

Simulation and Analysis of the Aircraft Corrosion Control Facility at the Corpus Christi Army Depot

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Abstract: Corpus Christi Army Depot (CCAD) is the principle agent for Army rotary wing aircraft depot maintenance and is constructing a new \$32.4M paint facility to support their mission. In this research, a discrete-event simulation with custom Excel user interface is developed to model production capacity and support production “what if” analysis for this new facility. The user interface allows users, unfamiliar with the simulation modeling language, to change major production parameters of interest and conduct “what if” analysis to examine the impact of production factors on key metrics. A multi-criteria quantitative value model is developed and integrated with the discrete-event simulation to quantify the value of each production scenario to support production decisions. A full factorial design of experiments, conducted across five production factors, identifies fourteen Pareto efficient production scenarios. These Pareto efficient solutions provide CCAD several production options that can be used to conduct cost-value trade space analysis.

Keywords: Discrete-Event Simulation, Multi-Objective Analysis, Cost-Value Analysis, Model Architecture