

### ABSTRACT SUBMISSION FORM

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**Title: E7-A AEW&C Wedgetail Boeing-developed HUMS data analysis tool (ASIGS – Aircraft Structural Integrity Ground Station) overview**

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**Abstract (200 words max):**

Boeing Defence Australia (BDA) is the supplier of Aircraft Structural Integrity (ASI) In-Service Support (ISS) to the Royal Australian Air Force (RAAF) for the E-7A Aircraft Early Warning and Control (AEW&C) Wedgetail program.

BDA has supported the Wedgetail program using the Boeing-developed Aircraft Structural Integrity Ground Station (ASIGS) software tool since the aircraft entered RAAF service in 2010. ASIGS is the authoritative usage monitoring tool for the E-7A program.

ASIGS is a sophisticated ground-based fleet management software tool utilising aircraft HUMS data to provide comprehensive usage and service life data analysis. ASIGS performs fatigue analysis at control points holistically representing the critical airframe structure for all types of potential aircraft usage. Actual usage data may be batch processed and investigated using the built in Excel based reporting tools, comprehensive data plotting package, damage query functions, and fleet trending features.

ASIGS has been instrumental in capturing aircraft data and performing analyses to support future extensions of airworthiness limitation inspections and service life limits. A close proximity flight load study is currently underway with the goal of developing an updated proximity spectrum utilizing all in-service data available and extending or eliminating the proximity lifetime limitation using ASIGS. The study has already yielded a novel algorithm to determine the presence of a lead aircraft in near proximity to the Wedgetail using recorded aircraft parameters. The results of this study will potentially extend the service life and operational utility of the AEW&C fleet, and could not be completed without utilizing the ASIGS tool and data.