

# MASTER OF SCIENCE IN MECHANICAL ENGINEERING

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## DEVELOPMENT OF A MODEL TO PREDICT AND ASSESS SURFACE SHIP RECOVERABILITY

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Survivability has become an increasingly important issue in the design of future naval warships. Quantifiable requirements for susceptibility and vulnerability have long been employed, but no model or computational methods exist to calculate the ability of a surface ship to “control the spread of damage and restore lost capabilities.” Recoverability is defined as the probability of recovering from damage caused by a specific weapon. This thesis analyzes the complex issues involved in determining recoverability and setting parameters for recoverability measurement criteria. Two methods to calculate the probability of recovery,  $P_R$ , are proposed along with sample data, analysis and applications. The variables and information required to implement the methodologies are outlined in significant detail to provide a basis for future model development.

**DoD KEY TECHNOLOGY AREAS:** Computing and Software, Surface/Under Surface Vehicles–Ships and Watercraft, Modeling and Simulation

**KEYWORDS:** Ship Survivability, Survivability, Damage Control, Recoverability, Ship Design

