

Public Abstract

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Title:REPAIR PRIORITIZATION WITH RESPECT TO INVENTORY REQUIREMENTS

In a multi-echelon service parts supply chain with limited repair resources, real-time repair decisions have significant impacts on supply chain performance. Inducting into repair the appropriate breadth and depth of components is essential to meeting short-term and long-term customer service level constraints. Previous research in this area primarily focuses on steady-state supply chains assuming infinite repair capabilities and the repair induction of all non-serviceable parts. This thesis develops a Mixed Integer Linear Program (MIP) which considers the current state of the entire repair system as well as forecasted part-breakages to produce strategic real-time repair recommendations. Repair inductions are prioritized to maximize stock location service levels over multiple budget periods through comparative fill rates encompassing both issue effectiveness and sub-system availability. Multiple model runs were completed to determine objective function parameter specifications that best align with these overall system goals. Model output includes daily or weekly repair recommendations, a prioritized list of repair inductions, and projected supply chain performance for issue effectiveness and sub-system availability.