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27 January 2017

Hon Jeffrey LAM Kin-fung
Chairman
Panel on Economic Development of the Legislative Council
Legislative Council Complex
1 Legislative Council Road, Central
Hong Kong
(Attention: Ms Shirley CHAN)

Dear Chairman,

Supplementary Information for the Meeting on 13 December 2016

I refer to your letter dated 19 December 2016, forwarding a letter from Hon Jeremy TAM Man-ho dated 16 December 2016 requesting for supplementary information about the full commissioning of the new Air Traffic Control (ATC) System discussed at the meeting of the Panel on Economic Development (the Panel) on 13 December 2016. I am authorized to provide a response as follows based on information provided by the Civil Aviation Department (CAD).

Items 1 to 5 in your letter enquired about the experience of Dubai in using electronic flight strips (EFS). As mentioned in our response to the Panel dated 18 January 2017, two CAD staff members attended the first Air Traffic Management Modernization Symposium held in Abu Dhabi in April 2014. Taking the opportunity, CAD made a side visit to Dubai Air Navigation Services (DANS) to solicit experience on the implementation and operation of its air traffic management system (i.e. AutoTrac III (AT3)). Concerning the use of EFS/paper strips in Dubai, CAD understood from its meeting with DANS that the ATC Tower at the Dubai International (DXB) airport was already using EFS, while paper strips were used in the Dubai Approach Control Centre. DANS expressed at the time that they would introduce EFS in replacement of paper strips progressively. CAD understands from the Raytheon Company

(Raytheon) that as at December 2016, DANS was working towards this end.

We wish to point out that regardless of the actual situations in Dubai, a generalised conclusion should not be readily drawn for Hong Kong. Two overseas experts of the expert panel set up by CAD had shared their experience in regard to the introduction of EFS that it involved a significant change in work culture. It is normal and understandable for air traffic controllers (ATCOs) to take a longer time to adapt to that change. As the operational environment and work culture vary in different places, the required adaption time also varies. Staff capabilities and levels of acceptance are most crucial. In this respect, the Hong Kong Air Traffic Control Association has openly expressed that ATCOs are gradually adapting to various functionalities of the new Air Traffic Management System (ATMS) (including the EFS). In fact, since the full operation of the new ATMS, ATCOs are generally satisfied with the performance of the EFS.

Question 6 in your letter should refer to an incident involving the Flight Data Processor (FDP) happened on 13 July 2016 (i.e. before the full commissioning of the new ATMS). During the event, the number one FDP (FDP#1) automatically switched over to the number two FDP (FDP#2) when playback session was conducted. Although the data synchronization process between the two FDPs was performing normally, the automatic switchover from FDP#1 to FDP#2 should not have happened. This issue had only happened once (i.e. on 13 July 2016) since CAD conducted acceptance tests on the new ATMS in 2014 until the full commissioning of the system. CAD had followed up with Raytheon regarding the incident immediately. CAD had reviewed the situation and confirmed that the automatic switchover of FDPs did not affect flight information shown on the radar screens; all functionalities and performance of the new ATMS were operating normally. CAD considered that the issue can be dealt with in the next software fix together with other teething issues. CAD and Raytheon are conducting comprehensive testing and safety assessment on the new software build in accordance with the Safety Management System of the International Civil Aviation Organization. The new software build is expected to be implemented by end-March 2017.

The incident on 13 July 2016 was of totally different nature from another incident involving FDP happened on 29 November 2016. As explained by CAD openly, the incident on 29 November arose from momentary disassociation of flight plans when the two FDPs carry out data synchronization during traffic peak. To prevent recurrence, CAD has requested Raytheon to address the issue in the software build mentioned above. Before completion of testing and implementation of the new software build, CAD staff would avoid conducting restoration of FDP and the synchronisation process during a period

of high traffic.

The independent consultant from overseas appointed by the Transport and Housing Bureau (THB), the UK-based National Air Traffic Services (NATS), has conducted four assessments for the new ATMS, the reports of which have been enclosed at the paper submitted by us to the Panel (CB(4)154/16-17(04)). NATS has confirmed that the system engineering of the new ATMS was safe, stable and reliable, and that CAD had an overall robust, achievable plan and approach to the Phased Functional Implementation in the second assessment. As pointed out by NATS, given the complexity of an ATMS, even with all reasonable efforts and endeavors, there could still be possibilities of setbacks during the introduction of a new system. The new ATMS would need some time to optimise and fine-tune its performance and suit the unique local circumstances. CAD's expert panel also agreed that such an optimisation process was inevitable and understandable. ATC systems of any brand would encounter this situation, as testified by overseas experience. Both NATS and the expert panel have confirmed that CAD has in place an appropriate and effective mechanism to handle the teething issues, which is in line with the international practice.

_____ Regarding the statistics requested by question 7 in your letter, we have already replied to Hon TAM through your goodself on 23 December 2016 which is enclosed at Annex.

Yours sincerely,

(Ms Joyce Chan)

for Secretary for Transport and Housing

c.c. Civil Aviation Department (Attention: Mr Richard WU, Assistant Director-General of Civil Aviation (Air Traffic Engineering Services))

Hon Jeremy TAM Man-ho

[Translation]

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23 December 2016

Hon Jeffrey LAM Kin-fung
Chairman
Panel on Economic Development of the Legislative Council
Legislative Council Complex
1 Legislative Council Road, Central
Hong Kong
(Attention: Ms Shirley CHAN)

Dear Chairman,

**Issues relating to Full Commissioning of
the New Air Traffic Control System**

I refer to your letter dated 9 December 2016 regarding the letter issued by Hon Jeremy Tam to your goodself about the full commissioning of the new air traffic control system. I am authorised to reply to you as follows.

Ensuring aviation safety has always been the top priority of the Civil Aviation Department (CAD). Before implementing the new Air Traffic Management System (ATMS), CAD had been closely monitoring surveillance data display (SDD) problems of the old ATMS (i.e. frozen/hang-up of radar screens used by air traffic controllers)¹ and had put in place enhanced maintenance measures for optimising the system performance. CAD implemented a one-off system optimisation in 2014, which included the upgrading of relevant SDD workstations and optimising radar signal inputs, etc.

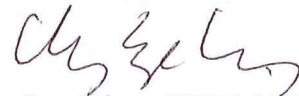
¹ The problems concerned can be solved by rebooting the relevant workstations. For details, please refer to Chapter 4 of the Director of Audit's Report No. 63A.

Since then, the occurrence of SDD problems of the old ATMS had decreased remarkably. Two years before the old ATMS was turned into a back-up (i.e. from 12 November 2014 to 13 November 2016), the system performance had been consistently better than the safety performance benchmark. SDD problems had decreased to about 1.6 times per month on average. The system availability² had always exceeded 99.9%, fully achieving the international standard.

For the new ATMS, since its full commissioning on 14 November 2016, it has never encountered any SDD problem³ so far. The system availability has consistently been above the target of 99.9%.

CAD will continue to closely monitor the performance of the new ATMS and work with the system contractor closely on system optimisation. CAD has also set up an expert panel comprising local and overseas experts in air traffic control and engineering fields. The expert panel will provide objective expert advice to the Director-General of Civil Aviation on teething issues arising from the commissioning of the new ATMS; and share with CAD international experiences with a view to further optimising the performance of the system.

Yours sincerely,



(Miss Sze Ling CHENG)

for Secretary for Transport and Housing

c.c. Civil Aviation Department (Attention: Mr Richard WU, Assistant Director-General of Civil Aviation (Air Traffic Engineering Services))

² According to international standard, “availability” is defined as “the probability that a system will perform its required function at the initiation of the intended operation.”

³ The issues with the new ATMS arising from limitations of radar technology and synchronisation of flight data are different in nature from the SDD problems mentioned above. CAD has been keeping the LegCo and public informed of the operational details of the new ATMS through various channels, and is working closely with the system contractor to optimise and fine-tune the system.