Air Force will adopt Defence Aviation Safety Regulations in September. In the first of a series, Barrie Bardoe reveals how an exhaustive program tested the mettle of the durable Hercules

After six years of testing that simulated more than 60,000 flying hours of operational use, the international C-130J-30 Hercules Wing Fatigue Test Program has come to a metal-splitting conclusion.

The program was managed by Marshall Aerospace and Defence Group (MADG) in Cambridge, UK, with oversight by the Royal Air Force, RAAF engineers and scientists from the Defence Science and Technology (DST) Group.

As Air Force transitions to a global convention on airworthiness, the result has been described as a “Herculean” step towards establishing a structural life of type (SLOT) for the C-130J-30 Hercules operating under Air Force-representative flying conditions.

DST Group’s Robert Ogden said the group’s scientists were embedded in MADG during the program “in order to take advantage of the significant DST Group experience in performing structural fatigue tests”.

“These staff, complemented by the placement of Air Force engineers, served to enhance and protect Australian interests in this complex and expensive program,” he said.

“With the fatigue-testing phase of the program now complete and the focus switching to structural teardown, inspection and subsequent test interpretation, there is much work to be done in translating test findings.

“However, it is clearly evident that the accumulation of two operational lifetimes and demonstration of residual strength proves it is a highly durable structure that should realise significant financial and capability-based benefits for the ADF.

“Ultimately, the realisation of such outcomes will owe considerable debt to the world-class aircraft structural integrity science, engineering oversight and leadership provided by the Air Force and DST Group staff who have supported this international collaborative structural test program.”

SQNLDR Aaron Jozelich, the final liaison officer in the UK and responsible for overseeing the residual strength testing phase, said the Wing Fatigue Test Program continued a long line of successful collaborations between DST Group and the Air Force in aircraft fatigue testing.

“We’re looking forward to the article arriving at RAAF Richmond in coming months so we can complete the structural teardown and implement test outcomes across the C-130J-30 maintenance program,” he said.

Mr Ogden said such structural test programs also provided “a wealth of data and opportunity to push the boundaries regarding the science of aircraft structural integrity”.

“Such opportunities will further serve to enhance Defence and industry capability in supporting airworthiness management of current and future Defence force platforms.”

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