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Paper Title: Ncompass-Voyager Intermittent Fault Detector
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Abstract: Ncompass-Voyager™ Intermittent Fault Detector™

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Abstract

Today's Warfighters are engaged in multiple theatres world-wide and continue to do so with finite resources. The Department of Defense's (DoD's) logistics & maintenance budgets cannot afford to waste a single dollar, which is why the Services are seeking ways to reduce No Fault Found (NFF). The Office of the Secretary of Defense (OSD) has established the Joint Intermittence Testing Working Integrated Product Team (JIT WIPT) and has calculated the cost impact of NFF at \$2 billion annually, with intermittent faults cited as the main cause. It's not just about the money. For many DoD weapon system components returned for Depot-level repair, less than half have the actual root cause of the problem identified and repaired: the other half test NFF. The implications for Front Line availability of critical combat equipment are stark and plain to see.

Conventional Automatic Test Equipment is not designed or optimized to detect momentary intermittent failures that cause NFF, which led to the development and deployment of the Intermittent Fault Detection & Isolation System™ (IFDIS™) which was specifically designed to successfully detect and isolate intermittent faults in electrical and avionics component interconnections and wiring. IFDIS testing of F-16 Radar Line Replaceable Units (LRUs) has more than tripled the LRUs' operational reliability and realized over \$62 million in maintenance and asset cost savings. Consequently the DoD is procuring further IFDIS systems so more maintenance depots can spread these benefits to other components and platforms.

Our Great Idea has been to take the advanced diagnostic capability contained in the IFDIS and make it portable so that it can be applied rapidly, easily and cost-effectively at O and I maintenance levels. The new system - the Ncompass-Voyager™ - is the size of a suitcase, weighs less than 33 lbs. and can be powered with AC or DC power supplies. This provides tremendous location flexibility where testing can be carried out: for example, the Ncompass-Voyager can be powered from flight line ground power units to facilitate on-aircraft testing. An intuitive touch-screen user interface allows the operator to select

and carry out tests, with test results being displayed in real-time and then automatically saved and date/time-stamped for later analysis. The immediate benefits of Ncompass-Voyager testing are the saving of maintenance hours and costs, as well as providing enhanced diagnostic capability to O and I levels of maintenance. For example, testing several hundred wires from a safety-critical system on the CH-47 Chinook intermittent faults were detected by the Ncompass-Voyager that conventional wire testers missed, allowing maintainers the make surgical reliability enhancement repairs.

The Ncompass-Voyager brings the proven benefits of IFDIS technology to the complete maintenance spectrum of electrical, electronic and avionics components/wiring and across the entire DoD maintenance enterprise.