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COMISIÓN DE
INVESTIGACIÓN
DE ACCIDENTES
E INCIDENTES DE
AVIACIÓN CIVIL

Second Interim Statement IN-003/2011

Incident involving an Airbus 330 aircraft, registration EC-LKE, operated by Air Europa, at flight level 240 in the vicinity of the Toledo VOR/DME on 13 February 2011

GOBIERNO DE ESPAÑA
MINISTERIO DE FOMENTO

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Important notice

This document constitutes the interim statement envisioned in Article 16.7 of Regulation (EU) no. 996/2010 of the European Parliament and of the Council, as well as in paragraph 6.6 of Annex 13 to the Convention on International Civil Aviation. The statement includes the details of the progress of the investigation and the most important operational safety issues revealed to date. The information provided herein is subject to change as the investigation proceeds

Pursuant to the contents of Regulation (EU) no. 96/2010 of the European Parliament and of the Council and of Annex 13 to the Convention on International Civil Aviation, the investigation is purely technical in nature and is not intended to determine or apportion blame or liability. The investigation is being conducted without necessarily resorting to evidentiary procedures and for the sole purpose of preventing future accidents.

Consequently, the use of this information for any purpose other than to prevent future accidents may result in faulty conclusions or interpretations.

Abbreviations

ATPL	Airline Transport Pilot License
FBO	Fan Blade Off
FL	Flight Level
HCF	High Cycle Fatigue
NMSB	Non Mandatory Service Bulletin
P/N	Part Number
S/N	Serial Number

DATA SUMMARY

LOCATION

Date and time	**Sunday, 13 Febrruary 2011 at 16:16 local time[1]**
Site	**FL240 in the vicinity of the Toledo VOR/DME**

AIRCRAFT

Registration	**EC-LKE**
Type and model	**Airbus 330-243**
Operator	**Air Europa**

Engines

Type and model	**Rolls Royce Trent 772B-60**
Number	**2**

CREW

	Pilot	First officer
Age	**47**	**38**
License	**Airline Transport Pilot License**	**Airline Transport Pilot License**
Total flight hours	**14757**	**5386**
Flight hours on the type	**1880**	**2084**

INJURIES

	Fatal	Serious	Minor/None
Crew			**11**
Passengers			**333**
Third persons			

DAMAGE

Aircraft	**Minor (limited to right engine)**
Third parties	**None**

FLIGHT DATA

Operation	**Commercial air transport - scheduled - international - passenger**
Phase of flight	**En route**

PRELIMINARY REPORT

Date of approval	**27 January 2014**

[1] All times in this report are local. To obtain UTC, subtract one hour from local time.

1. INFORMATION ON THE INCIDENT

On Sunday, 13 February 2011, aircraft EC-LKE, an Airbus 330 operated by Air Europa, was on a planned flight from Madrid (Spain) to Cancun (Mexico). There were 333 passengers, 8 flight attendants and 3 flight crew (one captain and two copilots) onboard, since the duration of the flight (over 11 hours) required an augmented crew.

At 16:02 the aircraft started its take-off run and 14 minutes later, at 16:16:03, a fan blade off (FBO) event took place involving the number 2 engine. The engine experienced a surge with heavy vibration. The crew shut down the number 2 engine, declared an emergency and decided to return to the Madrid-Barajas Airport. At 16:36:32, 20 minutes after the engine failure, the aircraft landed normally on runway 18R. The aircraft left the runway and there was no emergency evacuation.

2. PROGRESS OF THE INVESTIGATION

The failure of the number 2 engine (S/N 41222) on aircraft EC-LKE took place due to the partial detachment of a fan blade (P/N FW23741, S/N RGF18472). The fracture had initiated at the bond line between the convex aerofoil panel and the internal membrane, where a lack of bond was evident.

The investigation has focused on two aspects:

- On establishing the causes that resulted in the lack of bond in the blade and on the conditions required, given this defect, for the crack to grow and fracture the blade. An extensive set of analyses and tests has been carried out involving different areas, including: manufacturing processes, in-service operation of the blade, maintenance and repair history, lifing methodologies, material contamination, fatigue tests and stress analyses.

- On establishing inspection techniques aimed at detecting internal sub-surface cracks in all in-service blades. Non Modification Service Bulletins NMSB72-G872 and NMSB72-AH465 were issued in July 2012 and July 2013 respectively, requiring periodic inspection of all Trent 700 fan blades in service.

All of the tests were completed by December 2013, with the exception of the HCF Rig Test, which is scheduled for completion in May 2014. Since this final test is only expected to validate information already learned from the previous tests, investigators are now consolidating the findings from all of the relevant areas.

3. NEXT STEPS

Issuance of the final report.