ANALYSIS OF PASSANGER EVACUATION ON RO-RO VESSEL USING DESCERTE EVENT SIMULATION AND SOCIAL FORCE MODEL

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National Transportation Safety Committee declares that burned ship accident in 2004-2010 resulting 57 people die and 18 people missing. Ship accidents that resulting many victims have been caused by panic. Passengers who get panic will ignore evacuation process on ship. Discrete Event Simulation (DES) and Social Force Model (SFM) are one of evacuation methods for panic and normal passengers. The scenarios of passengers evacuation route, which were evaluated depend on evacuation route of safety plan and using garbarata as evacuation route alternative. In this study, IMO MSC.1/Circ 1238 standard was used to determine passengers walking speed on evacuation process and to determine evacuation time limitation on Ro-Ro ship. The results show that evacuation simulation in the morning without using garabata on normal and panic condition need 2517 seconds and 3090 seconds respectively, whereas in the nights need 2121 seconds and 2746 seconds respectively. Evacuation simulation use garbarata on panic and normal condition need 3826 seconds and 6286 seconds respectively. Those result are not appropriate with IMO MSC.1/Circ 1238 standard. As result, it is necessary to develop SOP (Standard Operation Procedure) and new general arrangement. By changing the width of door room near garbarata and garbarata, it can reduce evacuation time. The results of evacuation time on panic and
normal conditions 1584 seconds and 2572 second respectively.

**Keywords**: panic condition, evacuation, Discrete Event Simulation, Social Force Model