

**Legislative Council Panel on Transport
Subcommittee on Matters Relating to Railways**

MTR East Rail Line service disruption on 21 January 2010

The Legislative Council Panel on Transport Subcommittee on Matters Relating to Railways requested the Administration to provide a paper on the service disruption of the East Rail Line of MTR Corporation Limited (MTRCL) on 21 January 2010. The causes of the incidents and the contingency measures adopted by MTRCL are set out in the paper of the Corporation at the Annex. The Administration's assessment on the handling of the incident by MTRCL is set out in the following paragraphs.

2. The incident was caused by a data transmission network failure that occurred at 7:17 p.m. in the East Rail Line Operations Control Centre (OCC) preventing it from performing its central control function. The data network failure meant that the Train Controllers in OCC could not obtain information on the status of trains on the East Rail Line, and hence even though the signaling system was operating normally and the Automatic Train Protection system could still keep trains at a safe distance apart, the OCC decided to suspend train service on the entire East Rail Line. After the data transmission network was recovered, train service resumed gradually at 8:12 p.m. and service on the whole line resumed at 8:20 p.m.. About 30,000 passengers were affected. Given the scale and the duration of service disruption of this incident, the Administration considers the incident serious and is very concerned about it. Subsequent investigation revealed that the expert of the supplier of the data transmission network was conducting a regular audit of the system at the time of the incident. The expert inadvertently and erroneously executed a software programme that caused the failure of the data transmission network.

3. Transport Department (TD) has reviewed the notification procedures, dissemination of information and contingency arrangements of MTRCL. In handling the incident, MTRCL has notified the Emergency Transport Co-ordination Centre (ETCC) of TD, issued to TD and other public transport operators a Red Alert according to the established mechanism and disseminated to the media the information about the incident and train service arrangement.

4. Following the incident, the East Rail Line OCC instructed train captains of the trains stalled between stations to drive manually forward

to the stations ahead and allow passengers to alight as far as possible. As the radio communication system between the OCC and trains was not functioning, the OCC had to use hand portable radios to communicate with train captains one by one to confirm their train locations first, and having ascertained the locations of trains after about half an hour, the OCC arranged for trains to drive to stations to allow passengers to alight. MTRCL started to call for shuttle buses from 7:25 p.m. onwards to serve affected passengers. MTRCL also informed passengers of the East Rail Line service suspension and shuttle bus arrangements through the public announcement system and notices at the East Rail Line stations and platforms. In addition, MTRCL implemented measures to regulate passenger flows in accordance with its contingency plan. The passengers exiting East Rail Line stations were not charged a fare, while announcements were made at stations to advise affected passengers that they could obtain a refund on any fares collected at Customer Service Centres within four days. The entry gates of the line were also closed to disallow entry of passengers to the concourses and platforms. At the same time, MTRCL deployed additional staff to the East Rail Line stations to guide and assist passengers, and maintain order. As the incident occurred during peak hour, there was a large number of passengers and station staff were required to handle various tasks within short periods of time, staff might not have been able to address passengers' enquiries or requests within the time that it would have taken under normal circumstances, resulting in passengers gathering in certain stations or concourses at one time.

5. The shuttle buses arranged by MTRCL started running from 7:46 p.m. onwards along the East Rail Line between Hung Hom and Lo Wu/Lok Ma Chau Stations. During the incident, a total of 97 buses were operated and carried 5,500 passengers. Upon receiving the Red Alert issued by MTRCL and the notification from TD, relevant road-based public transport operators also enhanced their services to provide additional relief transport services.

6. As regards information to passengers, MTRCL informed passengers of the East Rail Line service suspension and alternative transport arrangements through the public announcement system and notices at the East Rail Line stations. Announcements were also made and notices posted at all other stations of the railway network and on the trains running on the Kwun Tong, Tsuen Wan, Island, Tung Chung, Tseung Kwan O, Ma On Shan and West Rail Lines. Moreover, announcements were made on trains running on Ma On Shan, West Rail and Kwun Tong Lines when they were approaching the interchange

stations with East Rail Line to ask passengers to continue their journeys using other services. TD maintained close contact with the Police, MTRCL and other public transport operators throughout the incident and noted that the situation at the East Rail Line stations was kept under control. TD has received complaints about inadequate information and the arrangement of shuttle buses during the incident. TD considers that MTRCL has implemented the necessary measures to inform passengers but should make improvements in respect of shuttle bus arrangements, in particular the number of shuttle buses and the time required for them to arrive at stations after being summoned.

Conclusion and improvement

7. MTRCL has submitted incident reports to TD and the Electrical and Mechanical Services Department (EMSD). EMSD agreed with MTRCL's findings on the cause of the incidents. On the whole, given the scale and the duration of service disruption of this incident, TD is of the view that MTRCL has implemented the necessary contingency arrangements in respect of notification procedures, dissemination of information and regulation of passenger flow in accordance with the contingency plans agreed with relevant government departments.

8. TD and EMSD have held a number of meetings with MTRCL concerning the incident. The departments have also followed up with MTRCL on implementation of improvement measures in the areas of shuttle bus arrangements and system management and maintenance respectively. On shuttle bus arrangements, TD has requested MTRCL to minimise the activation lead time, increase the supply of shuttle buses by other public transport operators, and enhance the operation efficiency of the shuttle bus routes. On system management and maintenance, MTRCL will install a standby workstation in the East Rail Line OCC that will allow the OCC to continue its central monitoring function even when there is a fault in the data network. In response to EMSD's proposal, MTRCL will also review its radio communication capacity between the OCC and trains to maintain smooth communications in the event of instability in the data transmission network. As the audit of the data transmission network includes evaluation of the performance of the network during normal train operations, it must be carried out during train service hours. With a view to avoiding similar incidents in future as far as possible and to minimising the inconvenience that may be caused to passengers, MTRCL has, in light of the cause of the incident, planned to tighten the procedures for all outside contractors/experts when they carry out work in the system, including stepping up the monitoring of audits

conducted by experts and, as far as possible, reducing the need to carry out audits during peak hours or operating hours.

9. TD and EMSD will continue to monitor the implementation of the measures by MTRCL.

Transport and Housing Bureau
February 2010

**Legislative Council Panel on Transport
Subcommittee on Matters Relating to Railways**

MTR East Rail Line service disruption on 21 January 2010

Introduction

This paper provides information on the service disruption on the East Rail Line of the MTR Corporation Limited (MTRCL) on 21 January 2010.

The Incident

2. At 7:17 p.m. on 21 January 2010, a failure occurred in the data transmission network in the East Rail Line Operations Control Centre (OCC). This prevented the OCC from properly performing its central control functions. These functions include tracking of locations of trains, radio communication with train captains, monitoring of the power traction control system, centralised public announcement system and passenger information display.

3. Following the incident, engineers were immediately dispatched to the OCC to follow up on the situation. Meanwhile, the Corporation notified the Emergency Transport Coordination Centre (ETCC) of the Transport Department (TD) and the Electrical and Mechanical Services Department (EMSD), and disseminated information to the media so that the public would be informed of the service disruption.

4. In spite of the East Rail Line OCC data transmission network failure, the signalling system for train operations along the East Rail Line continued to operate safely. At the time of the incident, a total of 27 trains were in service on the East Rail Line. As the OCC could not identify their locations and hence could not conduct any train regulation movement, the OCC decided to suspend service on the whole line as a prudent measure.

5. Eight minutes after the incident, shuttle buses were summoned by the OCC to operate between Hung Hom and Lo Wu/Lok Ma Chau Stations, stopping at all intermediate stations to serve affected passengers. A Red

Alert was issued at 7:29 p.m. informing other public transport operators to enhance their services in the affected areas.

6. After suspending train service, the OCC gradually arranged for the trains operating on the East Rail Line to proceed to the nearest platform to allow passengers to alight, while adhering to trackside signals. During that time, the power supply and air-conditioning systems on all trains operated as normal. Train service between Hung Hom and Tai Po Market Stations was first resumed at 8:12 p.m. after engineers succeeded in recovering the data transmission network. Train service on the entire line was restored at 8:20 p.m. and the Red Alert was then cancelled.

7. During the incident, the function of centralised controlling of train operation on the Ma On Shan Line remained normal, hence train service of that line was not affected.

Contingency Measures

8. MTRCL has contingency measures in place to handle incidents with a view to minimising any inconvenience caused to passengers. During the said incident, the following contingency measures were implemented:

(i) Information dissemination

9. Following the incident, information about the service disruption on the East Rail Line was disseminated to the media forthwith so that the public would be informed as soon as possible. At the same time, TD and EMSD were informed immediately in accordance with established procedures. A Red Alert was issued and other public transport operators were informed and requested to enhance their services in the affected areas.

10. As the East Rail Line OCC could not make centralised public announcements for the line, all East Rail Line stations were instructed to make their own public announcements and post notices to inform passengers of the service disruption and advise them to take shuttle buses or use other means of public transport during the incident. Public announcements were also made at stations on all other railway lines.

11. As the radio communication system between the OCC and trains was not functioning, the OCC switched to portable radios to communicate with

train captains and confirm their train locations. The OCC also instructed train captains to make on-board announcements to passengers. Announcements were made on trains on the Kwun Tong, Tsuen Wan, Island, Tung Chung, Tseung Kwan O, Ma On Shan and West Rail Lines to advise passengers of the service disruption on the East Rail Line.

(ii) Station crowd management

12. Crowd management measures were implemented at stations taking into account the respective circumstances of each station during the incident. After the Red Alert was issued, entry gates were closed in succession at stations along the East Rail Line to prevent passengers from entering the paid area. Exit gates were also set to allow passengers to exit without Octopus fares being deducted and Single Journey Tickets were returned to users. Announcements were made at stations to advise affected passengers that they could obtain a refund on any fares collected at Customer Service Centres within four days. Additional staff were deployed at stations to maintain order, and assist passengers in leaving the stations or boarding shuttle buses.

(iii) Shuttle bus arrangement

13. During the incident, shuttle buses were arranged to serve affected passengers. Shuttle bus service commenced at 7:46 p.m. and continued until 8:50 p.m. that evening, some time after train service on the East Rail Line had resumed. A total of 97 buses were operated, serving about 5,500 passenger-trips.

Cause of the Disruption

14. At present, the supplier of the data transmission network regularly conducts audits of the system in the East Rail Line OCC each year. The audit must be carried out by the network supplier's experts. As the performance of the network during normal train operations is to be evaluated, the work must be carried out during train service hours.

15. After the incident, the Corporation immediately began an investigation to determine the cause of the failure. The investigation was completed on the following day. It was confirmed that the failure was attributed to the inadvertent and erroneous execution of a software

programme by the supplier's expert while he was conducting a regular audit of the data transmission network system in the East Rail Line OCC. As a result, data transmission to the OCC was cut off, preventing the OCC from performing its central control functions.

Improvement measures

16. The Corporation apologises for the inconvenience caused to passengers and thanks them for their understanding and patience. In light of the cause of the incident, the Corporation has conducted a review, and will implement the following improvement measures to prevent similar occurrences in future :

- (a) a standby workstation in the OCC will be installed to allow the OCC to continue its central monitoring function even when the data transmission network becomes unstable; and
- (b) procedures will be tightened for all outside experts working within the MTR system. This includes stepping up the monitoring of audits conducted by experts and, as far as possible, reducing the need to carry out audits during peak hours or operating hours.

MTR Corporation Limited
February 2010