In Respect of the Response to the Battery Trouble with the Boeing 787

On January 7, 2013 (US time), a fire broke out from the auxiliary power unit (APU) battery of the Boeing 787 of the Japan Airlines parked at General Edward Lawrence Logan International Airport, Boston, Massachusetts. In addition, on January 16, 2013, smoke broke out from the main battery of the Boeing 787 of All Nippon Airways during a flight and the airplane made an emergency landing at Takamatsu airport. In the wake of these events, the operations of the Boeing 787 were suspended for several months all over the world. When these events occurred, Japanese airliners operated 24 Boeing 787 (49 in total around the world) and a number of users and airline companies were considerably affected by the events. After examining the causes of the problem and reviewing measures to prevent the recurrence in cooperation with relevant countries including the US, the manufacturing country, and interested parties in the aviation industry in Japan, all appropriate measures to ensure security and safety were taken to allow the operation to be restarted.

Examination of the causes and the review of measures to prevent the recurrence

In the wake of the occurrence of the battery trouble with the Boeing 787, the inter-ministerial working group with the Minister of MLIT as the head was established and the Japan Civil Aviation Bureau (JCAB) and the Japan Transportation Safety Board (JTSB) examined the causes and reviewed measures to prevent the recurrence in closed cooperation with the Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB).

The Boeing Company analyzed the views obtained from experts of both inside and outside the company and the facts found out through the investigations of the JTSB and the NTSB immediately after the occurrence of the events and narrowed the probable causes down to 80 items.

These 80 items were classified into the following four groups in terms of the similarity of the causes and measures.

① Improper torque of the electrode nuts
② Stress to the electrolyte due to external short circuit and variation in voltage
③ Chemical changes due to over-discharge of cells
④ Contaminants in the manufacturing process

Under the circumstances and in order to cope with all these causes, the following three-step corrective measures were formulated.

① Direct measures to prevent the overheating of battery cells caused by about 80 items in 4 groups
② Measures to prevent heat propagation to other battery cells when a battery cell is overheated
③ Prevention of fire and the like when heat is propagated between battery cells

Although multiple protection measures are taken in the whole design of an aircraft, these three-step corrective measures provide further three measures against a battery failure.

The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) analyzed and evaluated the contents of the examination of the causes and the corrective measures in closed cooperation with the FAA, and reached the conclusion that the corrective measures of the Boeing Company were adequate. On April 26, 2013, MLIT allowed the Boeing 787 to return to service with the battery system modifications related to the corrective measures.

Request to the airline companies to ensure security and safety

In consideration of the fact that the operations of the Boeing 787 were suspended for a long period of time, not only the securing of safety, but also the ensuring of security of the users for the Boeing 787 to return to service were considered extremely important, and thus, the following two points were emphasized to the airline companies of our country.

① Take all appropriate measures for the inspection and maintenance of the aircraft and to ensure the capacity of the crew
② Disclose information to users in an appropriate manner

In response to this guidance, the airline companies of our country carried out a variety of efforts including checking flights after the battery system modifications, shakedown training and the like. Staff of the JCAB was present in the sampling of the battery system modifications work and when staff was not present, the status of the subject aircraft was checked through work records and the like. In addition, staff was present in all the checking flights, carried out after the completion of the modification work and verified the safety before the resumption of revenue flights on May 26, 2013. After the resumption of revenue flights, each airline company implements the following measures as voluntary measures.

① Monitoring the battery voltage during flights at ground stations
② Detailed sampling inspection of the batteries after a certain period of use
③ Active disclosure of information on the website and the like on safety measures taken on the Boeing 787 to the public, such as the flight conditions of the Boeing 787

The JTSB and the NTSB are continuing their investigation to find out the underlying cause of the battery trouble of the Boeing 787. MLIT for its part are continuously making efforts to ensure the safety and security of the aircraft flight operations in close cooperation with relevant parties.

[Information on the topic is available on the website of the government]

Response from the moment of the occurrence of the battery trouble with the Boeing 787 to return to service is available on:
http://www.mlit.go.jp/common/001002893.pdf