LCQ9: Retrofitting platform screen doors or automatic platform gates at MTR stations

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Following is a question by the Hon Wong Sing-chi and a written reply by the Secretary for Transport and Housing, Ms Eva Cheng, at the Legislative Council meeting today (April 6):

Question:

As regards retrofitting platform screen doors (PSDs) or automatic platform gates (APGs) at stations along the East Rail Line (EAL) and Ma On Shan Line (MOSL) of the MTR Corporation Limited (MTRCL), will the Government inform this Council:

(a) given that in its reply to a question raised by a Member of this Council on June 9, 2010, the Transport and Housing Bureau (THB)indicated that "as there are platforms with relatively greater curvatures and wider platform gaps at some stations of the East Rail Line, the problem of wide platform gaps has to be properly resolved before 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", whether the authorities know:

(i) the definitions of "relatively greater curvatures" of the platforms and "wider platform gaps" referred to by THB, and whether there are objective measurement standards for such; if yes, of the details; if not, the reasons for that;

(ii) among the stations along EAL and MOSL, the names of those stations having platform(s) with relatively greater curvatures and wider platform gaps, as well as other stations (please list the stations by rail line); and

(iii) whether MTRCL will first retrofit PSDs or APGs at those stations with straight platforms only; if so, of the details and timetable; if not, the reasons for that;

(b) concerning the numbers of passengers who fell onto tracks as set out in Annex I of THB's reply to my question on January 19, 2011, of the respective numbers of injuries and deaths among such cases, with a breakdown by station and year;

(c) given that MTRCL indicated in its paper submitted to the Subcommittee on Matters Relating to Railways in January 2011 that "Synergy can be identified through integrating the APG and SCL (the Shatin to Central Link) projects while large amounts of redundancy and wastage would be incurred if the two were implemented separately", whether the authorities know the criteria and methods for evaluating the "synergy" and "large amounts of redundancy and wastage" referred to by MTRCL, as well as the details; if not, of the reasons for that, and when the Government can obtain such information; and

(d) given that MTRCL also indicated in the paper mentioned in (c) that consideration must be given to the impact that APGs would have on the circulation of air on EAL platforms, and that studies showed that existing station ventilation would have to be improved to maintain a comparable environment as before the installation of APGs for passengers waiting for trains on platforms, whether the authorities know if MTRCL (or its predecessor, the MTRCL before the rail merger) had studied the issue of ventilation when it retrofitted PSDs or APGs at other underground stations in the past and if it has conducted such studies at present when retrofitting PSDs or APGs at the eight aboveground and at-grade stations; if so, of the respective details of such studies and the aforesaid studies on EAL; if not, the reasons for that?

Reply:

President,

The replies to various parts of the question are as follows:

(a)

(i) In railway operations, factors such as wind speed, train speed, geographic conditions and passenger loading could cause slight, left-right swaying movements in trains while entering or leaving a platform. Hence, a suitable distance between the platform and the train has to be maintained to prevent trains from hitting the platform to ensure safe train operations. In the case of a curved platform, arc movements of a train occur when it is entering or leaving a platform. Therefore, a certain distance is also required between the train and the platform.

The design and construction of the East Rail Line (EAL) were different from that of the other railway lines. This is because apart from domestic passenger trains,

there are Intercity Through Trains with wider train bodies operating on the EAL. Due to geographic constraints, some EAL platforms are located on curved sections, necessitating wider gaps between the train and the platform. There are design standards for these technical aspects.

The MTR Corporation Limited (MTRCL) has already taken the following measures to ensure the safety of passengers waiting on platforms:

- Platform gap fillers are installed to narrow the gap between the train and the platform;

- Yellow tactile strips are installed along platform edges to remind passengers not to stand beyond the yellow line;

- Door chimes are broadcast before train doors close to remind passengers not to charge in the compartments;

- CCTV system is installed at platforms for monitoring purpose, public announcements are made on platforms and in train compartments to remind passengers to mind the platform gaps; and

- Illumination is installed under the platforms and flashing lights are installed at the edge of the EAL platforms at locations where the gap between the platform and the train is relatively wide so that passengers would pay attention to the gap.

(ii) At present, the platforms at Tai Wai Station, Sha Tin Station, Fo Tan Station, Racecourse Station, Fanling Station, Sheung Shui Station, Lok Ma Chau Station on the EAL and all stations on the Ma On Shan Line (MOL) are straight. Some platforms at Hung Hom Station, Mong Kok East Station, Kowloon Tong Station, University Station, Tai Po Market Station, Tai Wo Station and Lo Wo Station on the EAL are situated on curved sections.

(iii) The design of the MTR station platforms is safe. With the above facilities and measures taken by MTRCL, as well as regular passenger education activities, MTRCL has been providing a safe travelling environment for passengers.

Regarding the retrofitting of automatic platform gates (APGs) along EAL, technical studies have been conducted by the MTRCL with a view to identifying

feasible solutions. The studies reveal that retrofitting of APGs at EAL stations poses particularly difficult challenges, which include safety risk associated with wider platform gaps; limitations of the existing signalling system; limitations of the existing trains; and limitations of platform structure. The feasibility of retrofitting of APGs at straight platforms first have been considered. However, due to the problems with the existing system, retrofitting of APGs at straight platforms will require at least the replacement of the signaling system.

(b) Regarding the reply on January 19, 2011 to the Legislative Council on passenger-on-track cases from 2006 to September 2010, the information provided by MTRCL regarding the cases in respect of the year, stations, number of injuries and fatalities are set out in the Annex. There were different causes to these passenger-on-track cases, which include accidents in which passengers fall onto the track (e.g. under the influence of alcohol or medicine, due to sickness etc); suicides and attempted suicides; and trespasses onto the track (e.g. passengers trying to retrieve items fallen onto the track, crossing the track to the platform on the other side etc).

(c) According to MTRCL, before retrofitting of APGs at EAL stations, the following are required to ensure passenger safety, reliable train service and maintenance of current service levels :

(i) development of a highly-reliable Mechanical Gap Filler system which is suitable for use under Hong Kong's adverse weather conditions, or other solutions that can solve platform gap problem to effectively address the safety risk caused by wider platform gaps;

(ii) installation of a new signalling system;

(iii) a train fleet equipped with motoring and braking systems suitable for use with APGs; and

(iv) modifications to station platform structure and ventilation systems.

Under the North-South Line (NSL) of the Shatin to Central Link (SCL) project, MTRCL has proposed a new signalling system and new trains for the operation of the NSL. As both retrofitting of APGs on EAL and SCL projects require substantial work to be done on EAL platforms, MTRCL is of the view that the two projects

should be carried out in tandem to achieve synergy. However, if APGs are to be retrofitted as a standalone project, work will overlap at sites, causing delay to one project or the other; or once one has finished work on a particular platform, the other will commence and may go in to dismantle what has just been installed, creating waste and abortive work.

According to MTRCL's assessment, even if the timeframe or time clash of the two projects are not taken into account, the following wastage would be incurred during the construction of the SCL if retrofitting of APGs at EAL stations is to be implemented as a standalone project:

EAL is currently operated with 12-car trains. The future NSL of the SCL project will be operated with 9-car trains. This is because the NSL of SCL will extend the rail line through the Hong Kong Convention and Exhibition Centre to Admiralty where platforms for 12-car trains cannot be accommodated due to space constraints. When SCL is in service, trains will stop at the straighter part of the platforms to help narrow the platform gap. As the train door positions may have to re-align with the straighter part of the platforms, all the relevant APGs will have to be dismantled and reinstalled, resulting in wastage.

If retrofitting of APGs on EAL platforms is to be implemented as a standalone project, the MTRCL will need to first procure 12-car new trains to maintain its current service level. When SCL is completed, due to the above technical reason, 9-car trains will be used. As the combinations of motor cars and trailer cars of 9-car trains and 12-car trains are different, a certain number of trailer cars will be wasted when converting 12-car trains into 9-car trains. More motor cars will need to be procured and driving-cabs will have to be modified and all previous work done will be wasted. At the same time, enhancements will have to be made to the signalling system with a view to increasing train frequency and total capacity.

Regarding the time required for the project, according to MTRCL's assessment, it is expected that the retrofitting of APGs as a standalone project at EAL stations will take about ten years to complete. About eight and a half years will be needed to procure and replace the signalling system and the train fleet with the first APGs being operational at the same time, and then the retrofitting of APGs at all the stations will take about one and a half years. Once the SCL Project is given the go-ahead, the NSL is expected to be completed in 2020, similar to that of implementing the APG project as a standalone one. Therefore, it does not justify the abortive works.

Besides, work will continuously be carried out on EAL platforms if both projects are undertaken separately, causing extensive inconvenience to passengers.

(d) Ventilation was taken into account when the pre-merger MTRCL retrofitted Platform Screen Doors (PSD) at all underground stations and APGs at the eight aboveground and at-grade stations. Consultants were commissioned by MTRCL (and the pre-merger MTRCL) during the design stage to evaluate the impact of PSDs and APGs on ventilation at stations.

Before PSDs were retrofitted at underground stations, trains in motion could produce piston effect and drive fresh air from the station into the tunnel to provide ventilation. Retrofitting of PSDs can reduce the loss of air-conditioning and maintain the temperature at platforms at a consistent level in order to provide a better travelling environment for passengers. However, as the tunnel and platform area were separated after retrofitting of the PSDs, additional facilities such as air ducts and ventilation system had to be built at tunnels. The pre-merger MTRCL carried out major alterations to the station and tunnel ventilation, air-conditioning and smoke extraction systems.

Ventilation for the eight aboveground and at-grade stations is different from that of the underground stations as natural ventilation is used. After APGs are retrofitted, further enhancement to ventilation is required at platforms in order to maintain the same level of comfort for passengers. Therefore, installation of conducting fans at station platforms where APGs are retrofitted has been included in the project.

As for the impact on ventilation at EAL platforms after APGs are retrofitted, preliminary studies show that substantial improvement works to the existing station ventilation will have to be carried out to maintain a comparable environment as before the installation of APGs for passengers waiting for trains on platforms. MTRCL will conduct a detailed study when designing the APG system for EAL stations.

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