Fuel Tank Corrosion Impacts on Future Fleet Readiness
by
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Abstract

Ticonderoga-class cruisers face significant readiness problems stemming from widespread corrosion of an aging hull. This corrosion severely impacts shipboard safety and oper-ational readiness when it compromises the integrity of compensated (pressurized) fuel storage tanks. In most cases these leaks require immediate repair to restore the engi-neering spaces to a safe operating condition, and nearly always impact time-critical fleet operating schedules. This thesis studied cruiser fuel storage tank maintenance records contained within the Navy Maintenance Database (NMD) with two purposes in mind. The primary objective was to find commonly-repaired structural features to either be improved upon or avoided in future ship designs. Data was collected on the tank location, structural feature, and repair method to produce a class-wide distri-bution of all fuel storage tank repairs. The data showed that nearly all cruisers have experienced fuel tank leaks, with some suffering as many as twenty. The secondary objective was to assess how accurately the Navy forecasted and planned cruiser tank repair under old and new contracting strategies. New work discovery during a mainte-nance period often increases schedule and cost, and is even more important to control under the Navy's newly adopted fixed-price "MAC-MO" contracting strategy that relies upon private contractors to produce accurate work specifications. A proxy for new work discovery, "contract change requests" were assessed for both legacy cost-reimbursable and current fixed-price contracting strategies. The results showed a promising initial reduction in new work discovery that will need to continue for the Navy to return ships to the fleet on time and under budget.

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