

## **Learning from experience #6**

### **Rear fuselage mounted air brakes damaged against docking**

The aircraft was undergoing a hangar check, the aircraft power was off and the aircraft hydraulic system was fully intact in preparation for a trailing edge flap function check.

The supervisor in charge of the function check confirmed with all areas that it was clear to power up the aircraft and pressurise the hydraulic system. When the hydraulics were powered up the air brakes activated and struck the tail docking causing extensive damage.

As part of the clearance check, flight control settings on the flight deck for the air brake system were confirmed as 'Lift dumper & Air brakes deploy', however, previously the lift spoilers had been deployed and gagged for maintenance and the Air brake system circuit breaker (CB) had been opened prior to making the selection to isolate that system, but still the air brakes ran to deploy.

The Air brake hydraulic system is designed such that in the event of electrical power failure, ie CB opened, a spring bias mechanism in the electro- hydraulic control valve will make an automatic CLOSE selection. So what went wrong?

From a test and strip of the Air brake electro-hydraulic valve it was possible to determine that a higher than expected internal leak caused by a worn seal could have been a contributing factor to the system malfunction, however, even with the unexpected deployment, damage should not have been a factor with the considerable risk of injury to maintenance personnel.

The ensuing investigation identified that in preparation for the aircraft system power-up, system warning tags required by company Quality procedures had been attached to the tail docking warning of system status, however, the corresponding part of the tag required to be attached to the flight deck control had not been actioned which may have acted as a reminder to have a second look. Also upon closer review of the warning tag on the tail dock it was identified that it was for another aircraft previously under maintenance that was also of a different type to the current aircraft.

The discovery that the wrong aircraft had been annotated to the paperwork also identified that the wrong tail dock had been placed around the aircraft at input, the docking was for the previous aircraft and was not designed for use on the aircraft under maintenance, Therefore, when the air brake was deployed either intentionally or, as in this case unintentionally, damage to the aircraft would have been the result.

Previously, the company had decided that due to cost control, only one tail dock would be provided and had issued a notice to engineers that having carried out a risk assessment it considered the risk minimal to use the docking intended for the other aircraft type. A check list had been issued which required a placard to be placed on the flight deck reminding staff that sufficient clearance should be provided for the docking prior to aircraft system power-up, this was not carried out.

Lesson learned

Well intentioned procedures were not followed; this was exacerbated by the attempt at keeping costs down. A work around had been drawn up by the company to allow non standard docking to be used. The decision had combined to complicate the process and provide a distraction during a time of heightened activity at the end of a maintenance input.

