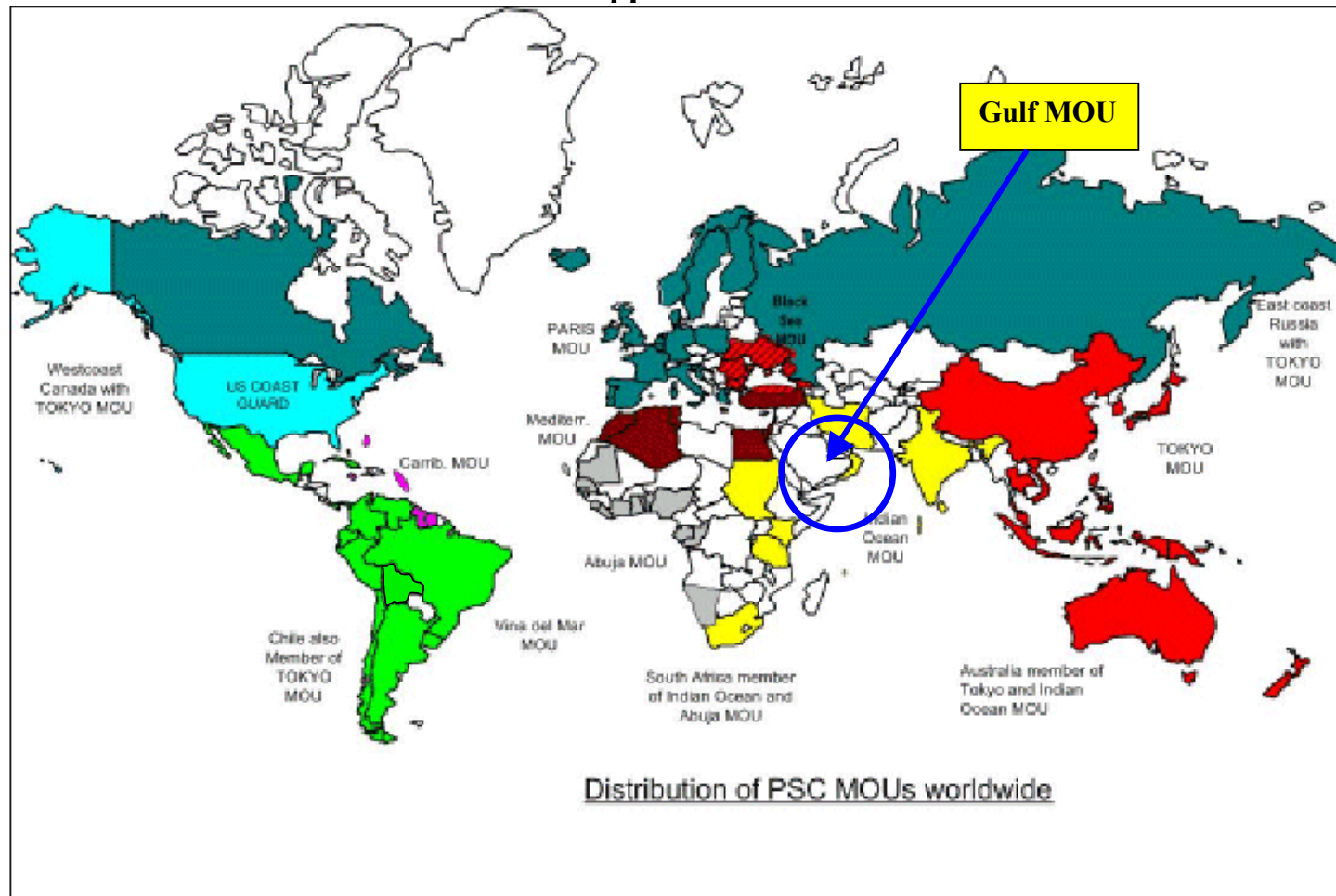
Note: This map was edited to include the future jurisdiction of Gulf MOU
Source: Germanischer Lloyd, PSC Information Manual

Appendix 2.2

Status of the Information system development and implementation

| PSC Regime	Paris MOU	Viña del Mar	Tokyo MOU	Carib MOU	Med MOU	IO MOU	Abuja MOU	BS MOU	USCG
Title of the information system	SIRENAC	CIALA	Asia Pacific Computerized Information System (APCIS)		Mediterranean Extranet Application (MedEA)	Indian Ocean Computer Information System (IOCIS)	Abuja MoU Information System (AMIS)	Black Sea Information System (BSIS)	Marine Information for Safety and Law Enforcement
Location of the information Center	Saint Malo, France	Buenos Aires, Argentina	Vladivostok, Russia		Casablanca, Morocco	Delhi, India		Novorossisk, Russia	Kearneysville, West Virginia
Information system Manager	Philippe Duchesne-DSI	Mr. R. Christello	Ms. Natalia Khartchenko		Mr. Omar HASSEIN		C.O. Okoroafuv		E.J. Terminella
Contact	SIRENAC@ equipement. gouv.fr	ciala@ prefecturanaval. Gov.ar	manager@ apcis.tmou.org		admarine@ iam.net.ma	iomou@ iomou.org	cokoroafur 2000@yahoo. com	bsis@ bsmou.org	eterminella@comdt.uscg.mil
Status of the project	In operation	In operation	In operation	In progress	In progress	Beta Version	In progress	In operation	In operation
Date of launching in productive mode	31 Jan 2003	1 Jul 2001	1 Jan 2000	2004	2004	Plan 2004	Plan 2005	1 Jan 2003	1 Dec 01
Network nature	Internet (since 2003)	Internet (since 2001)	Internet	Internet	Internet	Internet	Internet	Internet	Internet
Interface (s)	On-line Application	On-line	On-line, Batch		On-line	On-line, Batch	On-line	On-line	On-line

	Oracle	Oracle in Development	File Maker Pro		SQL Server	My SQL	File Maker Pro	File Maker Pro	SQL Server
PSC Regime	**Paris MOU**	**Viña del Mar**	**Tokyo MOU**	**Carib MOU**	**Med MOU**	**IO MOU**	**Abuja MOU**	**BS MOU**	**USCG**
Main user requirements	-Pentium III -Windows 98 -IE -Internet connection	-Pentium III -Windows 98 -IE -Internet connection	-Pentium III -Windows 98 -IE -Internet connection		-Pentium III -Windows 98 -IE -Internet connection	-Pentium III -Windows 98 -IE -Internet connection	-Pentium III -Windows 98 -IE -Internet connection	-Pentium III -Windows 98 -IE -Internet connection	Pentium III -Windows 98 -IE -Internet connection
Number of Users	1500	About 280	About 300		About 200	About 50		About 40	Approx 7000
Number of Authorities	20 + 5 Cooperative Members	13	17		11	11	19	6	1
Open publication of PSC data	Detention List	No	Yes		Yes Through Med MoU web-site	Through IOMOU website		Plan 2004	Yes, via EQUASIS PSIX
Interregional connections	Tokyo MOU in development	Tokyo MOU in development	-Black Sea MOU -Viña del Mar in development -Paris MOU in Development			No. But XML layer to facilitate		Tokyo MOU	NONE
Language	English	Spanish, Portuguese, English	English		English	English	English	English	English

Note: This table was updated with information provided by LtCdr. USCG. Kirsten Martin
Source: IMO 2004n

Appendix 4.1

INTERNATIONAL MARITIME ORGANIZATION
ORGANIZATIONAL CHART
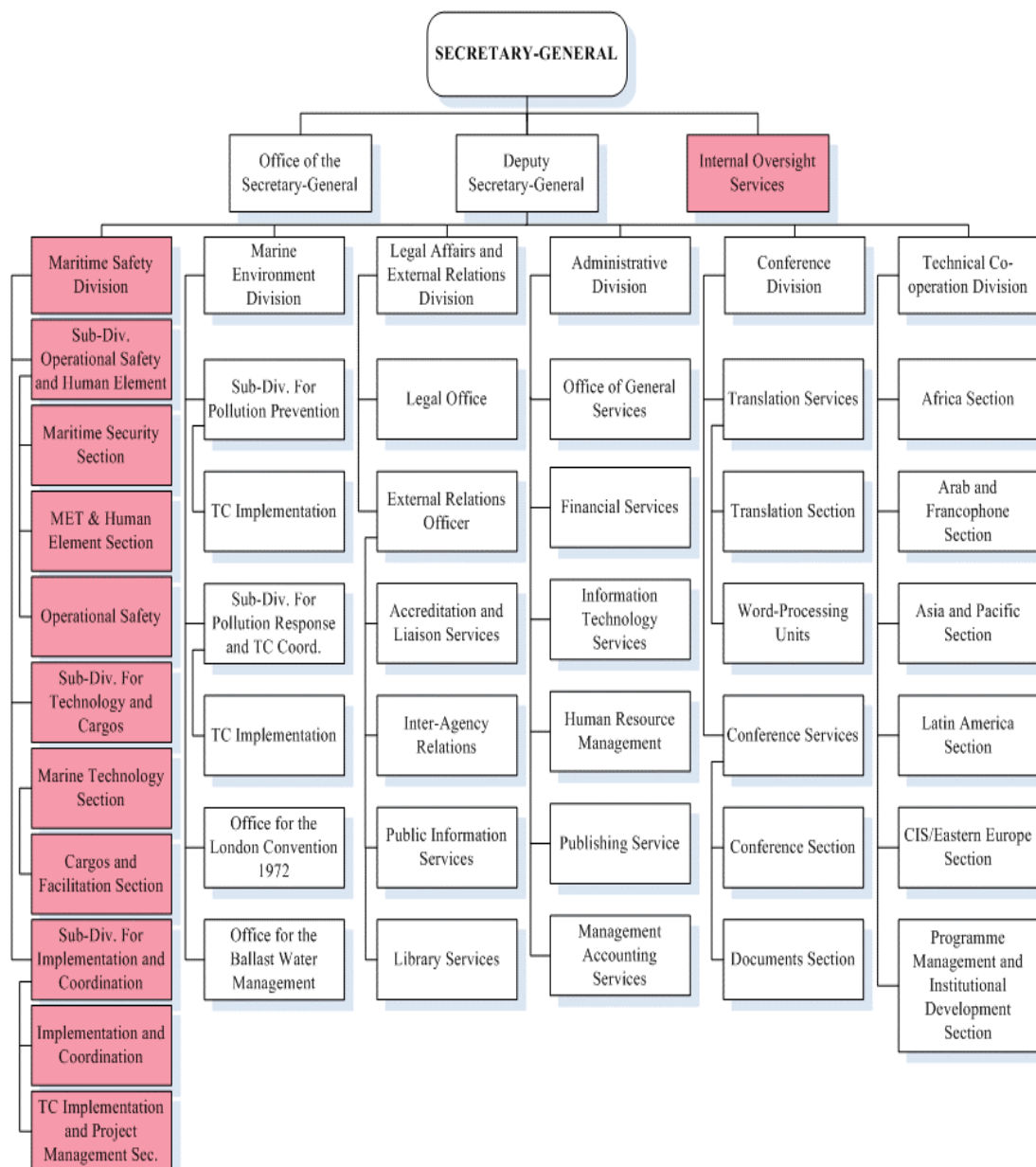
Source: Jo Espinoza, Head of the Latin America and Caribbean Technical Cooperation Section-IMO, Interview by Author, London, UK, 17 June 2004.

Appendix 4.2
FLAG STATE PERFORMANCE SELF-ASSESSMENT FORM
All questions relate to merchant ships flying the flag of the State concerned

GENERAL	
1 Name of State/Associate Member *List the Administrations which you represent at IMO (a separate assessment form should be completed for each. Include all flag States, including those which are not Member States of IMO but are Parties to IMO instruments).*	
2 Name of contact person responsible for the completion of this form Name of Administration Address Telephone number Fax number E-mail address	
3 Indicate to which of the following international instruments your State is a Party and which (optional) MARPOL 73/78 Annexes have been ratified.	
SOLAS 74	Yes/No
SOLAS Protocol 78	Yes/No
SOLAS Protocol 88	Yes/No
MARPOL 73/78	Yes/No
Annex III	Yes/No
Annex IV	Yes/No
Annex V	Yes/No
Annex VI	Yes/No
LL 66	Yes/No
LL Protocol 88	Yes/No
TONNAGE 69	Yes/No
COLREG 72	Yes/No
UNCLOS	Yes/No
4.1 How many merchant ships of 100 gross tonnage and upwards, subject to the relevant instruments you indicated in question 3, are currently flying the flag of your State? 4.2 What is the total gross tonnage of merchant ships currently flying the flag of your State?	MS:
INTERNAL CRITERIA	
Legal framework	
5 Does your Administration have the necessary laws in force to implement international maritime safety and pollution prevention instruments with regard to:	
.1 the construction, equipment and management of ships;	Yes/No
.2 the prevention, reduction and control of pollution of the marine environment;	Yes/No
.3 the safe loading of ships;	Yes/No
.4 the manning of ships;	Yes/No

.5 the safety of navigation (including taking part in mandatory reporting and routing systems), maintenance of communications and prevention of collisions?	Yes/No
6 Does your Administration have the necessary laws in force to ensure the provision of penalties of adequate severity to discourage violation of international instruments to which your State is a Party?	Yes/No
7 Does your Administration have the necessary laws in force to provide for ship inspections to ensure compliance with international maritime safety and pollution prevention standards to which your State is a Party?	Yes/No
8 Does your Administration have the necessary laws in force to take legal action against ships which have been identified as not being in compliance with the international instruments to which your State is a Party?	Yes/No
9 Does your Administration have the necessary laws in force to carry out the required casualty investigations?	Yes/No
Enforcement	
10 Does your Administration have an infrastructure, including personnel with appropriate technical expertise and experience, to:	
.1 identify ships flying the flag of your State which are not in compliance with international maritime safety and pollution prevention requirements?	Yes/No
.2 take action against ships flying the flag of your State which have been identified as not being in compliance with international maritime safety and pollution prevention requirements?	Yes/No
- If yes, against how many such ships was action taken for each of the previous 5 years*?	**....**
11 Did your Administration investigate detentions by port States of ships flying the flag of your State for each of the previous 5 years*? (see also question 28)	Yes/No
- If yes, indicate how many such detentions were investigated.	**....**
Recognized organizations acting on behalf of the Administration	
12 Which organizations has your Administration recognized for the purpose of delegation of authority under the relevant instruments you indicate under question 3?	
13 When your Administration delegates authority to recognized organizations, does it follow resolutions A.739(18) and A.789(19) as minimum requirements, the requirements in SOLAS 74, regulation XI/1, and the analogous requirements in MARPOL 73/78 in any delegation of authority?	Yes/No
14 Has your Administration provided IMO with a copy of the formal agreement or equivalent legal arrangements with the recognized organizations listed in question 12?	Yes/No
15 Indicate which survey and/or certification functions your Administration has delegated to the recognized organizations referred to in question 12.	
16 Indicate, for the instruments you listed under question 3, which survey and/or certification functions are carried out by your Administration.	
17 Does your Administration carry out the verification and monitoring functions specified in resolution A.739(18)?	Yes/No

18 How does your Administration carry out the verification and monitoring functions specified in resolution A.739(18)?	
19 How often does your Administration verify and monitor the work of recognized organizations acting on its behalf?	
20 How does your Administration take specific responsibility for international certificates issued on its behalf by dependent territories/second registers?	
Casualty and incident investigation	
21 Does your Administration have the means (financial and administrative) to ensure that thorough and prompt casualty and incident investigations into all cases of serious and very serious casualties, as defined in paragraphs 4.2 and 4.3 of the Annex to resolution A.849(20), are carried out?	Yes/No
22 For each of the previous 5 years*, for ships flying the flag of your State: .1 How many serious and very serious casualties were investigated? .2 How many such serious and very serious casualties were reported to IMO?	
23 Can your Administration provide to IMO, on request, evidence which shows that casualties and incidents on ships flying the flag of your State have been investigated?	Yes/No
24 For each of the previous 5 years*, has your Administration provided IMO with the mandatory annual reporting required by article 11.1(f) of MARPOL 73/78?	Yes/No
25 How many allegations of violations, according to article 4 of MARPOL 73/78, have been made against ships flying the flag of your State in each of the previous 5 years*? .1 How many investigations or legal proceedings has your Administration carried out in the previous 5 years* in accordance with articles 4 and 6 of MARPOL? .2 In how many cases did your Administration report back to the reporting State or to IMO in each of the previous 5 years*?	
EXTERNAL CRITERIA	
26 For each of the previous 5 years*, how many ships flying the flag of your State: .1 have been involved in serious or very serious casualties? .2 have become total losses or constructive total losses? .3 have caused severe pollution**? .4 What casualty rate per 1000 ships does this represent? .5 What is the total tonnage involved as a percentage of the total fleet?	
27 In each of the previous 5 years*, how many lives have been lost: .1 in casualties involving ships flying the flag of your State? .2 due to occupational accidents (i.e. other than from casualties to ships) on ships flying the flag of your State? *NB - Includes: falls; boarding or disembarking; accidents on deck and in machinery spaces; deaths in enclosed spaces; but does not include: accidents ashore; homicide; suicide; or deaths from disease or natural causes.*	
28.1 For each of the previous 5 years*, how many ships flying the flag of your	

| State were detained, within the scope of SOLAS 74, MARPOL 73/78, LL 66 or COLREG 72, by port States?
28.2 What detention rate per 1000 ship inspections does this represent? (see also question 11). | |

_____

* or from the date your Government became a Party to the relevant instrument, if that is later.

** "Severe pollution" is a case of pollution, which as evaluated by the coastal State(s) affected or the flag State, as appropriate, produces a major deleterious effect upon the environment, or which would have produced such an effect without preventive action.

Source: IMO, 2002

Appendix 5.1

VESSEL OPERATING COST "LEVELS"
AND FINANCIAL ADVANTAGES

(Period of reference: end 1994)

(20 year old bulk-carrier; 30 000 dwt)		(1990 built product tanker; 40 000 dwt)
US$/Day		US$/Day
7 500	Ceiling (1)	9 500
4 500	Good Practice (2)	4 850
3 750	Common Practice (3)	4 250
3 250	Standard (4)	3 750
.	(6)	.
2750	Floor (5)	3 100

(1) Ceiling = level of maximum expenditure (influenced by financial revenue earning potential of the vessel in the freight market and financial costs of owner).

(2) Good Practice = high level of expenditure adopted by minority of shipowners.

(3) Common Practice = average level of expenditure adopted by majority of shipowners.

(4) Standard Practice = minimum level of expenditure to ensure owner's compliance with the basic standards of safety.

(5) Floor = Level of minimum expenditure (still keeping the vessel "operational").

(6) Shaded area = margin of substandard operation within which the shipowner is able to operate a vessel subject to non-detection by regulatory authorities (flag states and classification societies acting on behalf of flag states, port states, etc.).

Source: OECD, 1996, p. 10