World Academy of Science, Engineering and Technology
International Journal of Marine and Environmental Sciences
Vol:12, No:11, 2018

Efficiency of Maritime Simulator Training in Oil Spill Response Competence Development

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Abstract : Marine oil spill response operation requires extensive vessel maneuvering and navigation skills. At-sea oil containment and recovery include both single vessel and multi-vessel operations. Towing long oil containment booms that are several hundreds of meters in length, is a challenge in itself. Boom deployment and towing in multi-vessel configurations is an added challenge that requires precise coordination and control of the vessels. Efficient communication, as a prerequisite for shared situational awareness, is needed in order to execute the response task effectively. To gain and maintain adequate maritime skills, practical training is needed. Field exercises are the most effective way of learning, but especially the related vessel operations are resource-intensive and costly. Field exercises may also be affected by environmental limitations such as high sea-state or other adverse weather conditions. In Finland, the seasonal ice-coverage also limits the training period to summer seasons only. In addition, environmental sensitiveness of the sea area restricts the use of real oil or other target substances. This paper examines, whether maritime simulator training can offer a complementary method to overcome the training challenges related to field exercises. The objective is to assess the efficiency and the learning impact of simulator training, and the specific skills that can be trained most effectively in simulators. This paper provides an overview of learning results from two oil spill response pilot courses, in which maritime navigational bridge simulators were used to train the oil spill response authorities. The simulators were equipped with an oil spill functionality module. The courses were targeted at coastal Fire and Rescue Services responsible for near shore oil spill response in Finland. The competence levels of the participants were surveyed before and after the course in order to measure potential shifts in competencies due to the simulator training. In addition to the quantitative analysis, the efficiency of the simulator training is evaluated qualitatively through feedback from the participants. The results indicate that simulator training is a valid and effective method for developing marine oil spill response competencies that complement traditional field exercises. Simulator training provides a safe environment for assessing various oil containment and recovery tactics. One of the main benefits of the simulator training was found to be the immediate feedback the spill modelling software provides on the oil spill behaviour as a reaction to response measures.

Keywords : maritime training, oil spill response, simulation, vessel manoeuvring
Conference Title : ICMT 2018 : International Conference on Maritime Transport
Conference Location : Venice, Italy
Conference Dates : November 14-15, 2018