

The following technical paper abstract information was recently submitted in connection with session DOD107,Inspection/Test

Offer Number: 14DOD-0033

Paper Title: Prognostics - Predicting Failures for Electronics from Parametric Data

Author:

Danny Parker

AVNIK

Alabama

(555)555 5555

danny.l.parker20.ctr@mail.mil

Abstract: Prognostics is a maturing technical field of study able to influence system use and sustainment through planned operational risks and sustainment planning. One example studied at the US Army Aviation and Missile Research, Development and Engineering Center, Prognostics and Diagnostics Laboratory is the Embedded GPS/INS (EGI) standard navigator. The EGI is a component in military aircraft and provides precise platform position information that is critical for navigation, targeting, and attitude reference. These functions are required for military operations, thus an EGI failure may significantly impact system performance and mission accomplishment. Forecasting future EGI failures is highly desired using existing parametric data recorded within the on-board Digital Source Collector (DSC) on an Army rotary wing platform. This data was acquired and analyzed focusing on the GPS Embedded Module (GEM) as the primary failure mode. The data consisted of built in test (BIT) messages and error measurements. Preliminary results indicate that GEMs failures can be predicted, and that additional data, not currently being recorded by the DSC, may allow for improved EGI failure prognostics. Analysis of the Condition Indicator (CI) depicts that the inertial heading error could provide failure prediction in excess of 50 flight hours. These data are from one EGI that exhibits a GEM failure on a single aircraft. This discussion will provide other EGI GEM failures further supporting an ability to predict EGI remaining useful life (RUL).