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Ms Shirley CHAN
Clerk to LegCo Panel on Economic Development
Legislative Council Complex
1 Legislative Council Road
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25 April 2017

Dear Ms CHAN,

Panel on Economic Development
Supplementary Document in relation to the Meeting on 27 March 2017

I refer to your letter to the Secretary for Transport and Housing dated 30 March 2017, requesting for supplementary information on the independent air accident investigation authority (independent investigation authority) discussed by the Panel on Economic Development (Panel) at the meeting on 27 March 2017. The relevant information is provided as follows:

(a) Number of civil aviation accidents investigated and the time required

2. Since each civil aviation accident investigation takes time to complete, there are cases accumulated every year. The investigations of these cases were started in the previous year or earlier and are still underway. In the past five years, the actual number of investigations (including both new and old cases) conducted by the Civil Aviation Department (CAD) each year ranged from eight to 13. As at the end of March 2017, there were still 12 cases under investigation. The details are as follows:

	2012	2013	2014	2015	2016	2017 (As at the end of March)
Number of investigations*	8	12	10	11	13	12

* Including new investigations and investigations which have accumulated and are still underway; investigations conducted by the CAD and investigations initiated by overseas investigation authorities requiring CAD's participation are included.

3. Currently, CAD's staff participate in civil aviation accident investigations on a part-time basis. In addition to the manpower factor, the progress of each accident/serious incident investigation depends on the complexity of the incident and whether the parties concerned are co-operative in the investigations. For example, in the past five years, each investigation conducted by the CAD took 26 months to complete on average.

4. Although the International Civil Aviation Organization (ICAO) has not promulgated any standard on the time to be taken in civil aviation accident investigations, it is conducting a study in this regard. According to a recent research conducted by an accident investigation related working group under the ICAO, among the fatal accidents involving aircraft of over 5,700 kg¹ between 2010 and 2016, 65% of the investigation reports were published within two years while most of the reports (89%) were published within three years.

5. We hope that with the establishment of the independent investigation authority, the full-time manpower support for accident investigation will be strengthened and the investigation process can thus be expedited. The industry will then be able to learn about the findings early, so as to draw safety lessons and adopt and implement safety recommendations for preventive purpose.

(b) Duties and qualification requirements of six professional support staff members

6. Six professional support staff members (including three Senior Operations Officers and three Operations Officers) of the independent investigation authority will all participate in civil aviation accident/serious incident investigations. In the course of investigation, they will advise the Chief Inspector (CI) in the light of their expertise and experience to assist the CI in identifying the cause(s) of accidents and putting forward safety recommendations. Moreover, the CI may invite people with professional knowledge or experience (e.g. meteorologists) to give advice where necessary.

¹ In general, passenger aircraft, cargo aircraft, business aircraft and some commercial helicopters are over 5,700 kg. In Hong Kong, there are only a few small helicopters below 5,700 kg.

7. In addition to accident investigations, the six staff members will share the workload of three main types of routine duties: (i) to implement safety management and accident prevention initiatives, including relevant legislative amendments; (ii) to conduct staff training and maintenance of investigation facilities to ensure the readiness of the authority in investigative work; (iii) to attend activities held by international organisations and keep track of the latest international trends and standards in accident investigation and aviation safety. The key duties of the six staff members under three investigation teams are detailed in **Annex 1**.

8. Currently, CAD's investigation team generally comprises members who have a professional background and/or experience in airworthiness, flight standards and civil aviation. Regarding the qualification requirements of the six staff members under the independent investigation authority, in addition to two staff with a professional background in accident investigation to be deployed from CAD's Accident Investigation Office, the staffing arrangement which we have in mind will generally make reference to the current composition of CAD's investigation team. In this connection, we will let the CI, upon his/her assumption of office, examine and decide on the professional background requirements of the remaining four staff members in the light of the actual operational needs. In any case, according to the relevant guidelines of the ICAO, the six staff members will receive professional training on accident investigation to ensure that they will be conversant with investigation procedures and skills.

(c) Definitions of civil aviation accidents and serious incidents

9. To tie in with the establishment of the independent investigation authority, corresponding amendments to the Hong Kong Civil Aviation (Investigation of Accidents) Regulations (Cap. 448B) (Regulations) need to be made. We are working on the relevant legislative amendment exercise and will amend/introduce the definitions of "accident" and "serious incident" in order to clarify the scope of application of the Regulations in the light of the updates made to "Annex 13 to the Convention on International Civil Aviation - Aircraft Accident and Incident Investigation" (Annex 13) by the ICAO. We will introduce the proposed amendments into the Legislative Council in this legislative session. Definitions of "accident" and "serious incident" in Annex 13 are at **Annex 2**.

(d) Outcome of the review on staffing provision

10. On 27 March 2017, the Panel discussed the Government's proposal on the establishment of the independent investigation authority and put forward views on the need for a permanent investigation authority and its staffing provision. We have considered whether the Panel's proposal can meet the requirements of the ICAO and the actual operational needs of the investigation authority.

11. As at the end of March 2017, there were a total of 12 cases under investigation by CAD, with five being conducted by CAD and seven conducted by

authorities outside Hong Kong requiring CAD's participation. A majority of these cases will not be completed by the time of the establishment of the independent investigation authority expected by end 2017 the earliest and will be passed on to the authority for follow-up. The authority also needs to take care of the transitional work relating to the transfer of civil aviation accident investigation functions from CAD during the initial period. It is expected that the independent investigation authority will be fully engaged in these investigations, while handling, among others, other key tasks e.g. promotion of aviation safety as well as the on-going review of the Regulations to comply with the latest standards promulgated by the ICAO.

12. Furthermore, the independent investigation authority has to ensure its readiness for newly initiated accident investigations and fulfilment of legal requirements at all times, similar to other emergency services, as and when an accident or serious incident occurs. The authority must be able to attend to the scene immediately to collect evidence and conduct other investigation-related tasks. Having taken into account the above factors, we consider a permanent set-up essential and necessary to meet the requirements of the ICAO. Besides, this permanent set-up needs adequate professional staff to support the work of the whole investigation authority and that of the CI. A permanent set-up is also in line with the practice of other developed aviation jurisdictions.

13. The set-up of the independent investigation authority, including staffing provision, will be reviewed before the expiry of the three-year period on 31 March 2020 in the light of actual experience, so as to formulate a long-term staff establishment for the authority to suit the actual operational needs.

Yours sincerely,

(Ms Joyce CHAN)
for Secretary for Transport and Housing

c.c.:

Hon Jeffery LAM Kin-fung, GBS, JP (Chairman of the Panel on Economic Development)
Civil Aviation Department (Attn.: Mr Alan SHUM, Assistant Director-General of Civil Aviation)

Key Duties of the Three Investigation Teams

Investigation Team 1

1. To conduct civil aviation accident investigations as directed by the Chief Inspector (CI);
2. To perform duties in relation to accident prevention, such as managing an incident reporting system, proactively collecting, processing and analysing safety data received from the industry to identify safety hazards, proposing safety recommendations and collaborating with the aviation industry to disseminate safety information;
3. To regularly review and update the legal provisions, arrangements and procedures for civil aviation accident investigation, in order to ensure Hong Kong's readiness and capability in accident investigation in compliance with local legislation and Annex 13; and
4. To perform any other duties as instructed by CI.

Investigation Team 2

1. To conduct civil aviation accident investigations as directed by CI;
2. To co-ordinate the training of Inspectors, by organising ab-initio and refresher training for Inspectors and external experts when necessary;
3. To establish and manage civil aviation accident investigation equipment and facilities;
4. To report investigation progress to survivors and families of victims, and to provide assistance as necessary; and
5. To perform any other duties as instructed by CI.

Investigation Team 3

1. To conduct civil aviation accident investigations as directed by CI;
2. To keep track of the latest international standards, developments and technologies in accident investigation and aviation safety with a view to updating the knowledge and equipment of the investigation team; and to promulgate relevant information to the industry to enhance safety awareness;
3. To liaise and co-ordinate with local and overseas organisations on accident investigation and aviation safety matters; and to participate in and/or organise aviation safety and civil aviation accident investigation related activities; and
4. To perform any other duties as instructed by CI.

ICAO's Definitions of "Accident" and "Serious Incident"²

Definition of accident

An occurrence associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which:

- a) a person is fatally or seriously injured as a result of:
 - being in the aircraft, or
 - direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
 - direct exposure to jet blast,

except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew: or

- b) the aircraft sustains damage or structural failure which:
 - adversely affects the structural strength, performance or flight characteristics of the aircraft, and
 - would normally require major repair or replacement of the affected component,

except for engine failure or damage, when the damage is limited to a single engine (including its cowlings or accessories), to propellers, wing tips, antennas, sensors, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome); or

- c) the aircraft is missing or is completely inaccessible.

Definition of serious incident

An incident involving circumstances indicating that there was a high probability of an accident and associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked.

Note 1 : The difference between an accident and a serious incident lies only in the result.

Note 2 : Examples of serious incidents are set out below.

² Only those parts involving manned aircraft are included.

List of examples of serious incidents

This list is not exhaustive and only serves as guidance to the definition of serious incident.

Near collisions requiring an avoidance manoeuvre to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate.

Collisions not classified as accidents.

Controlled flight into terrain only marginally avoided.

Aborted take-offs on a closed or engaged runway, on a taxiway (excluding authorised operations by helicopters) or unassigned runway.

Take-offs from a closed or engaged runway, from a taxiway (excluding authorised operations by helicopters) or unassigned runway.

Landings or attempted landings on a closed or engaged runway, on a taxiway (excluding authorised operations by helicopters) or unassigned runway.

Gross failures to achieve predicted performance during take-off or initial climb.

Fires and/or smoke in the cockpit, in the passenger compartment, in cargo compartments or engine fires, even though such fires were extinguished by the use of extinguishing agents.

Events requiring the emergency use of oxygen by the flight crew.

Aircraft structural failures or engine disintegrations, including uncontained turbine engine failures, not classified as an accident.

Multiple malfunctions of one or more aircraft systems seriously affecting the operation of the aircraft.

Flight crew incapacitation in flight.

Fuel quantity level or distribution situations requiring the declaration of an emergency by the pilot, such as insufficient fuel, fuel exhaustion, fuel starvation, or inability to use all usable fuel on board.

Runway incursions classified with severity A. The Manual on the Prevention of Runway Incursions (Doc 9870) contains information on the severity classifications.

Take-off or landing incidents. Incidents such as under-shooting, overrunning or running off the side of runways.

System failures, weather phenomena, operations outside the approved flight envelope or other occurrences which caused or could have caused difficulties controlling the aircraft.

Failures of more than one system in a redundancy system mandatory for flight guidance and navigation.

The unintentional or, as an emergency measure, the intentional release of a slung load or any other load carried external to the aircraft.