IDA | Research Summary

Improving Helicopter Readiness in the Army National Guard

The Army National Guard (ARNG) maintains a fleet of helicopters that provide essential support to a variety of missions, from military operations to disaster relief. As part of a broad effort to increase understanding of the relationship between investments in Full-Time Support (FTS) personnel and the ability to perform the ARNG mission, IDA quantified the causal relationship between maintenance military technician (MilTech) investments and helicopter readiness in the ARNG.

The ARNG fleet consists of a variety of aircraft maintained at a range of facility types. In this study, IDA focused on helicopters in the most prevalent family type—the H-60, composed of UH-60 Black Hawks and HH-60 Pave Hawks—located at Army Aviation Support Facilities (AASFs). Dual-status MilTech mechanics, who serve in the ARNG as a condition of their full-time federal civilian employment in AASFs, perform the majority of H-60 helicopter maintenance.

A helicopter's *readiness* status at any point in time indicates whether it is at a level of mechanical repair and outfitting suitable for performing some or all of its designated missions. When a helicopter is properly equipped and in good repair, it is in a *mission capable* status. When a helicopter requires certain repairs or scheduled maintenance to safely execute its missions, it is given a *not mission capable* (NMC) status. Maintenance events—called faults—are recorded for each individual inspection and repair. IDA used fault data to estimate the effect of changing MilTech mechanic staffing levels on the length of time required to resolve H-60 helicopter faults, and the resulting impact on NMC time.

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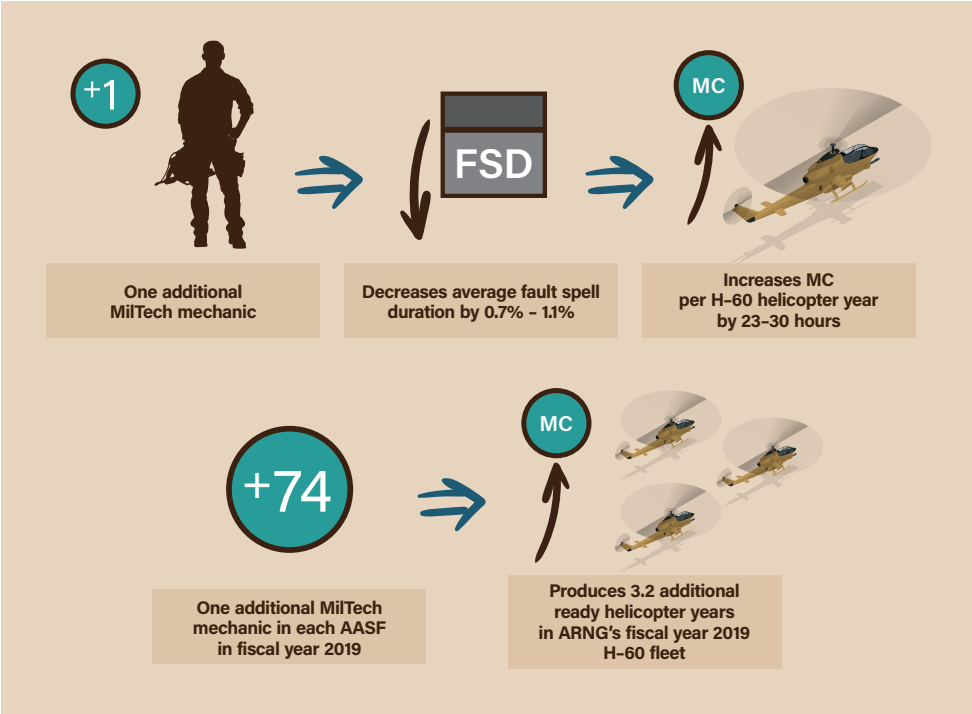
IDA's analysis included MilTech mechanics who worked approximately 420,000 person-months in fiscal years 2011 to 2019, in support of nearly 1,200 H-60 helicopters, and roughly 190,000 fault spells at 77 AASFs. To estimate the causal effect of additional MilTech mechanics on H-60 helicopter fault spell duration, the IDA team controlled for workload measures at each AASF, upcoming deployments of personnel and helicopters, maintenance type and complexity, individual AASF characteristics, and other features of the ARNG aviation environment.



IDA researchers found that increasing the number of MilTech mechanics at AASFs of all sizes results in statistically significant and economically meaningful increases in H-60 helicopter maintenance time. Reductions in maintenance time result in more hours available for mission completion. Downtime reductions following manpower increases were greatest for AASFs with lower initial MilTech mechanic headcounts, indicating that investments at the shortest-staffed facilities would yield the greatest return on helicopter readiness. Depending on baseline MilTech staffing levels, an additional MilTech mechanic decreases average fault spell duration by 0.7% to 1.1%.

Applying these findings to the AASF facilities and workloads as they existed in fiscal year 2019, the IDA team found that the addition of a single MilTech mechanic to each ARNG AASF—74 additional personnel in total—would have produced approximately 23 to 30 additional MC hours per H-60 helicopter year, depending on each AASF's baseline staffing, or approximately 3.2 additional ready helicopter years across the ARNG's fiscal year 2019 H-60 fleet. Per additional ready H-60 helicopter year, IDA found that increasing MilTech manpower is a more cost-effective way to improve readiness than borrowing or purchasing additional UH-60M Black Hawks.

Combined with up-to-date staffing and workload data, the model constructed in this effort can provide targeted readiness-enhancing staffing recommendations appropriate for a resource constrained environment by optimizing the placement of additional MilTech mechanics.



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