

## **EXECUTIVE SUMMARY**

### **ABBREVIATED AIRCRAFT ACCIDENT INVESTIGATION BOARD**

**F-15E-229 ENGINE MISHAP (S/N PW0E720181)**

**57<sup>th</sup> WING/57<sup>th</sup> COMPONENT MAINTENANCE SQUADRON (CMS)**

**NELLIS AIR FORCE BASE, NEVADA, 29 May 2003**

On 29 May 2003, a Pratt & Whitney 229 engine was undergoing test cell runs in a T-10 hush house. The mishap engine (ME) was recently assembled and required a test run before installation in an F-15E. During the engine run, the ME experienced a fully developed compressor stall. The test cell team performed the emergency actions and terminated the engine run. Subsequent investigation showed that significant internal damage was evident from the 8<sup>th</sup> stage aft. The damage to the engine is approximately \$1,607,687. There was no other damage to government or private property and there were no injuries. No claims are expected as a result of this mishap, and there were no press inquiries.

The chain of events relevant to this mishap began in June 2001 when a Pratt & Whitney 229 engine was sent to the 57 CMS because foreign object damage (FOD) was suspected. This unreported FOD incident resulted in a decision to rebuild the mishap core module (MCM) at Nellis rather than return it to depot. From July 2001 until 23 April 2002, 57 CMS rebuilt the MCM. The rebuilt MCM was not turned into supply and sat in the Propulsion Flight for one year before being installed in the ME on 25 April 2003.

The primary cause of this mishap, supported by clear and convincing evidence, was installation of the 9<sup>th</sup> stage compressor blade locks in an incorrect position while rebuilding the MCM. This incorrect installation allowed three 9<sup>th</sup> stage blades to liberate during the 29 May 2003 test cell run, resulting in a severe compressor stall and subsequent damage to the ME.

Substantial evidence indicates that faulty maintenance procedures and deficient supervision were contributing factors. The 8<sup>th</sup>, 9<sup>th</sup>, and 11<sup>th</sup> stage blade locks, and the 7<sup>th</sup> stage snap ring, were incorrectly installed by one or more technicians who did not follow Technical Order (T.O.) procedures accurately. Also, the technician who signed off the 9<sup>th</sup> stage work on the In-Process Inspection (IPI) testified that he did not perform the work. Further, it is most likely that the same technician who did perform the work on the 9<sup>th</sup> and 11<sup>th</sup> stage blade locks also inspected his own work on the IPI. Because that inspection was not conducted according to standard T.O. guidance, the incorrect installation went undetected. Additionally, supervisors tolerated an undisciplined environment where faulty maintenance procedures could occur. Finally, an inadequate IPI checklist was a contributing factor to this mishap.

*Under 10 U.S.C. 2254(d), any opinion of the accident investigators as to the cause of, or the factors contributing to, the accident set forth in the accident investigation report may not be considered as evidence in any civil or criminal proceeding arising from an aircraft accident, nor may such information be considered an admission of liability by the United States or by any person referred to in those conclusions or statements.*