

EVACUATION TRAINING USING IMMERSIVE SIMULATORS

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ABSTRACT

Evacuation by lifeboat is part of the emergency response plan of virtually every offshore petroleum installation and ship in the world. Offshore and marine industry personnel must be competent to operate lifeboats in the weather conditions that prevail during operations, including rough weather. However, it is not practicable to do drills with survival craft in even moderately rough weather because the drill itself poses an unacceptable risk to the health and safety of trainees. Further, recent accidents have highlighted the dangers of conducting practice launches even in calm conditions. This gap in training capability is being addressed by innovative simulation-based training for marine evacuation systems that provides training in extreme conditions, but in a safe environment.

KEY WORDS: emergency response, safety, lifeboat, training, simulator, virtual

INTRODUCTION

Launching lifeboats during an emergency abandonment scenario is a safety critical operation that must be done in the conditions that prevail at the time of the emergency. These conditions will be shaped by the emerging hazard and the weather, possibly including rough seas or other harsh physical environmental factors. Whatever the conditions, personnel onboard have to respond to the emergency using the life saving equipment provided. To do so successfully, they require appropriate knowledge and competence. Most lifeboat coxswains on ships and offshore petroleum installations learn how to operate survival craft through formal, live-boat training courses that comply with an accepted minimum standard, such as the International Maritime Organization's Convention on Standards of Training, Certification and Watchkeeping (STCW, IMO 1995). There are practical limits to what can be accomplished in such an approach, particularly when the training itself can expose the trainees to risks. In the case of survival craft, it is not practicable to use live-boat training for rough weather launches as these operations are too dangerous to be undertaken in a course or drill.

Recognizing the importance of effective training in the context of the overall safety management system, stakeholders in the offshore petroleum industry have assessed alternative methods for training

lifeboat operators. Simulation technology provides a safe means for offshore personnel to acquire experience launching survival craft in rough weather conditions and under emerging hazard scenarios, such as fires or explosions. Immersive full mission simulators, complemented by simpler multi-task and special-task simulation tools, are being developed to provide realistic, effective, and safe training for lifeboat coxswains. While the risk to the trainee is minimal in a simulation environment, the range of training experience can be increased beyond what could ever be safely done otherwise, thereby enabling trainees to improve situational awareness and to practice appropriate response under specific credible scenarios.

In this paper, approaches to training are reviewed briefly and the main attributes of a lifeboat training simulator are described, along with an ongoing R&D program focused on improving safety using simulation technology.

TRAINING AND COMPETENCE ASSURANCE

Most small craft operators learn how to operate their vessels through mentoring programs. The traditional process relies upon the acquisition of practical experience under the guidance of someone more experienced. One only needs to look at the requirement for seafarers to accumulate sea time in order to advance through the certification process to get a glimpse of the traditional learning method. The success of the training depends upon a wide variety of factors, not least of which is the experience of the mentor or instructor and the degree of structure in the program. Structured mentoring programs can be effective, although they have a number of drawbacks, most notably the time taken to develop competence through the learn-by-doing strategy, the overall cost of the process, and the inability to safely replicate hazardous situations in order to learn emergency procedures.

Experience has shown that unstructured mentoring can leave serious gaps in safety critical competencies. The shipping and offshore industries have adapted simulation-based training as a supplement to their competence assurance programs. Simulators have proven to be effective in accelerating the learning process by providing a useful tool to develop artificial experience, especially in situations that are too hazardous to practice in the field. Simulation has provided the professional maritime community with a means to complement the mentoring system and to shift the focus of their formal training