

Executive Summary: Coast Guard Evacuation Analysis Plan

With the establishment of the Fire Protection Sub-Committee's Correspondence Group on Evacuation Analysis, various Administrations are working together to revise and extend the recently adopted Interim Guidelines on Ro-Ro passenger vessel evacuation analysis (FP 43/WP5/Annex1). This is to meet the IMO Secretary General's charge to ensure that, with today's rapidly increasing passenger vessel capacity, adequate consideration is given to passenger safety. This work falls into two primary categories: (1) refining the existing "simplified" evacuation analysis methodology, and (2) extending its application from Ro-Ro passenger vessels to High Speed Craft and cruise ships.

The existing methodology adopted under FP43/WP5/Annex1 is wholly based on those used to evaluate building egress capability. While this allows use of the extensive work done by the shoreside community, it also neglects the significant differences between the two environments, particularly the effects of vessel designs and motions. Additionally, in the interest of developing a "simplified" methodology, several potentially significant factors (e.g., passenger age, accident type) were left out, and several potentially restrictive assumptions were made (e.g., people can move unhindered). A factor of safety was included in the existing methodology to account for these restrictions, although it is unclear whether this makes the methodology sufficiently conservative. In order to evaluate these questions about the existing methodology, the Coast Guard is developing a passenger vessel risk assessment methodology, including a detailed analysis for the evacuation process from alarm to lifeboat. A recently convened Ad Hoc panel by the Society of Naval Architects and Marine Engineers is supporting this effort to address evacuation issues.

The approach that is being developed will be comprised of three elements. The first element addresses the sequence of events leading up to and including the various accident types (e.g., collisions) that could lead to the need to evacuate a passenger vessel. For the second element, the work involved will focus on developing and populating a model to characterize the passenger's decision-making regarding the evacuation of the vessel, as well as the actual evacuation process. This latter will include factors for vessel design (e.g., compartmentation), passenger demographics (e.g., age), and accident scenario (e.g., accident type). The third element of this research is to investigate the impact of the abandon ship scenario, including the effect of passengers exposed in lifesaving equipment (e.g., survival craft) and the assessment of search and rescue capabilities. Within each of these elements is the call for collaboration among the various Administrations working in this area.

The results of these efforts will provide the ability to refine the "simplified methodology" by testing the significance of the shipboard environmental factors left out and the assumptions made in the existing guidelines. Additionally, this will provide for a better understanding of the effects of the differences between vessel types, thereby supporting the task before the Correspondence Group to extend the application of the guidelines to not only Ro-Ro passenger ships, but also High Speed Crafts and passenger cruise ships. Furthermore, knowing the influence of these factors, designers will be able to modify evacuation plans to achieve optimal performance. In addition to this work, an extensive bibliographic database and a web page to facilitate collaboration among the members is

under development by the Coast Guard. These will provide for better information sharing between the parties involved, allowing better use of the existing and forthcoming research on egress by the Correspondence Group.