

The Development of a Corrosion Prognostic Health Management System

James Waldie, Simon Jacob, John Jacob, and Neil Moorhouse, BAE Systems Australia.

Abstract (200 words max):

To more effectively manage and report aircraft corrosion, BAE Systems Australia has been developing an Environmental Degradation Monitoring and Prognostic (EDMAP) capability. The system is web-based and uses a similar architecture and process as our existing F/A-18 A/B/F Health Usage Monitoring System to collect, process and present actionable ED data. For EDMAP, a tailored suite of corrosion/degradation/environmental sensors and models are used for each application and location. EDMAP also interfaces with off-board sources of data, such as aircraft structural condition monitoring systems, CAMM2 and the Bureau of Meteorology. The data is filtered, then verified and validated by an Authorised Engineering Organisation, and presented on a custom graphic user interface on the DRN. In order to increase confidence in sensor results and enable prognostics, substantial corrosion modelling research has been conducted. The system will enable forward maintenance planning, proactive preventative maintenance and ultimately condition-based maintenance regimes to significantly reduce aircraft downtime and sustainment cost. Improved structural life assessments that consider both fatigue and corrosion may also be possible by interfacing EDMAP and HUMS.