

Optimization of shipboard operations for environmental protection and safety at sea through voluntary, knowledge transfer and experience sharing

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This paper outlines how HELMEPA (Hellenic Marine Environment Protection Association) has progressively built a concrete cluster of responsible shipping companies and vessels which, on the basis of corporate and individual commitment has demonstrated its effectiveness and success to optimize shipboard operations towards the protection of the marine environment and safety at sea. The philosophy and objectives of the new training initiatives of the Association are also presented, placing emphasis on the identification of the Best Available Techniques in the shipping industry.

Key words: knowledge transfer; best available techniques; optimization; HELMEPA; voluntary commitment;

1. Objectives of HELMEPA Training Initiatives

protection of the environment and improvement of safety at sea.

Implementing its Declaration of Voluntary Commitment, which calls for a concerted voluntary effort to educate and inform all sectors of the shipping industry, the objectives of the training that HELMEPA provides are the following:

This process includes the following activities:

- To complement the basic and further education of Greek seafarers with updated information covering a wide spectrum of topics that focus on the prevention of ship-generated marine pollution and safety at sea.
- To raise environmental awareness and cultivate a safety culture within the ranks of Greek seafarers, so that, the objectives set by the international conventions in respect to prevention of marine pollution and safety at sea, be effectively met.

- Monitoring of new trends in certain areas such as marine technology and innovation, ships' operation and maintenance, standards of competence, etc.
- Analysis of maritime accidents and marine pollution incidents occurring to its Member Vessels.
- Analysis of the results of inspections carried out to our Member Vessels in the framework of Port State Control. Data on ship detentions and deficiencies are systematically gathered from the respective monthly catalogues published from Paris, Tokyo MOU and the U.S.C.G.
- Monitoring of the latest developments of the international maritime legislation through the participation of HELMEPA personnel in the meetings of the MEPC and MSC of IMO.
- Analysis of feedback received from the participants on the training programs as well as of proposals made by our Member Companies.

Since 1983 and up to the completion of 2005-2006 Annual Training Program, around 15,000 Deck and Engine Officers, Member Companies' Staff, Hellenic Coast Guard and Hellenic Navy Officers have attended HELMEPA Training Programs.

2. Development of Refresher Training Courses

The annual training programs of HELMEPA are developed through a well - tested process (Fig.1) aimed at identifying areas where training could drastically assist in risk minimization, better



Fig.1 HELMEPA training development process

Major developments during the 25-year period of continuous materialization of annual training programs, among others, include:

- The development in 1990 of a specialized software program called HELMEPA INDEX as a tool to enable quick access to and learning of basic regulations of the international maritime conventions and testing of the relevant knowledge.
- The introduction in 1992 of Onboard Training proved to be an essential equivalent to ashore training that provides opportunity of testing and putting into practice theoretical knowledge.
- The recognition in 1992, by the Sub-Committee on Standards of Training of IMO of the quality and contribution of HELMEPA Training towards safer navigation in cleaner seas.

Resolution 8 of the revised International Convention of STCW in 1995 recommends that refresher and updated training be periodically provided, justifying the long-lasting efforts made by HELMEPA to ensure it for its Members. The 1996–97 training program focused on human element and the new competence and training requirements while the 2000 Program reviewed the ISM Code implementation in relation to the STCW standards of competence.

- Responding timely to the new requirements on Ship Security, HELMEPA planned in September 2003 and organized during the academic year 2003 – 2004 a specialized training program the first two days of which addressed the needs of both Company and Ship Security Officers whereas the third date was dedicated to Company Security Officers. This program was supported by the development of a Model Ship Security Plan.

3. Increasing the environmental awareness and safety culture in shipping

HELMEPA has placed particular emphasis in this area to assist its members in understanding efficiently the operational requirements of the Convention, their scope as well as the rationale of their application. The potential impact of illicit discharges to the marine environment and the side effects of poor waste management, break out maintenance of pollution prevention equipment and false recordkeeping are highlighted.

Motivation of seafarers and shore personnel has always been at the centre of HELMEPA efforts to create and maintain a green maritime profession throughout its membership. Protection of the marine environment has always been one of the main areas of attention for port state control inspections. Coastal states' concern for the environmental impact of vessel operations rapidly increased after the rising number of accidents, particularly in oil tankers in 1970s and 1980s. Recent widely known accidents ending in major oil

spills gave rise again to questions with regard to the framework and extent to which a state can take measures to protect its territorial sea and the coastal zone under its jurisdiction.

Inspection of foreign ships to verify compliance with MARPOL requirements constitutes one of the most important areas where port state control is exercised. Recent data (Fig.2) from different sources demonstrate that MARPOL related deficiencies account for around 6.95% of the total (Paris MOU average rate for the period 2003 – 2005) to 16% of the total in U.S. (2005). It's encouraging that the number of ships detained due to serious deficiencies, as well as the percentage of MARPOL related deficiencies gradually decrease.

If it were assumed that the 282 member vessels inspected during 2005 in this area represented an “imaginary” registry in a total of 113 national registries, then HELMEPA would have ranked 8th presenting a detention rate 2.63 times less than the average.

It is worth noting that there no deficiencies were recorded in the category of MARPOL related operational requirements, which refers to the human element onboard ships and the implementation of a broad range of requirements such as waste management, familiarization with discharge criteria at sea, record keeping, etc.

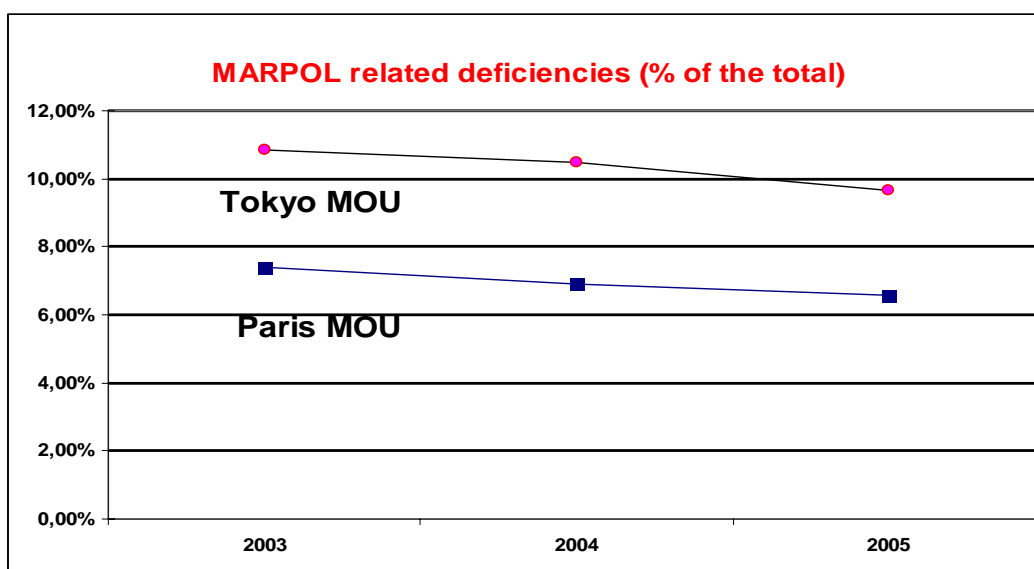


Fig.2 MARPOL related deficiencies trend

HELMEPA historically collects and analyzes data produced by MOUs on Port State Control as well as individual port state administrations. Important lessons learned by the analysis of statistics and the monitoring of trends worldwide are conveyed to the Annual Training Programs of the Association, where efforts are carried out to assist vessels personnel to be well prepared to minimize the risk of detention.

Taking as an example the area of Paris MOU, a total of 21,302 inspections were carried out during 2005 on 13,024 individual vessels registered in 112 different Flag States. 994 ships were detained, some 193 less compared to 2004, while the inspection rate was almost similar during these two years.

4. Transformation of training to a know how transfer and experience sharing process

The concept of optimization was considered to be a logical approach for HELMEPA Member Vessels representing a step beyond the compliance with the applicable rules and regulations. The excellent performance of its Members in several fields and in particular during the Port State Control inspections progressively led to the transformation of the training programs to a know – how transfer process among HELMEPA Members.

Knowledge and know how transfer are the innovative features of the 2007 HELMEPA voluntary training program. Cooperation with its members, Classification Societies, Managing companies and other maritime industry organizations has resulted in the joint development

of an area of knowledge transfer, through which Best Available Techniques for routine and new shipboard operations are identified and promoted with the aim to optimize them towards better environmental protection and enhanced safety at sea.

As Techniques we consider both the technology used and the way ships are maintained and operated (i.e. specifications and capacity of oily water filtering equipment installed onboard plus the way oil water mixtures from the machinery spaces are managed). Available Techniques mean those developed on a scale which allows implementation onboard similar ships under economically and technically viable conditions taking into the consideration the potential costs and advantages. Best mean the most effective in achieving a higher general level of environmental protection and safety at sea.

The concept of best available techniques is viable and practical to optimize ship performance, to reduce operational cost, valorize human resources onboard ships and make more environmentally sound the operation of vessels.

The last training programs of HELMEPA provide a platform for the Transfer of Knowledge, contributing to the voluntary upgrading of the knowledge and skills of Officers on board ships and the Staff of member companies. A specific number of issues are presented with the aim to convey such best practices successfully implemented in various shipboard operations such as preparedness and response to emergencies, mooring and towing operations, cargo handling, passage planning, navigation in congested waters, waste management, control of emissions, etc.

The 2007 Program titled “Optimization of shipboard operations for environmental protection, safety and security at sea” was developed with the aim, apart from compliance, to additionally meet factors of optimized operation and performance of the ship. The syllabus includes a wide spectrum of contemporary and particularly important issues covering the following thematic areas:

- Overview of the maritime legislative framework,
- Prevention and response to Marine Pollution,
- Enhancing safety and security at sea, and
- Shipboard Operations.

This know – how transfer area that HELMEPA represents, contributes to:

- the voluntary training and constant upgrading of knowledge and capabilities of the Merchant Marine Officers and Crews as well as of the land based personnel,
- the development of the Corporate Intellectual Capital of its Members which constitutes the implementation of the Declaration of Voluntary Commitment of 1982,
- the environmental awareness of the human factor in shipping, encouraging it to perform in the international scene.

The training programs of the Association drastically support to instill and nurture environmental consciousness throughout its Members so as to compliment the requirements of the legislation for pollution prevention and safety at sea. And this because the Greek seafarers understood that even the most widely accepted international conventions and national laws cannot be effectively implemented until every sector of the shipping industry is committed to the joint effort.

5. Conclusions

The traditional training that HELMEPA provides to its Members progressively takes the shape of a platform of know-how transfer and experience sharing. This way, best available practices for certain shipboard operations are discussed, analyzed and identified. Environmental awareness supplements basic education and training of seafarers promoting the respect, care and due diligence for the protection of the marine environment. HELMEPA members are committed to continue and intensify their efforts to protect the environment from the negative impact that routine shipboard operations or accidents might have.