EASA Safety Information Bulletin

SIB No.: **2011-07**
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Subject: **Functional Check Flights**

Applicability: All aircraft, certificated in any category, operated under an Air Operator Certificate (AOC).

Ref. Publications:
- France Bureau d'Enquêtes et d'Analyses (BEA) Accident Report Ref ISBN 978-2-11-099128-7.
- United Kingdom Air Accidents Investigation Branch (AAIB) Report EW/C2009/01/02, AAIB Bulletin 9/2010.
- UK AAIB Report EW/C2009/11/03, AAIB Bulletin 12/2010.
- FAA Safety Alert for Operators (SAFO) 08024.

Background:

A number of accidents/incidents have occurred recently on European registered aircraft during functional check flights.

For the purpose of this SIB, a functional check flight is any non-revenue flight performed to assess or demonstrate aircraft serviceability, for in service aircraft already having a valid certificate of airworthiness. This could be a flight after maintenance or before lease transfer, or troubleshooting checks on the ground where the aircraft is operated by a flight crew.

The core business of an operator may not necessarily include the conduct of such flights on a regular basis; thus, the level of expertise to conduct these flights safely may not be available.

As a first step, this SIB is published to raise awareness of the hazards. The content of this SIB has been produced in consultation with the European National Aviation Authorities (NAAs).

Secondly, EASA included into the OPS Comment Response Document (CRD) to Notice of Proposed Amendment (NPA) 2008-22c and 2009-02c proposal for the new implementing rules OPS an obligation on operators to describe non-commercial flights of aircraft included under their Air Operator Certificate (AOC) in detail in the operations manual, including:

- identification of the applicable requirements;
- a clear identification of any differences between operating procedures used when conducting commercial and non-commercial operations; and
- a means of ensuring that all personnel involved in the operation are fully familiar with the associated procedures.

These procedures would require prior approval of the competent authority.

Thirdly, EASA will conduct Rulemaking activities to address maintenance check flights and non-revenue flights[1] in more detail (MDM 097 and OPS.075).

The FAA pointed out that a significant number of accidents have occurred during non-revenue flights on US-registered aircraft over the past decade and published SAFO 08024.

Description:

In the context of the transfer of an Airbus A320 at the end of a leasing contract, a non-revenue flight ended in a fatal accident, as a result of stalling. The flight programme was based on that used for customer acceptance flights, which is normally performed in conjunction with the manufacturers' test pilot. In this occurrence, the manufacturer was not involved. The French *Bureau d'Enquêtes et d'Analyses* (BEA) identified that the accident was caused by the loss of control of the aeroplane by the crew following the check of the functioning of the angle of attack protections, while the blockage of the angle of attack sensors made it impossible for these protections to trigger. The crew was not aware of the blockage of the angle of attack sensors. They did not take into account the speeds mentioned in the programme of checks available to them and consequently did not abort the check before the stall.

In another event, in the context of a combined maintenance check and demonstration flight to confirm the serviceability of the aeroplane at the end of a lease agreement, a non-revenue functional check flight on a Boeing 737 ended in a serious incident investigated by the United Kingdom *Air Accidents Investigation Branch* (AAIB). The investigation showed that a manual reversion check was being conducted on the flight controls and the aircraft pitched rapidly nose-down, descending approximately 9 000 feet before control was regained.

A third event occurred on a Dassault Falcon 2000. In the context of maintenance troubleshooting, the crew performed eight (8) accelerate/stop runs without due consideration of the brake energy effects which resulted in a landing gear fire propagating on the airframe. The investigation conducted by the UK AAIB identified that the information available in the Aircraft Flight Manual was not appropriate for the purpose of such an activity.

In the first two events mentioned above, the flights were performed to confirm aircraft serviceability before lease transfer. The investigation results highlighted the vulnerability of operating an aircraft outside the normal operational practices that apply to commercial flights.

In the third case, tests were performed in the framework of systems troubleshooting without considering all related hazards, specifically brake energy effects.

[1] Non-revenue flight is the term presently used in EU-OPS and JAR-OPS 3, however the task could also impact non-commercial and specialised (aerial work) operators. One of the first tasks will be to list and define the different types of 'non-revenue flights'

Recommendations: EASA recommends operators, intending to conduct flights and manoeuvres that could be classified as functional check flights, to seek advice from the competent authorities (European NAAs in charge of their oversight, or EASA for design-related issues) and from the type certificate holder of the aircraft.

The operator should also establish:

- A flight operational risk assessment specific to functional check flights;
- Risk mitigation measures including operating procedures for such flights as expanded in the Operating Manual.

EASA further recommends that the following be clearly communicated to all personnel involved:

- the intentions of the functional checks;
- the way the functional checks are intended to be performed;
- procedures that are different or in addition to standard operating procedures; and
- roles and responsibilities of all personnel involved.

Such flights should only be performed by crew with appropriate knowledge, experience and training.

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