



KÖZLEKEDÉSBIZTONSÁGI
SZERVEZET
TRANSPORTATION SAFETY
BUREAU

Administrator János HORVÁTH
File Number RFO/ 825 / 1 /2009

TSB

Locally

Budapest, 3. August 2009

Subject: On the conclusion of the notification procedure in connection with aviation activity number **2007-299-4**.

Category of occurrence:	Serious incident
Location, time:	The airspace of the USA, 9 th July 2007
Operator of the aircraft:	Malév Zrt.
Registration:	HA-LHA
Type:	BOEING B-767-200ER
Operator/Flight Safety Service registration number	-
Receival of the final report on the technical investigation:	Concise technical investigation by the TSB

Description of the occurrence:

On 9th July 2007, after 7 hours and 50 minutes of the flight MAH090 (Budapest – New York), on the BOEING B-767-200ER type aircraft of MALÉV airlines, the failure of the generator of engine No. 1. (the left engine) was detected (GEN DRIVE warning light came on). The crew disconnected the generator from the network, and to ensure a 2 generator on-board electricity supply (APU generator and generator No.2 (the generator of the right engine)) the auxiliary power unit was started. Following this, after 40-50 minutes of flying, during descent, the APU generator got disconnected from the network. In line with the procedure applicable in this case, they “RESET” the generator to the idle position. The procedure did not yield the expected results. 2 minutes after this, the APU also shut down automatically, but with the electric generators being switched off – in an unloaded status – it could be restarted. The crew continued approach, and landed safely at New York JFK (John Fitzgerald Kennedy) airport without asking for help or declaring an incident. The crew documented the failures on Aircraft Flight Log (AFL) sheet No. 0022815. They asked the assistance of the contracted maintenance personnel (DELTA) to carry out the troubleshooting.

Action taken:

The occurrence was investigated by TSB.

The investigation covered the examination and analysis of the documents in connection with the case.

The investigation has established that both technical problems of the aircraft were examined by the contracted maintenance staff. During troubleshooting, bronze chips were found in the oil system of generator No. 2. (integrated drive generator, IDG). Thus, the generator was replaced in accordance with the regulations of the maintenance documentations (MM 24-11-01). A serviceability test was executed, and the leakproofness of the oil system ensuring the cooling of the generator was checked.

APU was operated on the ground by high electric load, and besides, it was restarted several times, also in a loaded manner. The indicated failure could not be reproduced. The APU and its generator, and the replaced IDG (and thus, the aircraft) was declared airworthy. The work carried out was documented on AFL sheets No. 0022815 and 0022816.

The new shift started the return flight (MAH 091) with the now operative aircraft, with the instruction to start the APU before beginning to descend and report to ACE/MALÉV how it had operated. The crew reported that after 1 hours and 52 minutes of operation, APU shut down automatically, accompanied by an "APU FAULT" warning. The crew documented the fault on AFL sheet No. 0022818. The aircraft landed safely at Budapest – Ferihegy at its planned arrival time.

The troubleshooting in Ferihegy was carried out by ACE maintenance service. They established that the APU failure had been caused by the inner malfunction of the engine control unit which led to fluctuations in the revolution of the APU, or to an increase in its revolution above the nominal value. The changing revolutions per minute also induced irregular revolutions of the generator, because the generator of the APU does not have a unit regulating its revolutions. The overspeed or the changing revolutions per minute of the generator causes fluctuations in the frequency of the voltage produced. Fluctuating frequency is a damaging phenomenon: in its presence, the generator control unit (GCU) does not enable the APU's generator to be connected to the network. This happened during the return flight. The ECU unit of APU was replaced during troubleshooting. The work was carried out in line with MM 49-61-05. The action taken and the airworthiness of the aircraft was documented on AFL sheet No. 0022818.

Comment: As based on ACE/MALÉV statistics, IDG was replaced 31 times on the B767-200 type due to malfunction in the period between 1994 and 2007. Neither the Maintenance Planning Document (MPD) of the manufacturer of the Boeing aircraft, nor the specifications of the manufacturer classify the IDG as a "hard time" equipment, but owing to the frequent malfunctions, the MALÉV Maintenance Program (MP) specifies an operational time limit of 12,000 hours. Reaching this operational time limit, the equipment is to be overhauled.

Safety recommendation: Due to the action taken by the operator in connection with the case, a safety recommendation is not to be issued.

László MÉSZÁROS
Director-General

NOTE:

The present document is the translation of the Hungarian version of the concluding letter. Although efforts have been made to translate it as accurately as possible, discrepancies may occur.

In this case, the Hungarian is the authentic, official version.