

LCQ10: Application of drones

Following is a question by the Ir Dr Hon Lo Wai-kwok and a written reply by the Secretary for Culture, Sports and Tourism, Mr Kevin Yeung, in the Legislative Council today (October 23):

Question:

There are views pointing out that with the development of low-altitude economy, the scope of drone application will continuously expand for purposes such as carrying sightseeing passengers or delivering meals and other goods. In addition, the arrangement of large-scale drone shows over the Victoria Harbour on festive days is also a selling point to attract visitors to Hong Kong. However, it has been reported that three recent drone shows in Hong Kong were cancelled at short notice (including the drone shows at the Wan Chai waterfront on September 21, the West Kowloon Cultural District on September 30 and the Victoria Harbour on October 1), leaving members of the public and visitors who waited for a long time disappointed. In this connection, will the Government inform this Council:

(1) whether the authorities had, before the aforesaid drone shows, assessed in detail with the organisers the various factors that might affect the drone shows as well as the different scenarios that might arise, drawn up fallback plans, and stepped up the coordination and support among different government departments; if so, of the details; if not, the reasons for that;

(2) whether the authorities had, before the aforesaid drone shows, put forward specific testing requirements to the outsourced contractors and formulated a mechanism for coordination and notification in the event of incidents, and taken timely follow-up actions after the short-notice cancellation of the shows; if so, of the details; if not, the reasons for that; and

(3) whether the authorities will formulate more forward-looking policy measures and allocate more resources to strengthen the research and development, application and regulation of drone technology; if so, of the details; if not, the reasons for that?

Reply:

President,

In respect of the question raised by Ir Dr Hon Lo Wai-kwok, in consultation with the Transport and Logistics Bureau, the Innovation, Technology and Industry Bureau, the Office of the Communications Authority (OFCA) and the Hong Kong Observatory, the consolidated reply is as follows:

For parts (1) and (2) of the question, as a drone show generally involves operation of a large number of drones in a confined airspace, the

operation of drones heavily relies on the high-precision reception of Global Navigation Satellite System (GNSS) signals.

From the perspectives of aviation and public safety, drone shows which involve operations exceeding the standing operating requirements of small unmanned aircraft are considered as advanced operations and require prior permission from the Civil Aviation Department. Advanced operation permit holders are required to conduct risk assessment in accordance with the established procedures prior to the drone shows in order to identify all potential risks, including the stability of the drones' satellite positioning signals, so as to ensure the safe conduct of the drone shows.

While drone shows can be organised by private organisations, for a drone show organised by the Government, the OFCA will generally conduct radio monitoring at the event venue. The OFCA will detect any source of harmful interference to the radio frequencies to be used by the drone system. It is understood that the atmospheric conditions (including ionospheric scintillation) may significantly affect the quality of GNSS signals. However, because of the rapid changes in ionospheric disturbance caused by solar activities, the precise influence of ionospheric scintillation in terms of timing, location and extent, etc. could not be accurately predicted in advance.

In preparation of the "Celebration of National Day – The Next Generation Chorus Performance" and "2024 National Day Fireworks Display" held on September 30 and October 1, 2024 respectively, the Government had held a number of inter-departmental meetings and drawn up contingency plans with the drone show operators. The operators of the two aforementioned drone performances also conducted multiple tests and rehearsals before the events (including on the day of the performance). Nevertheless, there was a sudden occurrence of ionospheric scintillation over Victoria Harbour during the events resulted in the drones being unable to receive good satellite positioning signals. After confirming that the ionospheric scintillation would prevent the drone shows from proceeding, we promptly made on-site announcements. For the drone show held on September 21, 2024, it was organised by a non-governmental organisation.

Taking into account the experience of cancellation of the drone shows on September 30 and October 1, 2024, the Government will take into account the following factors and prepare suitable contingency plans when organising drone shows in future –

- (a) the weather conditions (rain, wind speed, typhoon, etc.), as well as ionospheric disturbance which may seriously affect the reception of GNSS signals by the drone system concerned;
- (b) the nature of performance, audience and performers;
- (c) the programme rundown, such as whether there are performances which are linked to the drone show, whether the drone show is a standalone show, etc.; and

(d) whether there is flexibility to adjust the timing and scale of the drone show during the programme in case of weather or ionospheric disturbance to the drone show.

For part (3) of the question, in the light of technological advancement, improvements in the technology and design of drones will help enhance their stability and accuracy, thereby exploring more application scenarios for drones. In the 2024 Policy Address, the Government announced a series of initiatives to promote the development of low-altitude economy (LAE) in Hong Kong, including the establishment of the Working Group on Developing LAE which is led by the Deputy Financial Secretary to formulate development strategies and inter-departmental action plans, as well as plan for low-altitude infrastructure. At the same time, the Government will press ahead with pilot projects to explore the applications of drones at designated locations, and will amend relevant legislation to put in place a regulatory framework for different types of drones. The Government will commence the relevant work as soon as possible to proactively promote LAE as one of the new growth engines.

The Government also has all along been supporting research and development (R&D) in different technology areas through the Innovation and Technology Fund (ITF). Under the various ITF funding schemes, the Government supports local universities, R&D centres and enterprises to conduct R&D projects, including those low-altitude economy-related fields such as electronic, data transmission and processing, etc.