



# National Transportation Safety Board

Washington, DC 20594

## Safety Recommendation

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**Date:** December 1, 2014

**In reply refer to:** A-14-130

Mr. Yoshiaki Namikawa  
Division Manager  
Special Battery & Lithium-ion Battery Division  
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The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of the accidents and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge GS Yuasa Corporation to take action on the safety recommendation being issued in this letter.

On November 21, 2014, the National Transportation Safety Board (NTSB) adopted its report concerning the January 7, 2013, incident, in which a Japan Airlines Boeing 787-8, JA8297, was parked at a gate at General Edward Lawrence Logan International Airport, Boston, Massachusetts, when maintenance personnel observed smoke coming from the lid of the auxiliary power unit battery case, as well as a fire with two distinct flames at the electrical connector on the front of the case. No passengers or crewmembers were aboard the airplane at the time, and none of the maintenance or cleaning personnel aboard the airplane was injured.<sup>1</sup> Additional information about this incident and the resulting recommendations may be found in the report of the investigation, which can be accessed at our website, <http://www.nts.gov>, under report number AIR-14/01.

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<sup>1</sup> *Auxiliary Power Unit Battery Fire, Japan Airlines Boeing 787-8, JA829J, Boston, Massachusetts, January 7, 2013*, Aircraft Incident Report NTSB/AIR-14/01 (Washington, DC: NTSB, 2014), which can be accessed at the NTSB's website.

As a result of this investigation, we classified previously issued Safety Recommendations A-14-32 through -36 to the Federal Aviation Administration (FAA) and issued 18 new recommendations, including 15 recommendations to the FAA, 2 to The Boeing Company, and the following recommendation to GS Yuasa Corporation:

A-14-130

Review your cell manufacturing processes to minimize or prevent defects that could affect cell safety, and ensure that your employees are properly trained to identify and eliminate these defects.

In addition, we classified the following previously issued recommendations to the FAA:

A-14-32

Develop abuse tests that subject a single cell within a permanently installed, rechargeable lithium-ion battery to thermal runaway and demonstrate that the battery installation mitigates all hazardous effects of propagation to other cells and the release of electrolyte, fire, or explosive debris outside the battery case. The tests should replicate the battery installation on the aircraft and be conducted under conditions that produce the most severe outcome.

A-14-33

After Safety Recommendation A-14-32 has been completed, require aircraft manufacturers to perform the tests and demonstrate acceptable performance as part of the certification of any new aircraft design that incorporates a permanently installed, rechargeable lithium-ion battery.

A-14-34

Work with lithium-ion battery technology experts from government and test standards organizations, including US national laboratories, to develop guidance on acceptable methods to induce thermal runaway that most reliably simulate cell internal short-circuiting hazards at the cell, battery, and aircraft levels.

A-14-35

Review the methods of compliance used to certify permanently installed, rechargeable lithium-ion batteries on in-service aircraft and require additional testing, if needed, to ensure that the battery design and installation adequately protects against all adverse effects of a cell thermal runaway.

A-14-36

Develop a policy to establish, when practicable, a panel of independent technical experts to advise on methods of compliance and best practices for certifying the

safety of new technology to be used on new or existing aircraft. The panel should be established as early as possible in the certification program to ensure that the most current research and information related to the technology could be incorporated during the program.

These safety recommendations are now classified “Open—Acceptable Response.”

Acting Chairman HART and Members SUMWALT, ROSEKIND, and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to [correspondence@ntsb.gov](mailto:correspondence@ntsb.gov). If it exceeds 10 megabytes, including attachments, please e-mail us at the same address for instructions. Please do not submit both an electronic copy and a hard copy of the same response.

[Original Signed]

By: Christopher A. Hart,  
Acting Chairman