60th CONFERENCE OF DIRECTORS GENERAL OF CIVIL AVIATION ASIA AND PACIFIC REGIONS

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AGENDA ITEM 3: AVIATION SAFETY

AAM OPERATIONS AT THE OSAKA-KANSAI EXPO

(Presented by Japan)

SUMMARY

As the global adoption of Advanced Air Mobility (AAM) is anticipated, there is a growing need to establish internationally harmonized standards and regulatory frameworks. In this context, this paper introduces Japan's efforts for AAM operations at the Osaka-Kansai Expo as a pioneering case.

AAM OPERATIONS AT THE OSAKA-KANSAI EXPO

1. INTRODUCTION

1.1 Currently, the global adoption of AAM is anticipated, with various manufacturers around world actively engaged in its development. These efforts aim to establish a strong position in this emerging market, which is expected to become a new mode of air transportation in the future.

1.2 Some AAM manufacturers have already conducted a number of flight tests and have begun type certification procedures with regulatory authorities in their respective state of design. Furthermore, with the implementation of AAM operations in mind, some companies are examining viable operational routes and working on the development and operation of vertiports.

1.3 In Japan, the public and private sectors have been working together to promote the introduction of AAM, with the aim of realizing AAM operations at the venue of the Osaka-Kansai Expo.

2. DISCUSSION

2.1 Japan Civil Aviation Bureau (JCAB) established a Public-Private Committee for Advanced Air Mobility in 2018 to discuss the introduction of AAM ahead of the rest of the world, which has developed a roadmap toward the launch of full-scale commercial AAM operations in Japan. The roadmap defines the period until the Osaka-Kansai Expo in 2025 as the “Phase from test flights to the launch of commercial operations of AAM”, the period in the late 2020s as the “Phase for expanding commercial operations”, and the period in 2030s and beyond as the “Phase for further expansion of service areas, routes and number of flights”.

2.2 At the ongoing Osaka-Kansai Expo, AAM aircraft are scheduled to fly around the venue. To make this a reality, JCAB has completed the development of regulatory frameworks and technical standards regarding aircraft, pilot licenses, operations, vertiports, etc. by the end of FY2023, and the establishment of a traffic management system by the end of FY2024, and is currently proceeding with aircraft inspections, etc. In addition, not only for AAM aircraft under development in Japan, but also for AAM aircraft in the U.S. or Europe, Japan is making efforts to harmonize standards through communication with the respective aircraft manufacturers and the relevant authorities, so that we can smoothly issue type certification of AAM aircraft which are expected to be operated in the near future.

2.3 Four AAM aircraft are scheduled to fly at the Osaka-Kansai Expo: SkyDrive’s "SD-05", LIFT Aircraft’s "HEXA", Vertical Aerospace’s "VA1-100", and Joby Aviation’s "Joby S4". SD-05 and HEXA have already conducted demonstration flights at the EXPO Vertiport in April. Future flight schedules are as follows: SD-05 will conduct demonstration flights from late July to late August, Joby S4 from late September until the closing day of the Expo on October 13, and VA1-100 will conduct demonstration flights during October. Please note that this information is current as of June 6, and the flight schedule may change depending on the progress of aircraft development and other factors.

2.4 For flights at the Osaka-Kansai Expo, three vertiports have been prepared as takeoff and landing sites: "EXPO Vertiport", "Osaka Port Vertiport" and "Amagasaki Phoenix Vertiport". "EXPO Vertiport" is notable for being the first vertiport in Japan with two parking spots, allowing for the operation of multiple AAM aircraft. This vertiport was constructed in accordance with the "Vertiport Design Guidelines" published by the Japan Civil Aviation Bureau, and is equipped with a hangar, aircraft charging facilities, power conversion systems, weather measurement equipment, a passenger lounge, entry and exit gates. The total site area is approximately 7,944 square meters.

2.5 Regarding the traffic management for AAM at the Osaka Kansai Expo, the parties concerned held repeated discussions with reference to CONOPS, international situations, and research and development, and reached an agreement in November 2024 .

2.6 The traffic management is as follows:

- **Aircraft** : eVTOL(tilt-rotor type and multi rotor type)
- **Flight rule**: VFR (Visual Flight Rules)
- **Take-off and landing place**: Vertiport
- **Based on existing rules applicable only during the Expo period**

2.7 The Overview of the traffic management is as follows:

1) Notification of airspace and routes

As the airspace around Expo venue is surrounded by four airports (controlled airspace), there are fair amount of VFR traffic. Accordingly, the airspace and routes for AAM are disseminated by AIP-SUP.

2) Coordination of flight plans (Strategic Deconflict)

Coordinate flight plans during the pre-departure planning phase based on a guidance on schedule coordination which the stakeholders agreed with to prevent congestion at vertiport and long-time holding in the air.

3) Conformance monitoring

Monitor whether the flight is being operated according to the coordinated flight plan. In cases of approaching surrounding controlled airspace or situations differing from the flight plan, ANSP will alert the operator, support to handle irregularities, in addition, take actions such as coordinating flight plans with other operators. Position information by automatic dependent surveillance — broadcast (ADS-B) is also utilized as demonstration.

4) Information service

Provide necessary information for operations to AAM taking off from and landing at the Expo venue vertiport through VHF communication. Based on existing air traffic services (ATS) phraseology, examples of communication phraseology have been developed.

5) Information exchange

Exchange operational, aeronautical, and meteorological information, etc. among stakeholders utilizing system-wide information management (SWIM) to enhance situational awareness.

2.8 Regarding the status of ICAO's AAM activities, AAM2024 was held for the purpose of sharing the development status of each country, and the AAM SG is developing the AAM's vision and several guidelines. Japan is actively participating the AAM SG and contributing to the activities based on our experience through the Osaka-Kansai Expo. Japan is communicating with other authorities and making efforts to harmonize standards. In order to promote the introduction of AAM, we hope that internationally harmonized standards and guidelines will be developed under the leadership of ICAO, using the experiences at the Osaka-Kansai Expo as a precedent case.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

a) note the Japan’s effort and activities in traffic management for AAM at the Osaka-Kansai Expo as best practices;

b) encourage States to share their experiences with AAM, which is expected to expand its operations in the future; and

c) agree on the importance of developing internationally harmonized standards and guidelines under the leadership of ICAO to facilitate the smooth dissemination of AAMs, while referring to previous cases.

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