



SCHOOL OF NAVAL  
ARCHITECTURE &  
MARINE ENGINEERING

LABORATORY FOR MARITIME TRANSPORT  
NEWSLETTER No 8  
January – March 2009



<http://www.martrans.org>



N.T.U.A.  
NATIONAL TECHNICAL  
UNIVERSITY OF ATHENS

*Dear Reader,*

The electronic newsletter of the Laboratory for Maritime Transport (LMT) of NTUA is issued regularly to inform you regarding our current and forthcoming activities. You are warmly encouraged to visit our website ([www.martrans.org](http://www.martrans.org)) for further information and to contact us about your enquiries. Your feedback will be highly valued. Kind regards...  
*The LMT staff*

## LMT hosts open Workshop on Environmental Risk Evaluation Criteria

On February 27, 2009, LMT hosted an open one-day workshop on the subject of environmental risk evaluation criteria, with a focus on oil pollution.

The development of criteria that can capture the environmental dimension of the risk associated with maritime transport is still at its infancy. At the International Maritime Organization (IMO), this difficult matter has come under the umbrella of Formal Safety Assessment (FSA), IMO's prime scientific tool for the support of proactive safety regulation. Yet, FSA's current evaluation criteria deal only with risk associated with human life or the ship itself, and the quantification of environmental impact is yet to be decided in a satisfactory way. For the subject of oil pollution, the determination of such criteria is important for evaluating on a cost-benefit basis Risk Control Options (RCOs) for reducing oil spill pollution risk.

As reported in previous newsletters, this subject is currently under investigation by IMO's Maritime Environment Protection

Committee (MEPC), which has established a correspondence group since mid-2007 to address this issue.

This correspondence group is under the coordination of Greece, and is coordinated by Prof. Psaraftis of LMT. The Feb. 27 workshop itself was an initiative of LMT, and, although not officially connected to the work of the correspondence group, substance-wise it provided very much a flavor of the relevant issues.

There were several presentations and a panel discussion by key international experts from Germany, Greece, Japan, the Netherlands, the United Kingdom and the United States. Those attending the workshop had an opportunity to hear first-hand from these experts what is the state of the art and the main challenges on this subject and how one may come about to tackle them. Some 85 participants attended the workshop, which, in terms of feedback received, was a big success.

The full program and all presentations of the workshop can be found at this link <http://www.martrans.org/wsenv.htm>

Information on IMO developments in this area will be reported in a future newsletter.



From left to right:  
R. Hamann,  
K. Metselaar,  
J. McGregor,  
S. Micallef,  
E. Sampatakakis,  
N. Meade,  
Y. Yamada,  
P. Zachariadis,  
H. Psaraftis



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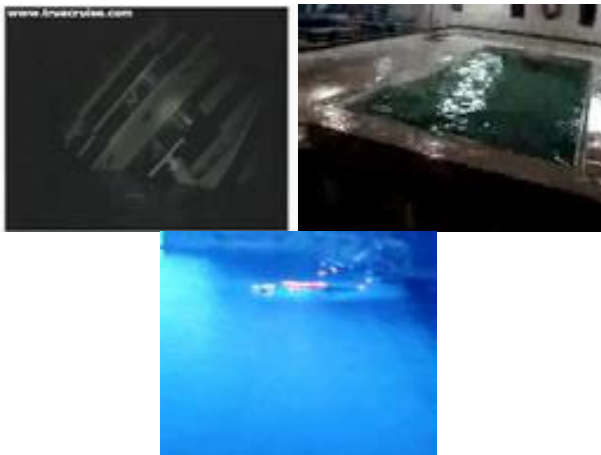


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**LMT assessing the proposed plan for the removal of oil from the wreck of SEA DIAMOND**

In the context of the “programmatic agreement” signed with the Municipal Port Fund of Thira (Santorini island), LMT proceeded with the evaluation of a plan submitted by a private contractor for the removal of oil from the wreck of the Sea Diamond cruise ship. In that context, the work of LMT has been to assist the local authorities in assessing the overall scope and all entailed technical details for the pumping of fuel and other oil products out of the sunken vessel.

One of the aims of the “programmatic contract” is to provide technical advice for the best possible protection for the marine and littoral environment of the island of Santorini, in relation to the impact from the sinking of the big cruise vessel.



*Original photos from the sinking of SEA DIAMOND*

**LMT is awarded contract with the Municipal Port Fund of Kos**

NTUA-LMT was awarded a programmatic contract with the Municipal Port Fund of the island of Kos for a prefeasibility study for the new commercial port of the island. In particular, due to the increased traffic in the existing port of Kos, the Municipal Port Fund is considering the creation of a separate, exclusively commercial port so as to decongest the port currently in service and furthermore to upgrade the provided services at both ferry/cruise and cargo shipping. In this context, LMT will provide to the Municipal Port Fund of Kos a realistic,

practical and viable prefeasibility study for the new commercial port in order to contribute in the best possible manner to the progress and further development of the island.



*The port of Kos*

**LMT “vassilopitta” cutting event**

As pre-announced in the last issue of our newsletter, LMT organized a special New Year evening for its alumni and other friends to cut the traditional ‘vasilopita’, or New Year’s cake. As last year, the event took place at the Piraeus Marine Club, in the heart of Piraeus, and more than 40 friends of LMT from the shipping industry were present. It was also a great pleasure to see there some of LMT’s international friends who happened to be in Greece at the time.

The traditional cake was cut by Prof. Psaraffis and the lucky one was Ass. Prof. Dimitrios Lyridis of LMT, who won the coin, but also raised some eyebrows, as rumors had it that he was in charge of logistical arrangements for the cake!

LMT would like to thank once more all of its friends for their presence in the event and their productive cooperation in 2008, and to wish a fruitful collaboration in 2009, as well as prosperity and health in their personal lives.

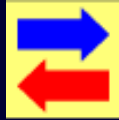
**Ongoing doctoral research at LMT**

An important part of the research undertaken at LMT is reflected in the work of its graduate and undergraduate students. It is a priority for LMT to disseminate its academic research work and link it with the real challenges faced by the industry. In this context, and continuing from the previous newsletter, the ongoing work of LMT’s doctoral candidates is briefly presented. For more information, please visit LMT website, “People” section (<http://www.martrans.org/people.htm>), while information about completed PhD and undergraduate theses can be found in the “non - funded research” section (<http://www.martrans.org/research.htm>).



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***Identifying and Measuring Non-Technical Skills for crews, designing and delivering effective training based on Crew Resource Management***

Georgios V. Lykos began his doctoral studies at LMT in 2005, supervised by Ass. Prof. D. Lyridis. In his research work, he considers the non-technical skills of crews and explains their importance for safe and efficient performance in maritime industry. Human error cannot be eliminated, but efforts can be made to minimize, catch and mitigate errors by ensuring that crews have appropriate non-technical skills to cope with the risks and demands of their task. Non-technical skills (situation awareness, decision-making, communication, teamwork, leadership, managing stress, coping with fatigue) are the cognitive, social and personal resource skills that complement technical skills to contribute safe and efficient task performance.

In the context of his research a two-stage process is introduced to develop taxonomy of skills for individuals and teams. In the first stage skills and related behaviors deemed to influence safe and efficient performance are identified, while in the second stage the resulting list is refined and organized it into a concise, hierarchical structure or taxonomy. The techniques used to identify the non-technical skills include Event-based analyses (examining accident or near-miss reports to identify patterns of behaviors), Questioning techniques (soliciting information directly from crews) and Observational techniques (watching and participating in crews).

The purpose of the research is to develop training designed to improve the non-technical skills of crews based on Crew Resource Management principles. A framework for training development is presented, potential training methods and strategies are identified, and methods of evaluating the effectiveness of the training are expounded. The model of training includes identification of the training needs, defining the objectives of the training, development of the training, and evaluation of the training.

***Current status and future perspectives of Piraeus as a maritime cluster***

Vassilios Zagkas began his doctoral studies at LMT in 2008, supervised by Ass. Prof. D. Lyridis. In his research work, he investigates the role of entrepreneurial networks and their evolution into dynamic cluster formations through the emergence of competitive advantages. This research focuses

on the geographical concentration of maritime firms and uses the region of Piraeus as a case study. Several theories have been applied in the study of clusters; such are agglomeration economics, industrial districts, and economic geography. However, the competitiveness theory as developed by Michael Porter is the most well-known theory on cluster behavior. The integration of Porter's theory with the maritime context can give a pragmatic approach to Maritime Clusters.

The first level of this research is to investigate the existence of a cluster formation in the area of Piraeus. The collection quantitative and qualitative data, from key maritime companies in the region reveals the strengths and weaknesses of interconnections among them. The research then focuses in developing a sustainable model for the build up of the maritime cluster organisation.

A sophisticated computational model such as Agent Based Modelling is employed in order to simulate the interactions of firms acting as autonomous individuals in the maritime cluster. The model intends to simulate the operations of firms, in an attempt to re-create and predict complex phenomena as the maritime business environment. Individual agents are presumed to act in what they perceive as their own interests, such as economic benefit, or expansion, and may experience learning and adaptation. This analysis contributes into useful conclusions for policy and initiatives, aiming to promote competitiveness and innovation.

**Meetings and Events  
attended by LMT staff**

- LMT "vasilopitta" event, Piraeus, Greece, Feb. 26
- LMT workshop on environmental risk evaluation criteria, Athens, Greece, Feb. 27
- CHINOS Final Meeting, Bremen, Germany, March 26.

**Papers, presentations and speeches  
published / presented by LMT staff**

- Kontovas, C.A., H.N. Psaraftis (2009), "Formal Safety Assessment: A Critical Review," *Marine Technology*, Vol. 46, No. 1, pp. 45–59
- Samuelides, M. S., Ventikos, N. P. and Gemelos, I. C. (2009), "Survey on grounding incidents: Statistical analysis and risk assessment", *Ships and Offshore Structures*, 4:1, 55-68.