LCQ6: Platform screen doors and automatic platform gates in MTR stations

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Following is a question by the Hon Andrew Cheng and a reply by the Secretary for Transport and Housing, Ms Eva Cheng, at the Legislative Council meeting today (March 17):

Question:

At present, all underground stations of the MTR Corporation Limited ("MTRCL") have been retrofitted with platform screen doors ("PSDs"), and the works of retrofitting automatic platform gates ("APGs") at eight at-grade and above-ground MTR stations will also be completed in 2011. Due to the design of the platforms along the East Rail Line, the retrofitting of APGs may render passengers unable to see the width of the platform gap clearly, thus posing danger. The trial of the mechanical gap filler ("MGF") system carried out by MTRCL for its study to solve this problem was completed in October last year, and a comprehensive review was expected to be completed at the end of last year or early this year. Moreover, in January this year, an incident occurred at Shau Kei Wan MTR Station in which the glass pane of a PSD cracked. In this connection, will the Government inform this Council whether it knows:

(a) apart from the above incident, other incidents involving cracking of PSD glass panes or failures of PSDs have occurred at the underground stations since the completion of the works of retrofitting PSDs in 2006; whether MTRCL or its predecessor, MTR Corporation Limited, has conducted any investigation into these incidents; if such investigations had been conducted, of the progress and outcome; if not, the reasons for that;

(b) at present, MTRCL has put in place a mechanism to test and inspect the quality, safety and operation of PSDs and APGs regularly; if so, of the details; if not, the reasons for that;

what measures MTRCL has put in place to prevent the recurrence of incidents of cracking of PSD glass panes; and

(c) MTRCL has completed the comprehensive review of the MGF system; if so, of the outcome; if not, the reasons for that, and whether there is any specific timetable for the retrofitting of PSDs or APGs at the stations along the East Rail Line and the Ma On Shan Line; if so, of the details; if not, the reasons for that?

Reply:

President,

(a) Platform Screen Doors (PSDs) were retrofitted at 30 underground stations on the MTR Kwun Tong Line, Tsuen Wan Line and Island Line from 1999 to 2006. Since completion of the project in 2006, PSD operation in the MTR network has been smooth with only a few incidents recorded. From 2006 to the present, there have been four cases of broken PSD glass panels and five cases of cracks being found on individual panels (details of the nine cases are in the attached table). As the glass panels are made of toughened safety glass, no injuries resulted from breakage of glass panels of PSDs.

After every incident, MTR Corporation Limited (MTRCL) would follow up and conduct investigation into the cause of the incident. Investigation revealed that most of the incidents were caused by human factors, such as the glass being hit by hard objects, while others were caused by impurity in the glass panels.

(b) The toughened safety glass panels currently used for PSDs are manufactured by specialist glass manufacturers. The manufacturing process adopts stringent standards and the glass panels are subject to rigid tests. In general, the raw materials used to manufacture toughened safety glass contain some natural impurities (for example nickel sulphide). To

ensure product quality as far as possible, each toughened safety glass panel must undergo a heat soak test under a high temperature of 290 degrees Celsius for eight hours before they can be validated and leave the factory. After these tests, the manufacturers would issue certificates which would be examined by the suppliers. This method of testing has been recognised in the market as an effective way to test the quality of glass. Nevertheless, this cannot completely rule out that tiny impurities may still exist in individual glass panels, creating vulnerable points for cracks or breakage if the glass panel is hit at a certain angle or from a certain direction. However, one characteristic of toughened safety glass is that when broken, it will shatter into small pieces with rounded edges, and so the broken glass itself will not cause harm to passers-by.

MTRCL has in place a robust maintenance regime to ensure the smooth operation and good condition of PSDs. Each day, station staff will conduct function test and visual check of PSDs before the start of train service. In addition, maintenance contractors conduct quarterly inspections of PSD glass panels, replacing the panels when cracks or damage are identified. As regards PSD operation, regular maintenance and testing at varying levels are carried out quarterly, half-yearly, annually and five-yearly to ensure continued smooth operation. MTRCL has all along reminded staff and contractors to carefully inspect and test PSDs according to established timing and procedures.

(c) MTRCL is in the process of arranging for the installation of Automatic Platform Gates (APGs) at eight above-ground stations on the Island, Kwun Tong and Tsuen Wan Lines. Retrofitting APGs at platforms of an operating railway line involves highly complicated works including major modifications to the platform structure, ventilation system and earthing protection system. Concrete breaking and installation works have to be carried out during the very tight non-operating hours in the night time so that disruption

to railway service could be minimised. MTRCL is also conscious of the noise issue in association with the works and will hence work closely with the contractor in controlling noise generated. Temporary mitigation measures such as erecting noise barriers will be implemented during the works to mitigate possible noise nuisance caused to nearby residents and this will inevitably further reduce the time available for the installation works every night. MTRCL understands that both Members of the Legislative Council and the general public would like to see the completion of retrofitting of APGs as soon as possible. Therefore, when MTRCL awarded the contract for the project in January 2009, the contractor has been asked to look at the possibility of speeding up the programme. In planning the detailed implementation programme, the contractor and MTRCL's project management team determined that some works can be done simultaneously to shorten the works period. MTRCL has announced in May 2009 that the installation work will be completed one year earlier than originally scheduled, i.e. in 2011.

For East Rail Line, there are platforms with relatively greater curvatures and wider platform gaps at some stations. The problem of wide platform gaps has to be properly resolved before Automatic Platform Gates (APGs) are installed at stations along the line in order to reduce the risk of passengers inadvertently stepping into the platform gaps because of sight line obstructions caused by the APGs. If APGs are to be considered to be installed on the East Rail Line, Mechanical Gap Fillers (MGFs) have to be installed at platforms first to reduce the risk of passengers stepping into the platform gaps when they are boarding and alighting. Therefore, the pre-merger Kowloon-Canton Railway Corporation decided to study the effect of installing MGFs at station platforms with wider gaps first. The design and operation of MGFs has to interface with the train signalling system, the MGF plates will automatically extend after the arrival of a train before the train doors are opened, and automatically retract into the platform edge after the train doors are

closed and before the train departs to ensure passenger safety. The MGF system is new and has never been used in Hong Kong. In fact, it is also uncommon in other railway systems internationally. As such, MTRCL needs to develop a MGF system that is suitable for East Rail Line and conduct on-site trial at platforms during train service hours to test its effect.

The trial was conducted at Lo Wu Station in three phases. In the first phase, MTRCL installed MGFs at one boarding and alighting position of each of Platforms 3 and 4 of Lo Wu Station for initial mechanical testing. The second phase of the trial was to test the effect of MGFs operating together with the signalling system at a total of 10 boarding and alighting positions at Platforms 3 and 4. In the last phase, MTRCL installed MGFs at a total of 98 boarding and alighting positions at four platforms at Lo Wu Station where platform gaps are relatively wider to conduct function and reliability test during service hours (for example to test whether the MGFs extend and retract to reduce the platform gaps every single time according to requirement, and to test the fault rate of the MGF system during operation) and collect test data in order to assess the performance of the system. The whole trial commenced in July 2008 and was completed at the end of last year.

The MGF system needs to have a sophisticated interface with various railway systems, such as signalling and train control, etc. Due to safety consideration, when a train comes to a complete stop at a station, MGFs would extend from the platform edge, and only after the system verifies that the MGFs are extended would the train doors open. After boarding and alighting of passengers, the train doors would have to be securely closed before the MGFs start retracting. Trains would depart only when the system verifies that the whole process has been completed. During the trial, MTRCL found that, since elaborate verifications for the communications between the MGF system and the various railway systems are required, additional platform dwell time and lengthening of total

journey time are incurred. MTRCL is now collating and analysing the data collected to assess the system's performance and implication on train service.

We understand the public's views on the installation of APGs at platforms. However, before installing any facilities in the railway system, considerations have to be given to the operational safety of and implications on railway services. We will continue to follow up closely with MTRCL on the review of the trial on MGF system.

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