AC DGR-10(0)
23 March 2018

Civil Aviation Authority of Singapore

Advisory Circular

GUIDANCE FOR CARRIAGE OF BAGGAGE EQUIPPED WITH LITHIUM BATTERIES

1. GENERAL. Pursuant to paragraph 88B of the Air Navigation Order, the Director General of the Civil Aviation Authority of Singapore (DGCA) may, from time to time, issue advisory circulars (ACs) on any aspect of safety in civil aviation. This AC contains information about standards, practices and procedures acceptable to CAAS. The revision number of the AC is indicated in parenthesis in the suffix of the AC number.

2. PURPOSE. This AC provides guidance for the carriage of baggage equipped with lithium batteries (also known as smart luggage) by passengers and crew.

3. APPLICABILITY. This AC applies to all Singapore air operators and foreign air operators operating aircraft into and from Singapore.

4. CANCELLATION. This is the first AC issued on this subject.

5. EFFECTIVE DATE. This AC is effective from 23 March 2018.

6. REFERENCES.

- Air Operator Certificate Requirements (AOCR)
- ICAO Technical Instructions (TI) for the Safe Transport of Dangerous Goods by Air (Doc 9284).
- AC DGR-2 – Guidance for Carriage of Lithium Batteries by Air.
- AC DGR-9 – Guidance for Carriage of Personal Transportation Devices Powered by Small Lithium Battery.
- AC AOC-7 – Use of Portable Electronic Devices Onboard Aircraft.
- IATA Dangerous Goods Regulations (DGR) Manual.

7. BACKGROUND.

7.1 Baggage with high-tech features such as location tracking, charging capability and digital weighing capability equipped with lithium batteries are being carried in increasing numbers as checked and/or carry-on baggage. Collectively known as smart luggage, they are equipped with lithium batteries and may contain powerbanks intended to provide power to other electronic devices, USB ports, GPS and other technologies such as Bluetooth, RFID and WIFI capabilities.

7.2 The presence of lithium batteries in smart luggage presents a fire risk when transported by air in checked and/or carry-on baggage.

8. CARRIAGE OF SMART LUGGAGE BY PASSENGERS AND CREW.

Recommendations from Anticipated Changes to the Technical Instructions

8.1 To mitigate the safety risk in the carriage of smart luggage by passengers and crew, it is recommended that smart luggage equipped with lithium batteries exceeding 0.3 grams of lithium content for lithium metal batteries or 2.7 Wh (Watt-hour rating) for lithium ion batteries:

(a) should not be transported as checked baggage unless its batteries are removed and carried by passengers and crew into the cabin. The removed batteries will be deemed as spare lithium batteries and must be individually protected to prevent short circuit when carried in the cabin;

(b) if smart luggage was designed such that the batteries could not be removed, the baggage with its batteries should be carried into the cabin by the passenger or crew as carry-on baggage so that any incident can be immediately mitigated by trained cabin crew. Carry-on baggage should adhere to size and weight limitations and any restrictions (such as ensuring the transmitting functions are disabled at all times during flight) that may be imposed by the air operator.

(c) if the smart luggage was designed such that the batteries could not be removed and its size, weight or any air operator specific restrictions do not permit it to be transported in the cabin as carry-on baggage, it should not be accepted for transportation.

Handling of Mishandled Baggage

8.2 Mishandled smart luggage (transported under “Rush Tag”) equipped with lithium batteries exceeding the capacity specified in paragraph 8.1 should not be accepted for transportation unless its batteries were removed.

Smart Luggage Designed to also Function as Personal Mobility Devices

8.3 Baggage installed with lithium battery for the purpose of functioning as personal mobility devices must be considered as personal transportation devices and should be transported as carry-on baggage in the cabin. Refer to AC DGR-9 for more guidance on the carriage of personal transportation devices powered by small lithium battery.

Other Lithium Battery Requirements

8.4 All lithium batteries accepted for carriage by passengers and crew must comply with the capacity limitations and its associated requirements as set out in the ICAO TI and documented in Subsection 2.3 of the IATA DGR manual. Refer to AC DGR-2 for more guidance on the carriage of lithium batteries by air in passenger or crew baggage.

Mitigating the Interference Effects of Smart Luggage

8.5 Smart luggage with location tracking capability such as GPS and GSM may pose a hazard to aircraft systems due to electromagnetic transmissions. To mitigate the risk of such interference by smart luggage, Singapore air operators must comply with applicable requirements in the AOCR. Further guidance can also be found in AC-AOC 7. Foreign air operators should comply with applicable regulations of its State of the operator.

8.6 In addition, motorized smart luggage must be switched off when carried on board the aircraft. This is because motorized luggage may unintentionally emit spurious radio frequency signals during its operation and cause interference with the aircraft systems.

Provision of Dangerous Goods Information to Passengers and Check-in Process

8.7 To alert passengers regarding the requirements and limitations on the carriage of smart luggage, air operators should include specific information on the carriage of smart luggage on their website, at the ticket purchase, check-in counters, self-check-in kiosk, baggage drop areas and the boarding gates.

8.8 Passenger service staff accepting checked baggage at the check-in counters or the boarding gate should be vigilant when accepting smart luggage carried by passengers. To prevent smart

luggage containing lithium batteries exceeding the capacity specified in paragraph 8.1 from being accepted as checked baggage, passenger service staff should seek confirmation from passengers and crew and request for such batteries, including any spare lithium batteries, to be removed prior to accepting them for carriage as checked baggage.

9. CARRIAGE OF SMART LUGGAGE AS CARGO CONSIGNMENTS.

9.1 When transported as unaccompanied baggage, smart luggage equipped with lithium batteries exceeding the capacity specified in paragraph 8.1 should not be accepted for transportation unless its batteries were removed.

9.2 Other than in unaccompanied baggage, smart luggage equipped with lithium batteries or button cells should be identified under "*UN3481, Lithium Ion Batteries Contained In Equipment*" and complying with Packing Instructions 967 or "U*N3091, Lithium Metal Batteries Contained In Equipment*" and complying with Packing Instructions 970 as appropriate.

10. SAFETY RISK ASSESSMENT.

10.1 To identify and effectively mitigate the safety risk in the carriage of smart luggage by passengers and crew and in cargo consignments, air operators are advised to conduct safety risk assessment in the acceptance and carriage of smart luggage.

11. PENALTY.

11.1 If convicted, any person who contravenes paragraph 50E and the Nineteenth Schedule of the ANO shall be liable to a fine not exceeding S$100,000 or to imprisonment for a term of not more than five years, or both.

12. TRAINING SERVICE PROVIDERS.

12.1 Entities offering dangerous goods training programmes are to address the understanding of the ICAO TI requirements associated with the carriage of lithium batteries by air and to emphasize the need to comply with these requirements in the interest of safety.

13. CONTACT PERSON AND INFORMATION.

13.1 Should you have any queries relating to the contents of this advisory circular, please e-mail to us at CAAS_Dangerousgoods@caas.gov.sg .