

The following technical paper abstract information was recently submitted in connection with session DOD103,Electrics, Electrical

Offer Number: 14DOD-0022

Paper Title: Assuring Mission Readiness Through the Use of Common Electrical Test Equipment

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Abstract: The health of electrical systems are vital to reliable operations of weapon systems. Electrical problems have led to catastrophic failures. Typical methodologies for testing the health of electrical systems rely upon tedious and time consuming methods that are heavily dependent on the experience of the test technicians. The speed and efficiency maintenance tasks are accomplished has a direct impact on operational costs and readiness.

Eclipse has worked with the DoD across all maintenance echelons to develop common automated test equipment (AWTS) currently used on a variety of weapon systems. Maintainers are more thoroughly assessing the electrical health on the vehicle under test, finding potential faults before they can lead to catastrophic failure, and allowing maintenance personnel the ability to quickly isolate and repair these faults. The automated test systems, which include the testing hardware, software, cabling, and data collection, have been developed, evaluated and are used on several platforms including the B-1B, C-130, C-2, E-2, F-15, F-16, F-18, F-22, H-6, H-47, H-46, H-53, H-60, and V-22. In addition, AWTS has been used for assessing the electrical health of wiring harnesses on vehicles, shipboard, and other weapon system applications.

Readiness: Use of the AWTS capability within DoD has demonstrated its ability to quickly and efficiently find electrical issues within weapon systems. Where deployed, no-fault-found (NFF) rates and test times are drastically reduced, resulting in better and faster diagnosis and repair of electrical problems. Readiness rates improve along with weapon system performance and safety to better assure mission success.

Cost: Traditional electrical testing in the DoD relies upon dedicated test equipment specifically developed for a particular platform, and a specific component. Hence, there is a need for many test sets for each weapon system, plus the logistics system to manage and maintain the test equipment as needed. With the use of common AWTS equipment applicable to any weapon system deployed by the DoD, the logistics footprint is greatly reduced for both the hardware and the maintenance support staff responsible for testing, reducing costs. AWTS smaller, portable systems also reduce the space and weight necessary for deployment to the field and its recovery.

Safety: More reliable aircraft are inherently safer. Rotary wing aircraft experienced catastrophic failures due to electrical malfunctions during recent operations in Iraq/Afghanistan. Conventional test methods could not pinpoint the reasons for failure and are trying AWTS. The Army has extended testing to their H-60 fleet instruments at CCAD to H-6 and H-47 to improve overall reliability. Personnel safety is

improved by the use of the AWTS due to the ease of connecting and hands free approach in an automated process.

Reduction in maintenance man-hours: The technical capabilities being implemented are not specific to any single platform or components, but can be used on any weapon system. The same AWTS family of circuit analyzers used for the H-60 can test any item in the DoD inventory. Common training of personnel on the AWTS capability can be used on deployed weapon systems wherever the need originates, reducing overall manpower needs.