

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

**Automatic Train Operation (ATO) of East Rail trains**

Purpose

This paper updates Members of Legislative Council Panel on Transport Subcommittee on Matters Relating to Railways of the performance of East Rail's Automatic Operation System (ATO).

Background

2. At the meeting on 13 June 2005, Members requested for information on the ATO performance of East Rail trains. KCRC reported at the meeting that in the light of the non-stopping incident of an East Rail train at Tai Wo Station on 28 April 2005, the signalling system would be enhanced. In January 2006, in order to facilitate the root cause investigation of the cracks found in the underframe equipment of East Rail Mid-Life Refurbished (MLR) trains, the operation of all East Rail trains were switched to Automatic Train Protection (ATP) mode between mid-January and early August 2006.

ATP System

3. The safe operation of East Rail trains is controlled and monitored by the ATP system introduced in 1998. The system ensures that a train can only proceed under safe circumstances, regardless of whether it is operated in ATO mode or manual mode. ATP system also ensures that trains would not operate above the designated speed control profile; and that a safe distance is maintained between trains.

ATO System

4. In 2002, ATO system was introduced in East Rail in addition to the ATP

system. Nonetheless, the safety of train operation is still controlled and monitored by the ATP system. The ATO system controls the train speed for the driver, and ensures that all trains will stop when arriving at every station.

5. Under normal circumstances, most trains are operated in ATO mode. However drivers would also operate trains under ATP mode in different scenarios, such as the operation of trains in and out of train depots, operation of special train trips, during driving training, or at times when the ATO system fails to function properly.

### Signalling System Enhancement

6. The signalling system enhancement work implemented following the non-stopping incident of an East Rail train at Tai Wo Station in April 2005 was completed on 20 December 2005. KCRC upgraded the system software such that all trains operated in ATP mode will stop at every station according to system instruction.

7. To facilitate the root cause investigation of the cracks found in the underframe equipment of East Rail MLR trains, the operation of East Rail trains had been switched to ATP mode since 15 January 2006. After thorough investigation, it was confirmed that ATO system is not a direct cause of the cracking. KCRC also conducted thorough tests to ensure the stability of the system. After obtaining the approval of the Hong Kong Railway Inspectorate, KCRC East Rail trains reverted to the ATO operation on 6 August 2006.

### ATO performance of East Rail trains

8. To ensure that the performance of ATO system could be kept to a high standard, KCRC has been monitoring its performance closely and regularly conducts preventive maintenance and inspections, as well as replacing parts where necessary. The average availability<sup>1</sup> of East Rail ATO system from August 2006 to March 2007 exceeded 99.72%.

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<sup>1</sup> ATO availability is defined as “the total number of ATO minutes less the total number of ATO failure minutes divided by the total number of ATO minutes.”

## Conclusion

9. East Rail train operation has always been safe and reliable. After reverting to ATO operation from August 2006, the system has been operating smoothly. The completion of the signalling system enhancement work also enables trains to stop precisely under the ATP system so as to avoid human errors and minimize inconvenience caused to passengers.

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