



SAIB: NM-13-03

Date: October 23, 2012

SUBJ: Hydraulic Power System: Power Transfer Unit

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin advises registered owners and operators, repair stations, and mechanics holding inspection authorizations, of **all Airbus Model A318, A319, A320 and A321 series airplanes** of an airworthiness concern regarding overheating of the power transfer unit (PTU) of the hydraulic system.

Background

There have been several reports of loss of a single hydraulic system due to leakage, and subsequent failure of a second hydraulic system from overheating. Airbus determined that overheating of the second hydraulic system is caused when the PTU is not de-activated by the flight crew within two minutes after the fault annunciation (AMBER CAUTION) alert on the electronic centralized aircraft monitoring (ECAM) system. Consequently the airplane is left with only one functional hydraulic system. The subject airplanes require at least one functional hydraulic system for continuous safe flight and landing.

Model A318, A319, A320 and A321 airplanes have three independent hydraulic systems which are: GREEN, YELLOW, and BLUE. After loss of either the GREEN or YELLOW hydraulic system, a bi-directional PTU powered by a functional hydraulic system (GREEN or YELLOW), provides an auxiliary pressure supply for hydraulic system failure without transfer of fluid between the two systems. During flight, the PTU activates automatically if there is a pressure difference of 500 psi between the GREEN/YELLOW or YELLOW/GREEN hydraulic systems, and it transfers the hydraulic power without transfer of hydraulic fluid. However, in the case of failure due to loss of hydraulic fluid of the YELLOW or GREEN systems, the PTU runs continuously but cannot pressurize the failed hydraulic system. Continuous running of the PTU causes the functional hydraulic system to overheat. Therefore, the PTU must be switched to OFF by the flight crew using the ECAM procedure, except during take-off; or using the Airplane Flight Manual (AFM) procedures during flight and take-off. When the flight crew switches off the PTU using ECAM or AFM procedures, the hydraulic fluid temperature cools down and the functional hydraulic system is recovered.

Airbus has developed a modification to prevent overheating of the functional hydraulic system powering the PTU. This modification enhances safety by automatically deactivating the PTU, which reduces the flight crew workload and the probability of dual hydraulic system failure; therefore, risk is mitigated without flight crew intervention. A modification including wiring provisions, with an option to activate the PTU inhibition logic has been installed in certain production airplanes. For in-service airplanes, this modification is identified in relevant service information. Airbus has issued Service Bulletins A320-29-1115, Revision 03, dated July 23, 2010; A320-29-1126, Revision 02, dated July 23, 2010; and A320-29-1156, dated October 16, 2012. These service bulletins provide operators with guidelines for doing the modification, which will ensure continued availability of two hydraulic systems after single failure of the GREEN or YELLOW hydraulic system.

At this time, the airworthiness concern is not considered an unsafe condition that would warrant airworthiness directive (AD) action under Title 14 of the Code of Federal Aviation Regulations (14 CFR) part 39.

Recommendations

The FAA recommends complying with the guidelines outlined in Airbus Service Bulletin A320-29-1115, Revision 03, dated July 23, 2010 (for installation of wiring provisions for automatic PTU inhibition); Airbus Service Bulletin A320-29-1126, Revision 02, dated July 23, 2010 (for activation of the automatic PTU inhibition logic) or Airbus Service Bulletin A320-29-1156, dated October 16, 2012 (for installation of wiring provisions for automatic PTU inhibition and activation of the automatic PTU inhibition logic). This modification will enhance the system and ensure continued availability of two hydraulic systems after a single failure of the GREEN or YELLOW hydraulic system.

In the interim, we recommend that operators ensure that pilots follow the latest AFM procedures for the hydraulic reservoir low level AMBER caution. Pilots should address this caution with minimal delay to prevent any further degradation of the hydraulic system.

For Further Information Contact

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