Image Cover Sheet

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TITLE

AN OVERVIEW OF THE CRAD MAJOR DEVELOPMENT PROJECT IMPROVED SHIP STRUCTURES
MAINTENANCE MANAGEMENT \(ISSMM\)

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An Overview of the CRAD Major Development Project Improved Ship Structures Maintenance Management (ISSMM)

by

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ABSTRACT

The Improved Ship Structural Maintenance Management (ISSMM) CRAD major project is being developed to provide a tool to assess the effect of various types of damage and degradation on the structural integrity of the Halifax Class patrol frigates. The structural assessment is being done primarily by finite element analysis using a top-down approach of global modeling of the complete hull structure with fine mesh models of specific areas of interest. The calculation of stress in structural details is required for the assessment of strength, endurance (fatigue) and stability limit states. In many cases the change in structural integrity due to the damage will be assessed by comparing results of the same analyses for the damaged and undamaged structure.

A prerequisite for the successful application of advanced numerical or analytical structural analysis methods is access to relevant and comprehensive material property data. Unfortunately, for the material systems employed during the construction of the HALIFAX Class Frigate, more commonly known as the Canadian Patrol Frigate (CPF), there is limited property data available. In addition to the development of analysis methods, structural tests and trials at sea, a significant element of the work is to develop a suitable materials property database, necessary for the implementation of the advanced numerical analysis systems that will be developed during the project.