

Dynamic Maintenance on Ships: Integrating Threat Dimension

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Abstract. Maintenance management on ships is a pillar for operations success. As in other industry systems and equipment's, maintenance has evolved from a corrective maintenance to systematic preventive, to condition based maintenance. To accomplish a condition-based maintenance with high quality and a dynamic maintenance concept can be considered various non-destructive techniques, and data from sensors. After obtaining the data from the various systems, it should be registered, and statistical models should be developed and applied to enhance the human evaluation about the data. The Failure Mode and Effect Critically Analysis may be one reliability evaluation and design technique for data treatments and to calculate the risk about a system or equipment. As a case study it was selected a propulsion diesel engine and it was applied a Failure Mode and Effect Critically Analysis, which was modified, FMECA-CC, to integrate various severities, and to integrate data from condition control and the Threat. To limit the study presentation on the present article, it was decided to develop only the variable Threat. The threat was integrated on the study because it represents a study on a military environment. It was considered 5 levels for the threat variable, which are manually introduced by an operator who receives hierarchic input about the threat environment and introduces on a propulsion decision-making software. The results showed that FMECA-CC may be applied on diesel engine monitoring on board ships integrated data from sensors and also the variable threat.

Keywords: Maintenance, Dynamic, Ship, Risk, FMECA, Threat.