Twenty Eighth Meeting of the Communications/
Navigation and Surveillance Sub-group (CNS SG/28) of APANPIRG

WP/10
Feasibility Study and Trials of Using Drone to Enhance Efficiency in Flight Inspection at the Hong Kong International Airport

Presented by Hong Kong, China

Limitation of Conventional Flight Inspection

Day Light Operation

Disruption to airport & ATC operations during flight inspection might not be avoidable

Reachable Distance & Height of Measuring antenna

Exploring Use of Drone to Conduct Part of Flight Inspections for the HKIA

- With support from CAAC FIC & AAHK, HKCAD conducted the first trial at HKIA using drone to carry out part of flight inspections in August 2023.

- The second trial was conducted in Hong Kong in May 2024 covering flight inspection profiles for both the Instrument Landing System (ILS) and Doppler Very High Frequency Omnidirectional Range (DVOR).

Conduct of Trial Flight Inspections at HKIA by Drone

(a) Drone performing low approach profile to inspect the ILS signal

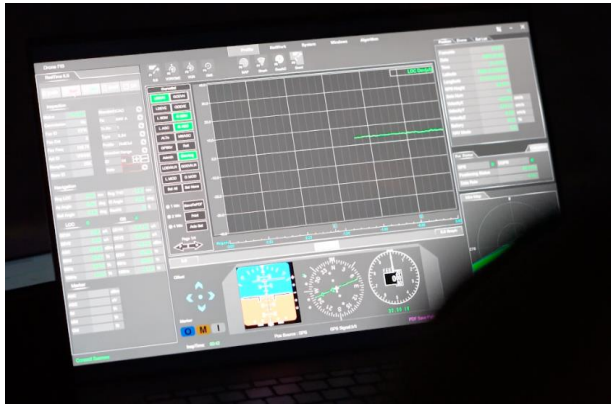
(b) Drone to perform orbiting to measure DVOR bearing error

Conduct of Trial Flight Inspection at HKIA by Drone

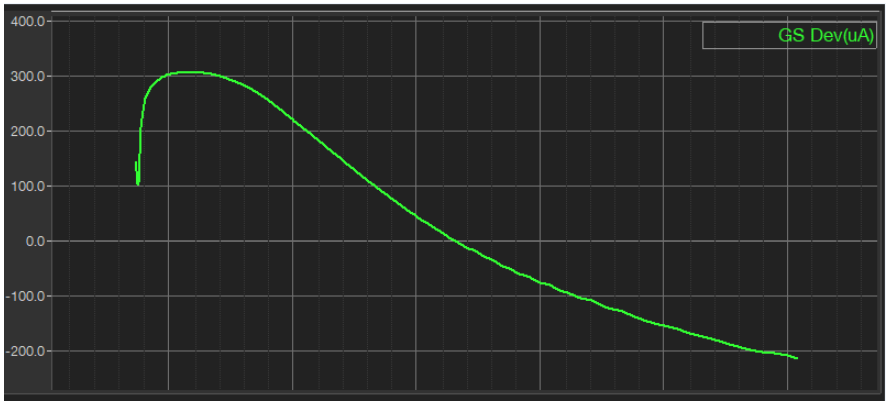
- The four-rotor drone, equipped with a specially designed signal receiver, were adopted in the trial

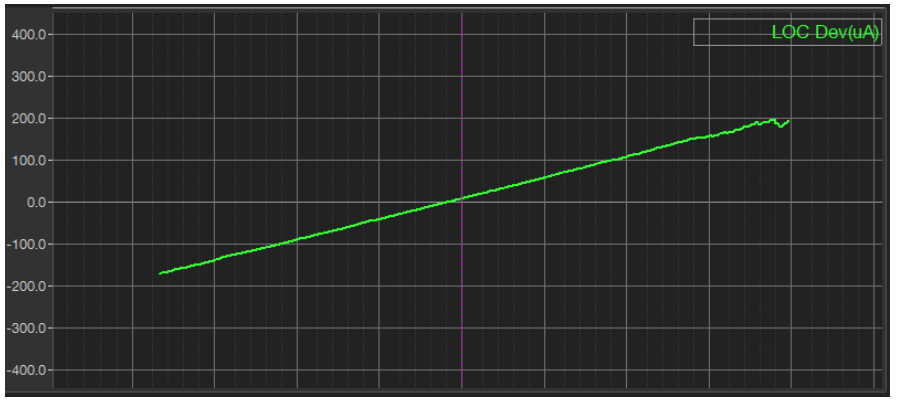
Conduct of Trial Flight Inspection at HKIA by Drone

- Remote tracking of the drone and real-time measurements



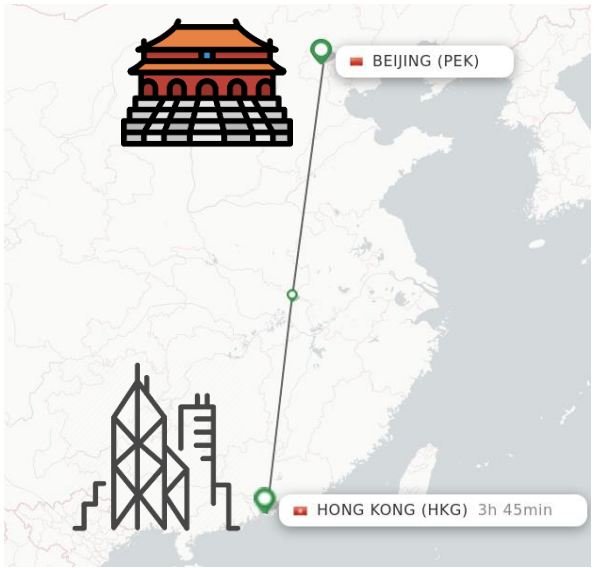
- Measurement results of GP and LOC signals





Benefits of Utilizing Drones for Flight Inspection

- Utilizing drones for part of flight inspection on navigational aids is more efficient in deployment with greater flexibility in flight manipulation while achieving zero carbon emission.



- These advantages are particularly significant for HKIA :
  - The flight inspection aircraft of CAAC FIC is based far from Hong Kong
  - During unpredictable weather conditions in the wet season of Hong Kong, drones demonstrated their versatility by quickly adapting to the limited time window and effectively conducting the inspection

Findings of Trial Flight Inspection at HKIA by Drone

- The inspection results obtained from the drone generally aligned with those obtained from traditional flight inspection aircraft.

- It is crucial to closely monitor the wind conditions along the flight paths and avoid performing inspection during windy days.

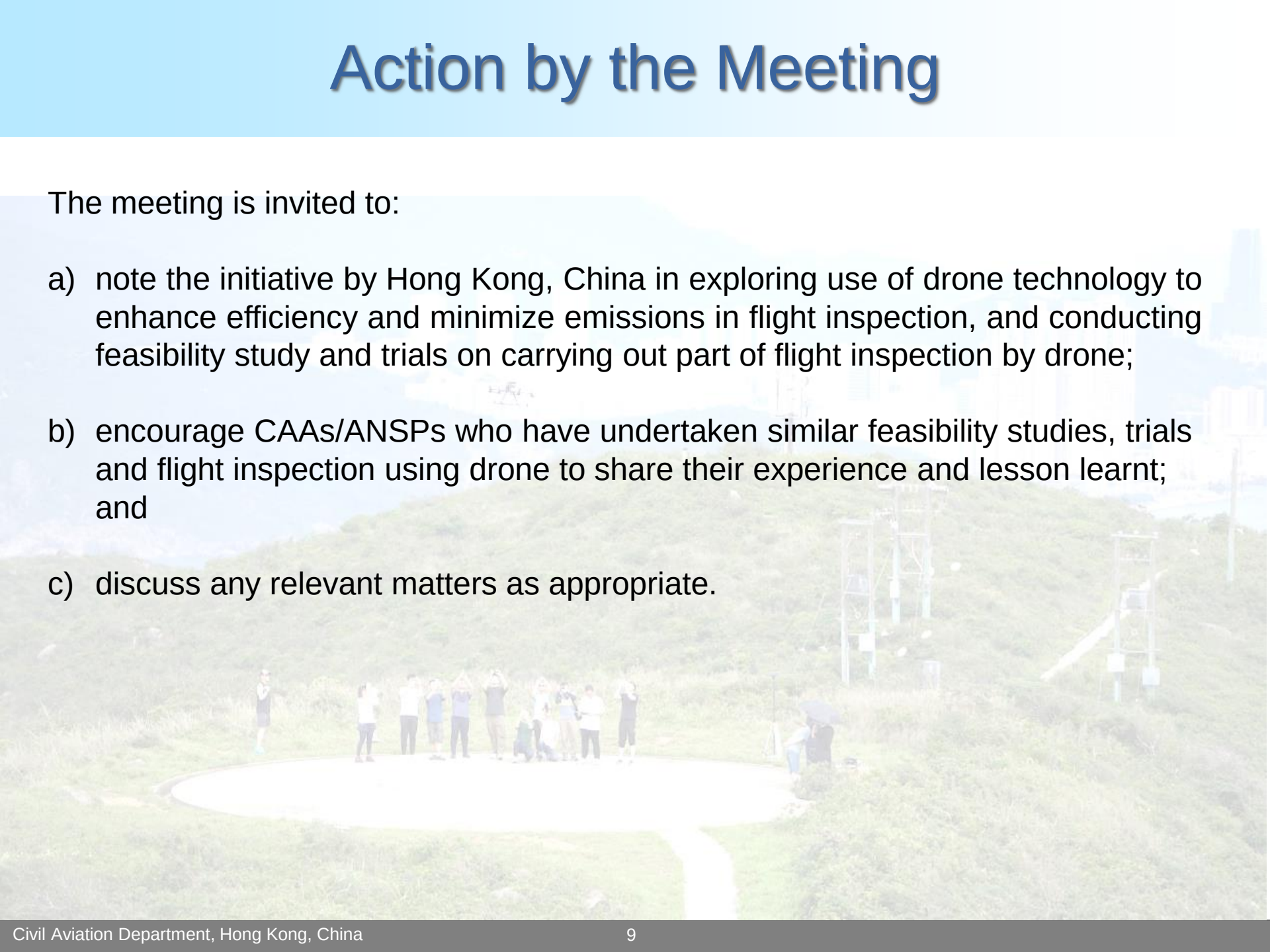
Action by the Meeting

The meeting is invited to:

a) note the initiative by Hong Kong, China in exploring use of drone technology to enhance efficiency and minimize emissions in flight inspection, and conducting feasibility study and trials on carrying out part of flight inspection by drone;

b) encourage CAAs/ANSPs who have undertaken similar feasibility studies, trials and flight inspection using drone to share their experience and lesson learnt; and

c) discuss any relevant matters as appropriate.

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A
QUESTION
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Thank you