ASO Alerta de Segurança Operacional

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The ASO contains important information on operational safety and may contain recommendations for actions to be taken by operators. However, even if a recommendation is published in an ASO, an alternative action may be as or more efficient for the specific case of each operator and its particularities. The content of this document is for guidance purposes only, has no legal force and effect, and is not intended to be binding on the public.

Transport of lithium batteries by passengers on board commercial aircraft

This Operational Safety Alert (ASO) is intended for all air operators operating under the Brazilian Civil Aviation Regulation (RBAC) No. 121.

Purpose of the ASO

This Operational Safety Alert (ASO) aims to define recommendations for passenger aircraft operators and ground handling service providers on actions to be taken to make passengers aware of the restrictions and conditions applicable to the transport of lithium batteries and portable electronic devices (PEDs) powered by lithium batteries on passenger aircraft.

The need for this definition lies in evidence that, in the event of a thermal runaway of a PED's battery (e.g., a fully charged laptop) carried in a checked baggage along with some normally permitted dangerous goods, such as cosmetic items, there is a low chance that the cargo compartment fire protection systems can contain the resulting fire.

Furthermore, the risks of transporting PEDs in baggage, including phones, laptops, or tablets, justify the regulatory requirement for them to be carried in the passenger cabin to allow the crew to react quickly in case of a PED battery fire.

Other items that have proven to be particularly dangerous are e-cigarettes and power banks. E-cigarettes can be easily activated and increase their temperature rapidly, igniting any object placed nearby. Power banks are prohibited in checked baggage.

Lithium batteries and lithium battery-powered devices can act as a source of ignition and/or contribute significantly to a fire when overheated. In all cases, aircraft operators must be aware of what is being transported on board their aircraft and ensure that the dangerous goods accepted for transport comply with the Brazilian Civil Aviation Regulation No. 175 and its Supplementary Instructions.

Considerations on Safety Management

Safety Management is a dynamic process that requires continuous adaptation to changes in the aviation environment. Effective safety management is designed to proactively detect emerging hazards, assess the associated level of risk, and implement appropriate barriers and mitigations to keep it at an acceptable level. Such mitigations may include, but are not limited to, changes in processes, review of operational or maintenance procedures, and reinforcement of training for the professionals involved.

Adjustments to preventive controls and Safety Risk Assessments through a Safety Management System (SMS) may be necessary to ensure that the risks associated with the transport of lithium batteries by passengers and crew are identified and mitigated.

Recommended Actions for Safety

Based on the increase in the number of occurrences with lithium batteries on board commercial passenger aircraft and the risks that these batteries normally present, with emphasis on the possibility of overheating, fire, and explosion, ANAC recommends to air operators governed by RBAC No. 121:

1) Reinforce the instruction of flight and cabin crews, as well as ground handling personnel, regarding the restrictions on the types and characteristics of lithium batteries permitted in the checked and carry-on baggage of passengers and crew.
2) Reinforce the instruction of ground service providers to communicate these restrictions to passengers at check-in, including examples of what is and is not permitted. This process of including the passenger's confirmation of this information can be done with the display of visual examples of devices powered by lithium batteries.
3) Reinforce the instruction to ground service providers that e-cigarettes and spare lithium batteries, including power banks, are not permitted in checked baggage.
4) Instruct the ground handling provider that when baggage is taken from the passenger at the boarding gate to be checked because it cannot be accommodated in the cabin, the passenger must be required to remove any lithium batteries from the then-checked baggage.
5) Develop means to raise passenger awareness, such as websites, notification systems, cabin announcements, and safety videos about the risks associated with lithium batteries and the equipment powered by them, as well as the restrictions applied to their transport, including, among others:
   a) Guidance on what lithium batteries are, where they are found, what thermal runaway is and how it occurs, and the associated risks.
   b) Information on the safe handling, storage, and transport of lithium batteries, including care to prevent them from being crushed or damaged.
   c) Recommendation to transport e-cigarettes and power banks in a place where they can be monitored by the person, and not in the overhead bin.

d) Prohibition of the use of power banks to charge electronic devices during the flight.
e) Protection of spare batteries, including power banks, and e-cigarettes in carry-on baggage against short-circuit (e.g., by carrying them in their original packaging, protective cases, or applying tape over their terminals), unintentional activation, and storage as far as possible from potentially flammable items (e.g., perfumes).
f) Use of the aircraft's electrical power systems, when available, only to charge portable electronic devices, provided they are always monitored by the passenger.
g) Protection of portable electronic devices from damage and unintentional activation when not in use during the flight.
h) Transport of lithium batteries in places where a potential thermal runaway is visible and accessible to passengers or crew.
i) Immediate notification to a crew member if a lithium battery starts to overheat or emit smoke.
j) Information that any portable electronic device that cannot be carried in the passenger cabin due to its size may be transported as checked baggage and must be completely turned off (it is not sufficient to place it in standby or hibernation modes), protected against the risk of accidental damage with the use of packaging, casing, or padding, and not be transported near flammable or pressurized materials, such as perfumes, aerosols, etc.

6) Guide crews with safety information that can be disseminated through appropriate internal channels, such as service bulletins, manuals, etc.
7) Follow the safety risk management or equivalent process to ensure that all potential hazards have been identified and implement risk mitigation measures for the transport of lithium batteries. Safety risk assessments should consider the hazard posed by stowing lithium batteries in areas not visible or easily accessible to passengers or crew, such as in overhead compartments or in carry-on baggage.
8) Review the processes, procedures, and training for fighting lithium battery fires.
9) Ensure that crew members recognize the different stages of lithium battery thermal runaway (e.g., smoke versus flame) and can respond appropriately.
10) Evaluate onboard safety equipment, such as fire extinguishers, water sources, and fire containment products, to ensure they have the capability to mitigate onboard fires caused by lithium batteries.
11) Evaluate aircraft components, emergency equipment, and passenger items that could become involved in a thermal runaway event.
12) Review procedures that minimize the potential for smoke inhalation by passengers and crew.

Guidance Materials

A. SAFO 09013
B. SAFO 15010
C. SAFO 24007
D. SAFO 25002
E. SIB 2025-03

References

A. Regulations:
   a. Regulamento Brasileiro da Aviação Civil (RBAC) nº 121
   b. Regulamento Brasileiro da Aviação Civil (RBAC) nº 175
   c. IS 175-001 – Transporte de Artigos Perigosos em Aeronaves Civis