Legislative Council Panel on Transport
Subcommittee on Matters Relating to Railways

MTR Tsuen Wan Line Service Disruption on 21 October 2010

At the meeting of the Subcommittee on Matters Relating to Railways under the Legislative Council Panel on Transport held on 4 November 2010, Members noted the preliminary findings on the causes of the service disruption of the Tsuen Wan Line (TWL) of the MTR Corporation Ltd (MTRCL) on 21 October 2010 and the proposed improvement measures. MTRCL has now completed the technical investigations and introduced most of the improvement measures as set out in the Corporation's paper. The Administration's assessment of the outcome of the investigations and follow up actions taken by MTRCL are set out in the following paragraphs.

Final technical investigations

2. The incident on 21 October 2010 was due to a power fault on a train which led to breakage in the overhead line at Yau Ma Tei Station. It caused a three-hour suspension of train service between Yau Ma Tei and Jordan Stations on the MTR Tsuen Wan Line.

3. MTRCL submitted the final investigation report incorporating its supplier's findings to the Electrical and Mechanical Services Department (EMSD) on 18 February 2011. Having examined the report, EMSD generally agreed with MTRCL's findings on the root causes of the incident. The incident was highly unusual due to a combination of independent factors, including failure of traction motor, failure of on-board circuit breaker, unsuccessful lowering of the pantographs by the train captain and the abridgement of two adjacent overhead line sections by the subsequent train. The protection system of overhead power supply system was proved to be sound, and therefore this incident had no safety implication.

4. Further investigation of the failure modes of the traction motor and circuit breaker indicated that the traction motor fault was initiated by a small carbon chip broken off from a carbon brush inside the traction motor. The circuit breakers had operated within the design purpose to clear the electrical fault current. However, the magnitude of the fault current had exceeded the design rupture capacity of the onboard circuit breaker, and therefore the onboard circuit breaker was damaged.

5. The incident circuit breakers were procured in the 1980s. At that time, circuit breakers with higher rupture capacity were not compact enough for train installations. The 20kAmp circuit breakers were scheduled for replacement by 30 kAmp circuit breakers in 2011.

6. During the recovery process to restore power supply, the pantographs were not lowered and resulted in repeated short-circuit current passing through the overhead contact wires which were ultimately overheated and broke. EMSD considered that the electrical faults were not a result of aging or maintenance deficiencies but a combination of the above independent factors. The failure of the lowering of the pantographs was the determining factor in the breakage of overhead contact wire.

7. MTRCL has reported in its paper the implementation of the remedial measures. In addition, EMSD has instructed MTRCL to review the recovery procedure for handling circuit breaker tripping incidents so as to provide clear and detailed steps for operators in the Operations Control Centre (OCC) to follow. The review was completed in December 2010. To avoid recurrence of similar incident and subsequent service delay, enhanced recovery procedure is required for trains with traction units of the incident type until the replacement of all 20 kAmp on-board circuit breakers by December 2011. OCC operators are required to ensure lowering of pantographs of trains with such traction units prior to attempting to resume power supply.

Review of the contingency plans

8. The Government considered the incident on 21 October 2010 a major and serious one. There were a number of areas in which deficiencies were glaring in terms of MTRCL's handling of the incident. MTRCL was asked to come up with comprehensive improvement measures. As stated in the paper submitted by MTRCL, the Corporation has implemented a series of improvement measures, and the major items are set out below -

(a) Alert system

MTRCL was late (20 minutes versus 8 minutes as required under the established procedure) in its notification to the Transport Department (TD)'s Emergency Transport Coordination Centre (ETCC) of this incident because the OCC staff were preoccupied with handling the train fault. MTRCL

has now strengthened its internal operating procedures of OCC at Tsing Yi to ensure strict adherence to the established notification procedures and issue of "Alerts" as agreed with TD. The manning level of MTRCL's Communication Control Centre (CCC) has also been improved with a Communications Manager on duty (in shift) at all times daily so that CCC can provide timely and updated information to ETCC and Railway Police. To enhance communication between the OCC and its staff at stations, MTRCL is now testing a new digital radio system which it will implement in phases from mid-2011.

(b) Emergency bus operation

The crowd control measures at the boarding point for emergency buses at Yau Ma Tei Station on 21 October 2010 were far from satisfactory. MTRCL has learnt its lesson and completed a comprehensive review on the operation of emergency buses (now called free shuttle buses by MTRCL), including their routeings and boarding / alighting points at all of the 84 stations in conjunction with TD and the Police. The boarding / alighting locations at 11 major stations have been changed having considered the current local traffic conditions. Meanwhile, the recruitment and training of the Customer Service Rapid Response Unit for reinforcement of crowd control and queuing arrangements at boarding points during incidents are in progress. In the joint drill with the Police, Fire Services Department (FSD) and TD conducted at Yau Ma Tei Station before train operation hours on 25 February 2011, the operation of emergency buses and the coordination between MTRCL and parties concerned were considered effective by TD.

(c) Station-specific contingency plans

MTRCL has reviewed the existing station-specific contingency plans for handling railway incidents with service disruptions and streamlined various aspects such as the alerting procedures, publicity arrangements and operation of emergency buses. In particular, MTRCL has strengthened the role of the controller of emergency buses at each station in liaising with the station staff and OCC at Tsing Yi on the operations of emergency buses and the passenger order at the boarding and alighting points. Also, station-specific cue-cards with street maps, service information on emergency buses and alternative public transport in the vicinity of the station were made available to its staff for

reference. Such contingency measures are applicable to service disruption incidents that occur at various times of the day, including peak and non-peak hours.

(d) Publication of contingency plans

In early January 2011, MTRCL has uploaded on its web page the information of the emergency bus services along each of the railway lines in the network, including their origins and destinations, as well as the en-route stations where passengers can alight in case of service disruption incidents. The station-specific guides titled "Rail Service Suspension - Passenger Guide" have also been uploaded in February 2011, providing information on the steps to follow in case of railway service suspension; the locations of emergency bus boarding points; as well as the types and locations of alternative public transport services available outside the respective stations at ground level. A two-week publicity programme comprising broadcast of segments on the television and video shows at interchange stations were launched on 24 February 2011.

(e) Communication with the public

MTRCL has refined and streamlined messages to be disseminated to passengers under different scenarios of service disruption. By the end of the second quarter of 2011, a digital stanchion system will be completed to help convey service information and contingency transport arrangements to the passengers during service disruption incidents. Directional signs will be displayed inside stations and at street levels to guide passengers to emergency bus pick-up points. Giant information panels will be displayed at times of incidents to provide passengers with information on alternative public transport services outside the stations.

9. The Administration's assessment is that MTRCL's revised contingency arrangements have been much improved in terms of the alerting arrangement, communication with passengers in the railway system and to the public outside the system, the emergency bus arrangement and staffing to cope with train service disruptions. In particular, a new Customer Service Rapid Response Unit has been set up to assist passengers when incidents occur. However, what is still missing is the absence of a sufficiently senior supervisory or management staff to oversee the conduct of the contingency arrangements with a view to

minimising the impact on the travelling public. We will continue to urge the Corporation to review their system of command to ensure that a sufficiently senior commander would take the helm to handle service disruption incidents effectively.

Conclusion

10. MTRCL's inability to notify TD in time on 21 October 2010 (i.e. 20 minutes as opposed to 8 minutes) was regarded as a non-compliance. The consequence of the delay in notifying TD was that the coordinating efforts, jointly made by TD and MTRCL, could have been executed 12 minutes earlier and that might help the other public transport operators to arrange for the supplementary relief services earlier. The Police could also have been alerted earlier for strengthening crowd management.

11. The chaos that had let the passengers down on the day were mainly due to the faulty contingency arrangements in various aspects and the lack of preparedness of the management and front line staff of MTRCL. There was no commander in control of the situation ensuring the proper execution of the contingency arrangements, as well as dissemination of clear and timely information about the train services available and alternative means of public transport. The message that the affected passengers could simply choose to walk from Yau Ma Tei Station to Jordan Station to continue their journey on TWL to Central was not conveyed to passengers.

12. In this connection, the Secretary for Transport and Housing served a notice to the Chief Executive Officer of MTRCL that the Government takes a serious view of the Corporation's handling of the incident. The Corporation is expected to learn from the TWL incident implementing all the remedial measures and contingency plans as they have now pledged in full and effectively. The new measures introduced by the Corporation for better handling of future incidents as set out in the Corporation's paper will become the yardstick for TD to measure the Corporation's performance in the event of future service disruptions. The Secretary for Transport and Housing made it clear that any failure of a similar scale and/or nature in the future could lead to punitive action to be taken under the Mass Transit Railway Ordinance.

13. The Administration will monitor the progress of implementation of MTRCL's whole range of remedial measures to prevent similar occurrences in future. MTRCL is fully aware of the expectations of the Administration and the members of the public, and will do its utmost to provide quality and efficient service to its passengers at all times.

Transport and Housing Bureau
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