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Mr Anthony CHU
Clerk to the Public Accounts Committee
Legislative Council
Legislative Council Complex
1 Legislative Council Road
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21 April 2017

Dear Mr CHU,

New Air Traffic Control System

Thank you for your letter dated 11 April 2017 to the Secretary for Transport and Housing. I am authorised to reply on the Secretary's behalf.

The Transport and Housing Bureau (THB) and the Civil Aviation Department (CAD) have all along been stressing that our commitment to ensuring aviation safety will not be compromised. Since the full commissioning of the new Air Traffic Management System (ATMS) last November, the CAD has been closely monitoring the system's performance and proactively looking for optimisation measures to address the teething issues during the initial operation period. As stated in the interim report of the ATMS Expert Panel (Expert Panel), set up by the CAD, given the complexity of the new ATMS, it was inevitable and understandable to encounter some special or unforeseen situations during the initial stage of the new ATMS operation. Of utmost importance was that the CAD had in place an effective and established mechanism for responding to different situations and these issues did not compromise aviation safety. Nevertheless, the CAD would seriously look into the root cause(s) and identify solution(s) whenever there was an occurrence, so as to further optimise the system.

With regard to the momentary hitch experienced by the new ATMS on 8 April, the CAD had proactively issued a press release on the same day to explain the cause of the occurrence identified by the initial assessment and relevant follow-up actions taken. Upon the request of the CAD, the contractor of the new ATMS, the Raytheon Company, submitted a report on 15 April and committed to provide a software fix for testing by end April to resolve the problem in the long run. On the cause of the issue, the report was consistent with the preliminary analysis made by the contractor's staff on-site on that day. The occurrence was caused by an accumulation of users' preferences settings exceeding the preset system limit, i.e. 5,500. As a result, the Flight Data Processors could not function properly. During the occurrence, all flight targets were continuously displayed on the radar screens and the new ATMS displayed the full information of most of the flights, except for a few (eight flights) which could only show their position and altitude information. Air traffic control officers (ATCOs) were able to keep direct voice communications with the pilots at all times and obtain all the flight information through Automatic Dependent Surveillance–Broadcast technology to provide air traffic control (ATC) services. For the sake of prudence, the ATCOs deferred giving clearance to departure flights for about 15 minutes. All arrivals and flights flying through the Hong Kong Flight Information Region (HKFIR), which were also handled by the new ATMS, were not affected. Aviation safety was in no way undermined by the incident.

To address the issue above, the Raytheon Company is preparing a new software fix which will enhance the system's alert messages to technical staff when the accumulation of users' preferences settings has reached the preset system thresholds before reaching the limit. Upon receiving the alert, appropriate follow-up action will be taken by the technical staff, such as requesting the users to remove obsolete or unwanted preferences. The software fix will also give alert to the users rejecting the creation of new preferences settings once their accumulation reaches the preset system limit, without affecting the normal operation of the system. Furthermore, the new software fix will increase the maximum number of users' preferences allowed. The software fix will be tested by the Raytheon Company at its factory, followed by on-site testing in Hong Kong. Upon completion of the relevant safety assessments by the CAD, the software fix is expected to be implemented in the new ATMS by May. Before the new software fix is implemented, the CAD will continue to request the users to stop creating new preferences settings and to remove obsolete or unwanted preferences settings. Furthermore, the technical staff have been tasked to enhance the preventive maintenance of the new ATMS, which includes monitoring the accumulation of users' preferences settings round-the-clock and taking necessary actions to prevent the recurrence of similar incident. The CAD has also informed the Expert Panel immediately

and will update them closely on the follow-up actions. The CAD has also made public the report of the Raytheon Company. For details, please refer to relevant press release (www.cad.gov.hk).

As a matter of fact, the new ATMS has overcome the challenges arising from peak air traffic flow of the festive periods at the end of 2016 and in early 2017 since its commissioning. The average daily flight movements handled by the new ATMS since its full commissioning increased by 3.75 per cent when compared with the corresponding period a year earlier. Besides, during the peak air traffic flow in the last Easter holidays, the new ATMS effectively handled a daily average of 1,171 flight movements and 860 overflights, representing an increase of some 7 per cent when compared with the flights handled by the old ATMS over the corresponding period last year. This affirms the performances of the new ATMS and frontline ATCOs.

The Expert Panel's interim report also confirmed that, up till the end of February this year, the new ATMS had been providing safe, reliable and generally smooth air traffic services within the HKFIR and in compliance with the international safety standard since its full commissioning on 14 November 2016. Although the new ATMS has experienced some teething issues, the CAD's staff had handled those occurrences professionally, per standing practices, and acted prudently to minimise potential safety risk. The interim report also noted that the CAD had in place an effective and established mechanism for responding to different situations occurring after the full commissioning of the new ATMS judging from and comparing against the international best practices and the International Civil Aviation Organization (ICAO)'s safety management system process. Despite this, the CAD will continue to stay alert.

Although the occurrence on 8 April did not undermine aviation safety, THB has tasked the CAD to work closely with the Raytheon Company and keep the Expert Panel and THB informed of the development. Apart from expediting the preparation of the new software fix to resolve the occurrence on 8 April in the long run, the CAD will also:

- a) drawing on the experience from the occurrence on 8 April, urge the Raytheon Company to conduct a health check on the ATMS for other potential glitch(es) arising from the system setting. The CAD will seek independent and professional advice from the Expert Panel throughout the process and will brief the experts on the initial findings at the next Expert Panel meeting (tentatively scheduled for early June);

- b) extend the cold standby mode of the old ATMS until after the next Expert Panel meeting and consult the Expert Panel on whether the cold standby mode needs to be further extended. During the process, the CAD has to strike a balance among different considerations. For example, the extension will impose extra burden and pressure on the ATCOs if they are requested to maintain the necessary competence to handle both the new and old ATMS simultaneously for a prolonged period. It will also introduce additional and unnecessary operational risks as the ATCOs have to familiarise themselves with the operation of the old ATMS which is different from the new ATMS again. Furthermore, the replacement programme of the ATC System consists of two phases. Phase 1 refers to having the new ATC system installed and commissioned at the new ATC Centre in CAD Headquarters building (completed), while Phase 2 refers to the new ATC equipment to be extended to the old ATC centre as a back-up of the new ATC system. Extending the cold standby mode of the old ATMS for a prolonged period will unavoidably hinder the progress of the Phase 2 project. CAD will uphold the “safety first” principle and consult the Expert Panel regarding the above considerations before deciding on the way forward;
- c) spearhead to form an international user group for the AutoTrac III users and invite ATC experts from Dubai and India and also experts from the United States where the Raytheon’s ATC systems are used extensively, to share operational and technical experiences, and to enhance users’ operations and map out the development roadmap of the system in future. It will help expedite the completion of optimisation work of the new ATMS system in Hong Kong; and
- d) continue to exchange views on ATC matters through different channels, including the two overseas members of the Expert Panel (i.e. President of National School of Civil Aviation in France, Mr Marc Houalla and Chairman of ICAO Regional Air Traffic Management Sub-Group, Mr Kuah Kong Beng), with overseas civil aviation regulatory authorities and international air traffic management service providers.

We fully understand the concerns of the community and Legislative Council Members over aviation safety. Should there be any issues concerning aviation safety, we will continue to take the initiative to promulgate the issues through the established mechanism in an open and transparent manner. In the face of growing air traffic volume in future, the Government will spare no effort in upholding the highest level of aviation safety in a bid to maintain Hong Kong's status and reputation as a regional aviation hub.

Yours sincerely,

(Ms Joyce Chan)
for Secretary for Transport and Housing

c.c. Director-General of Civil Aviation