Naval Surface Ship Maintenance: An Unconventional Approach to Improve Performance

by

Darien A. Sears

Submitted to the Department of Mechanical Engineering and the System Design and Management Program on May 14, 2021, in partial fulfillment of the requirements for the degrees of Naval Engineering and Master of Science in Engineering and Management

Abstract

This thesis presents an alternative approach towards meeting the challenge of delays within Private Sector repair of Naval Surface Ships. The quest to create greater efficiency, effectiveness, and excellence at the workplace has been a source of discussion and debate in the Navy for decades, particularly within the complex Private Sector Surface Ship maintenance enterprise. Recently, the Chief of Naval Operations (CNO) emphasized the priority to improve depot-level maintenance of Navy ships, which directly impacts our readiness to project power against our most lethal adversaries. The Regional Maintenance Center (RMC) presented the delay and overall underperformance of depot-level maintenance as a "challenge [that] is not new" [25]. I submit that there is too much focus on overcoming this ship repair issue through the use of money and policy and not enough attention directed toward improving the underlying human relationships involved in executing these complex jobs.

To explore this concept, this thesis describes the main stakeholders involved in the Navy non-nuclear surface ship maintenance enterprise; briefly outlines the current maintenance process from contract formation to ship delivery; and discusses the known factors contributing toward private sector surface ship maintenance delays. I make use of direct reports from the Navy, formal analytical reports, other relevant literature, and interviews conducted with 20 respondents including Navy Commanding Officers, a Private Shipyard General Manager, and a Regional Maintenance Center Waterfront Operations Director, among others. Four themes emerged for areas of suggested improvement: a refocused purpose and vision, updated motivation techniques, more systems thinking, and effective communication and coordination. I also present a case study of two private shipyards at one company which have practiced an alternative approach to maintenance challenges in relation to findings within the four themes. An analysis of this case in the context of the broader literature, in connection to the four themes led to further insights, recommendations, and areas for

future research.

Thesis Supervisor: John S. Carroll

Title: Gordon Kaufman Professor of Management, Emeritus

Thesis Supervisor: Themistoklis P. Sapsis

Title: Associate Professor of Mechanical and Ocean Engineering