This paper will focus on modeling and simulating human performance on ship operations related to human task execution times, including variance in human performance and impact of potential task performance confounders (i.e. performance modifiers) and human reliability. Such efforts aim to assure meeting critical response times by developing and validating the rationale for human variability modeling. The concept of Ideal human observer introduced by Krebs(2013) will be expanded and applied to simulate the time sequence of task generation and task completion in terms of Communication sequence, Transit sequence, and Execution sequence. A system of categorization that maps both to the shipboard tasks and to the subject literature on distributions of execution times will be developed for this purpose. The task categorization scheme will be based on taxonomy of human tasks with three main classes of human performance, including: skill-based, rule-based, and knowledge-based tasks that differ in the level of their complexity as reflected by the nature of information being processed and physical components of the task as well as human reliability and resilience. This paper will support evaluating the criticality of the human tasks, and help explore design alternatives that may lessen the operational risks, and elaborate on the boundaries to better characterize future ship design methodologies.

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