

**21/2009****Applicability: All AOC Holders****REPORTING OF SUSPECTED HARD/HEAVY LANDINGS****1 Introduction**

- 1.1 An Airbus A321 aeroplane was not flared sufficiently during a landing and as a consequence a hard landing, categorised as 'severe hard', occurred. The crew decided not to report this hard landing following discussion with ground engineers who had been passengers on the flight. The presence of a landing parameter exceedance report was identified after a further two sectors had been flown, when an unrelated inspection of the landing gear found a crack in a wing rib gear support lug and a manual interrogation of the aeroplane's Data Management Unit (DMU) was conducted. See [Air Accidents Investigation Branch \(AAIB\) Bulletin No. 06/2009](#).
- 1.2 The purpose of this FODCOM is to alert operators to the need to provide training in the procedures associated with the reporting of **suspected** hard/heavy landings as well as the information available to assist decision-making on reporting for the aircraft/type operated. This FODCOM does not deal with the reporting of overweight landings.
- 1.3 Although the incident relates to the Airbus A321 aeroplane, the advice in this FODCOM is applicable to the operation of all aeroplanes.

**2 Issue**

- 2.1 The A320 family of aeroplane is fitted with an Aircraft Integrated Data System, which receives information from many other systems on the aeroplane through its DMU. The DMU processes this data and produces various reports including exceedance reports. One such group of reports is based on structural parameters. The structural report is identified as a LOAD 15 report.
- 2.2 The manufacturer offers the option of the DMU automatically printing out the LOAD 15 report at the end of the flight, when an exceedance has been generated. However, the unit fitted to the incident aeroplane was not configured to produce this automatic printout and required **manual** interrogation of the DMU to access the data and create a report. The presence of a LOAD 15 report is not highlighted by the Central Fault Display System or the Electronic Centralised Aircraft Monitor.
- 2.3 In the Airbus A321 incident, the commander and co-pilot discussed the landing and both considered it not to have been heavy. The commander asked company line engineers, who had travelled as passengers on the aeroplane, for their opinions of the landing and specifically whether they considered it a hard landing. As no LOAD 15 report had been produced on the flight deck printer and the commander did not consider the landing to have been heavy, then in their opinion the engineers considered that no action was needed. Although the commander was unfamiliar with this LOAD 15 report, he knew that the aeroplane was capable of printing a report after a hard/heavy landing, but confirmed that no report had been printed.

**3 Discussion**

- 3.1 Operators should provide clear guidance and training to all staff to enable them to correctly report a suspected hard/heavy landing to enable investigation prior to any further operations. The primary trigger for a hard/heavy landing report should be the subjective evaluation by the aircraft commander. Subsequent recourse to any onboard monitoring systems with which the aircraft may be equipped may support such evaluation, but it must be clear to crew and maintenance staff that all suspected hard/heavy landings must be reported before further flight to permit a full investigation and determination of continued airworthiness.

# FLIGHT OPERATIONS DIVISION COMMUNICATION - 21/2009

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3.2 The following aspects should be considered in developing guidance and training for staff:

- Terminology: clear definition of and distinction between firm, hard, heavy and overweight landings.
- The causes of, and techniques for avoiding, hard/heavy landings.
- The related requirements of the Accident Prevention and Flight Safety Programme and/or Safety Management System.
- The need for procedures that ensure that aircraft possibly damaged by a hard/heavy landing do not fly until inspected and repaired as necessary.
- The responsibilities and procedures involved in reporting, including internal reports, CAA reports and AAIB involvement.
- The procedures to be employed in the Technical Log/Aircraft Maintenance Log.
- The overriding requirement to report every suspected hard/heavy landing.
- The potential sources of information that may be used to support subjective evaluations; their access, use and limitations. It is particularly important that staff understand whether recording systems will automatically generate and display a report for landing parameter exceedances, or whether the information must be requested from the system following a suspected hard/heavy landing. If there are differences in system capability or configuration within and across fleets, these must be identified and included in the guidance and training. An example of such systems is the LOAD 15 report facility on Airbus aeroplane, which may or may not be configured to automatically generate exceedance reports. Operators of Airbus types should ensure that guidance and training enables staff to understand the configuration of this report function and its limitations in assisting the evaluation of a suspected hard/heavy landing, by comparison with data from the digital flight recorder. Where there is an option, operators should make use of a system which automatically generates and displays landing parameter exceedances.
- The qualification of those delivering training.
- The recording of training and retention of records.
- Other operator-specific guidance and information.
- Action in the event of a hard/heavy landing being detected through the Flight Data Monitoring Programme.

## 4 Recommendation

4.1 **Operators should provide clear guidance and training to flight crew to enable them to correctly report a suspected hard/heavy landing to enable investigation prior to any further operations.**

## 5 Queries

5.1 Any queries as a result of this FODCOM should be addressed to Head of Flight Operations Policy Department at the following e-mail address: [FOP.Admin@caa.co.uk](mailto:FOP.Admin@caa.co.uk).

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***Recipients of new FODCOMs are asked to ensure that these are copied to their 'in house' or contracted maintenance organisation, to relevant outside contractors, and to all members of their staff who could have an interest in the information or who need to take appropriate action in response to this Communication.***

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