



ICAO

International Civil Aviation Organization
Asia and Pacific Office

**Tenth Meeting of the Asia Pacific Accident Investigation Group
(APAC-AIG/10)**

(Bangkok, Thailand, 9-10 November 2022 — Hybrid Format)

Agenda Item 4: Enhancing Accident Investigation Capabilities

SMALL UAS ACCIDENTS AND INCIDENTS INVESTIGATION BY JTSB

(Presented by Japan)

SUMMARY

This paper provides an overview of the Small Unmanned Aircraft System (UAS) Accident and Incident investigations that the Japan Transport Safety Board (JTSB) will start on December 5, 2022 and the system built up for investigations.

1. INTRODUCTION

1.1 Small UAS are being promoted as one of the so-called "Industrial revolutions in the sky". Small UAS are already being used in a wide range of applications such as aerial photography, pesticide spraying and infrastructure inspection. The usage of Small UAS is expected to expand further into various fields like package delivery, patrol service and surveillance for agricultural management. There are expectations for small UAS as a tool for solving social challenges, e.g., labor shortage and aging society with fewer children, and for creating new added value.

1.2 On the other hand, in FY2021, the number of license approvals for Small UAS will reach approximately 75,000, which is almost six times higher than in FY2016. With the rapid expansion of Small UAS operations, events of intrusion into airspace around airports or injuries to people on the ground are increasing year by year in Japan.

1.3 Japan Civil Aviation Bureau (JCAB) permits or certifies Small UAS weighing 100 grams or more. Any person who intends to fly small UAS around airports, in airspace at or above 150m, or above densely inhabited districts is required to obtain permission. In addition, any person who intends to fly small UAS at night, beyond visual line of sight (BVLOS) or at event sites, or for the purpose of transporting hazardous material or dropping off objects from small UAS is required to obtain approval. The owner is to be required to register detailed information about their small UAS.

1.4 In 2020, JTSB conducted a survey on the actual status of investigations into Small UAS accidents or incidents in several countries, and introduced the results at APAC-AIG/8.

1.5 Currently, Small UAS accidents or incidents are not subject to investigation by the JTSB. However, in Japan, a regulatory framework for design and operations will be built in phases, and from December 5, 2022, unassisted BVLOS flights over densely populated areas will be permitted. At the same time, JTSB will start investigation of Small UAS accidents or incidents. JTSB is currently building a system for investigations.

2. DISCUSSION

2.1 In ICAO, the current scope of remotely piloted aircraft system (RPAS) considered for SARP's development is limited to RPAS operating internationally within controlled airspace under instrumental flight rules (IFR) in non-segregated airspace or at aerodromes. This scope does not necessarily include small UAS operation outside the controlled airspace.

2.2 The amendment to Annex 13 has already been adopted to expand the definition of accidents and serious incidents to include UAS related accidents and serious incidents. Note 3 of 5.1.3 to Annex 13 states that "In the case of investigation of an unmanned aircraft system, only aircraft with a design and/or operational approval are to be considered", which provides flexibility for cases where an individual investigative authority decides to investigate an occurrence involving small UAS.

2.3 In a survey conducted two years ago, JTSB grasped the actual status of investigations of Small UAS accidents and incidents by other investigative authorities, and with reference to the survey it was decided that JTSB will investigate only "serious" accidents or incidents reported to the JCAB.

2.4 The following table shows the accidents and incidents to be reported to JCAB and to be investigated by JTSB.

Accident	
Reported to JCAB	Investigated by JTSB
Human casualties caused by Small UAS (Severe injuries or more, not limited to third parties)	Same as left
Property damage caused by Small UAS (Damage to property owned by third parties is covered regardless of the amount of damage.)	The following situations listed on the left (serious ones) a) Destruction of buildings or moving facilities such as vehicles, ships, etc., where people are actually present. b) Due to the damage (excluding those listed in A), electricity supply facilities, telecommunication facilities, transportation facilities (including transportation facilities such as vehicles and ships), educational facilities, medical facilities, government facilities and other public facilities that hinder the operation c) In addition to those listed in A and B, those that are recognized as exceptional.
Collision or contact with aircraft (damage is recognized)	Same as left
Other accidents (No assumptions at this time)	—

Serious Incident	
Risk of collision or contact with aircraft	Same as left
1) Human casualties caused by Small UAS (excluding those falling under accidents) b) Situation in which lost of control of a Small UAS c) Situations in which an Small UAS catches fire (limited to those that occur during flight)	A situation listed on the left, which are recognized as exceptional.

2.5 Building a system for investigating Small UAS

- a) Reinforcement of personnel: Hire two Small UAS experts as aircraft accident investigators
- b) Enhancement of analysis capabilities: Establishment of a Research and Analysis Office, and in addition to the four aircraft accident investigators in charge of analysis up to now, a Director of the office and two staff from other modes have been added to increase the number of staff to seven.
- c) Equipment purchase: CT scanner, 6 Small UAS (for investigation (5) and for performance assessment (1))
- d) Training: Piloting (domestic), Small UAS accident investigation (overseas)
- e) DOI update with a State of Design and Manufacture
- f) Update the Investigation manual and the Report creation manual.

2.6 JTSB has utilized the know-how of manned aircraft investigations to date to build a conceivable system for Small UAS investigations. However, given the fact that many of the Small UAS operated in Japan are foreign-made, we recognize that international mutual cooperation is as important as manned aircraft.

3. ACTION BY THE MEETING

3.1 The Meeting is invited to:

- a) Take note of JTSB's Small UAS accidents and incidents investigation system; and
- b) To ensure that Small UAS accidents and incidents investigations conducted by JTSB as an accident investigation authority to lead to the improvement of aviation safety more effectively, knowledge or experience should be shared with relevant States (States of Design and Manufacture) and other interested accident investigation authorities. Encourage to cooperate in providing the information necessary for investigations and so on.