

# LCQ10: Aircraft noise mitigating measures

Following is a question by the Hon Michael Tien and a written reply by the Acting Secretary for Transport and Housing, Dr Raymond So Wai-man, in the Legislative Council today (May 16):

Question:

The Civil Aviation Department currently implements a number of aircraft noise mitigating measures, such as (i) refusing to allow aircraft which do not comply with the prescribed noise standards to land and take off at the Hong Kong International Airport (HKIA), (ii) encouraging airlines to deploy newer and quieter models of aircraft and (iii) adopting a set of "Radius-to-Fix" flight procedure. Such flight procedure allows aircraft which can use satellite-based navigation technology in their flights to adhere closely to the nominal centre line of the flight track when they take off towards the northeast and make south turn to the West Lamma Channel, and thus enables the aircraft to keep a distance away from the areas on the vicinity of the flight paths (e.g. Ma Wan), thereby reducing the impact of aircraft noise on those areas. In this connection, will the Government inform this Council:

(1) of the respective numbers of times, as recorded by the various aircraft noise monitoring terminals in late hours (i.e. between 11pm and 7am of the next day) in each year from 2012 to 2017, for which aircraft noise levels reached (i) 70 to 74 decibels (dB), (ii) 75 to 79 dB and (iii) 80 dB or above;

(2) among the take-off flights in each year from 2012 to 2017, of the respective numbers and percentages of those which adopted the Radius-to-Fix flight procedure; the measures taken by the authorities since 2012 to encourage airlines to adopt such flight procedure;

(3) whether it is feasible for all take-off flights to adopt the Radius-to-Fix flight procedure; if not, of the ceiling percentage, and whether the authorities have estimated the respective numbers of times for which aircraft noise levels reaches (i) 70 to 74 dB, (ii) 75 to 79 dB and (iii) 80 dB or above will be recorded by the various aircraft noise monitoring terminals in late hours when the percentage of flights adopting such flight procedure has reached the ceiling;

(4) of the progress and specific achievements (e.g. the number and percentage of flights for which quieter types of aircraft were deployed by airlines) made by the authorities in each year from 2012 to 2017, in respect of (i) refusing to allow aircraft which do not comply with the prescribed noise standards to land and take off at HKIA, and (ii) encouraging airlines to deploy newer and quieter models of aircraft; and

(5) of the aircraft noise mitigating measures, apart from the aforesaid three

measures, which are currently implemented by the authorities and their effectiveness?

Reply:

President,

The Civil Aviation Department (CAD) is conscious of the impact that aircraft operations have on the local communities and has implemented a number of aircraft noise mitigating measures based on the guidelines of the International Civil Aviation Organization (ICAO) to alleviate the noise impact on areas in the vicinity of flight paths.

Our reply to the various parts of the Hon Michael Tien's question is as follows:

(1) The CAD has 16 noise monitoring terminals (NMT). The aircraft noise events recorded between 11pm and 7am the following day by these terminals from 2012 to 2017 are set out at Annex 1.

(2) and (3) The CAD has implemented the Radius-to-Fix (RF) turn flight procedures since 2012 to allow aircraft equipped with satellite-based navigation technology to adhere closely to the nominal centre line of the flight track when departing to the northeast of the Hong Kong International Airport (HKIA) and making south turn to the West Lamma Channel. This keeps the aircraft at a distance away from areas located in the vicinity of the flight paths (particularly Ma Wan), and reduces the impact of aircraft noise on these areas.

The CAD has not set any "ceiling" for the utilisation of the RF turn flight procedures. Whether an aircraft can adopt the flight procedures is mainly dependent on the equipment of the required navigational equipment on board, the relevant training for the flight crew members, and the respective operational approval issued by the aviation authority of the place of registry of the aircraft concerned.

Amongst all aircraft departing towards the northeast direction from the HKIA, the proportion of aircraft adopting the RF turn flight procedures between 11pm and 7am the following day from 2012 to 2017 are set out at Annex 2. The figures show that the utilisation rate was steadily increasing since the implementation of these flight procedures in 2012.

The CAD has also been closely following up on the overall adoption of these procedures. Between 2012 and 2018, the CAD has conducted four surveys to gather relevant information from airlines on the utilisation of the RF turn flight procedures. The latest information shows most of the new aircraft types are already equipped with the required navigational equipment. As a result of the fleet modernisation by the airlines, more suitably equipped aircraft will enter into service. The CAD will continue to encourage airlines to adopt these flight procedures and closely monitor the effectiveness.

(4) Aimed to reduce aircraft noise at source, only aircraft that comply with

the noise standards stipulated in Chapter 3 of Part II, Volume I of Annex 16 to the Convention on International Civil Aviation (Chapter 3 noise standards) and the relevant standards of noise prescribed in the Civil Aviation (Aircraft Noise) Ordinance (Cap. 312) are permitted to operate in the HKIA since 2002. Such restriction is in line with practices in other major international airports. According to the CAD's record, there were no non-compliant aircraft operated in the HKIA between 2012 and 2017. There was also no record of refusal of application for the use of aircraft which did not comply with the relevant noise standards at HKIA.

In addition, with effect from 2014, the CAD no longer allows aircraft which are marginally compliant with the Chapter 3 noise standards to land and take off in Hong Kong. To further strengthen this measure, the CAD is also planning to impose more stringent requirements with additional operating restrictions on aircraft which do not comply with the noise standards in Chapter 4 of Part II, Volume I of Annex 16 to the Convention on International Civil Aviation (Chapter 4 noise standards (see Note 1 below)), or equivalent, to operate at the HKIA from 10pm to 7am on the following day starting from the summer of 2019. Airlines have been consulted on the plan, and they showed understanding and support. This measure, when implemented, will further alleviate the aircraft noise impact on the local communities.

Apart from the above measures, as newer-model aircraft are benefited from the advancement of aviation technology, aircraft engines are quieter than before and the improved design of airframe has also helped reduce noise significantly. The CAD has been encouraging airlines to use newer-model and quieter aircraft. Many airlines are progressively modernising their fleet. Based on our statistics, the percentage on the use of newer passenger and cargo aircraft (see Note 2 below) operating at HKIA during night period has increased from 66 per cent in 2012 to 85 per cent in 2017. As the number of newer-model and quieter aircraft in their respective fleet continues to increase, the aircraft noise impact will be further alleviated in the long run.

(5) The other noise mitigating measures introduced by the CAD in addition to the above three are:

(i) between midnight and 7am, subject to acceptable operational and safety considerations, arriving aircraft are required to land from the southwest. This measure aims at reducing the number of aircraft overflying populated areas such as Sha Tin, Tsuen Wan, Sham Tseng and Tsing Lung Tau;

(ii) between 11pm and 7am, subject to acceptable operational and safety consideration, aircraft departing to the northeast of the HKIA are required to use the southbound route via the West Lamma Channel. This measure aims at reducing the number of aircraft overflying populated areas such as the Kowloon Peninsula and Hong Kong Island;

(iii) all aircraft approaching the HKIA from the northeast between 11pm and 7am are required to adopt the Continuous Descent Approach (CDA), subject to operational considerations. As aircraft on CDA fly higher and normally on a lower power/low drag configuration, noise experienced in areas such as Sai

Kung and Ma On Shan will be lowered; and

(iv) aircraft departing to the northeast of the HKIA are required to adopt the ICAO noise abatement take-off procedures so as to reduce the noise impact on areas located in the vicinity of the HKIA. Aircraft adopting these procedures are required to reduce their power upon reaching an altitude of 800 feet or above to abate aircraft noise.

The CAD's regular reviews of the noise mitigation measures showed that the above measures are effective in alleviating the aircraft noise impact on the local communities. Taking the noise data of the CAD recorded at Ma Wan NMT as an example, the number of noise events of high decibel level (80 decibels or above) during the night period in 2017 have significantly reduced by 80 per cent compared with 2012, and those of 70 decibels or above during the night period have also reduced by 33 per cent during the same period.

Note 1: Part II, Volume I of Annex 16 to the Convention on International Civil Aviation sets out the aircraft noise standards formulated by the ICAO at different times. The aircraft noise standards of Chapter 4, which are applicable to aircraft for which the application for a Type Certificate was submitted between 2006 and 2017, were more stringent than those of Chapter 3. Generally speaking, the noise levels of Chapter 4-compliant or equivalent aircraft were lower than those of Chapter 3-compliant aircraft.

Note 2: Newer passenger and cargo aircraft cover aircraft types such as Airbus A320, A330, A340, A350 and A380 and Boeing B777, B747-8 and B787, etc.