

# West Rail Fire Incident

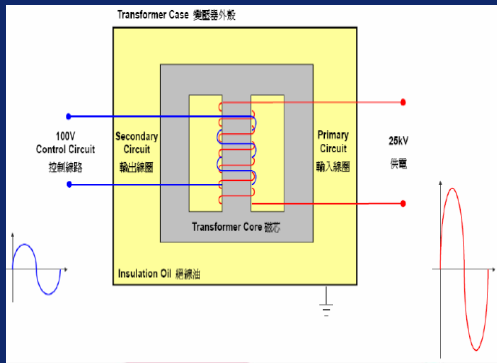
**Legislative Council – Panel on Transport  
Subcommittee on Matters Relating to Railways  
4 May 2007**

# Forensic Examination of the Failed Transformer

## Failed Transformer



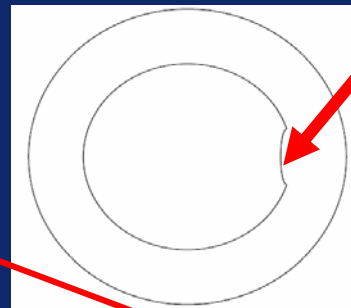
Upper Coil burnt seriously with signs indicating its insulation was firstly damaged by voltage surge



Lower Coil bulging and internal coils separating from resin as a result of over-heating due to over-current



Coil Cross-section



Bulging



Separation of coil and resin

# Cause of Insulation Breakdown

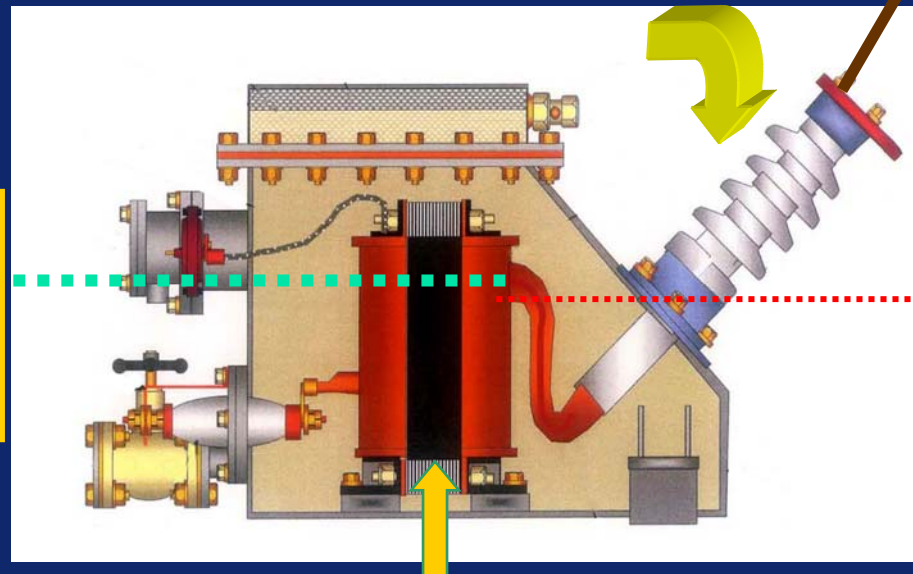


Travelling voltage surge, for example, comes from lightning



25kV overhead line

A hidden imperfection of insulation alone would not lead to equipment failure



A hidden imperfection of insulation encountering voltage surge as an attributing factor then triggered the fault



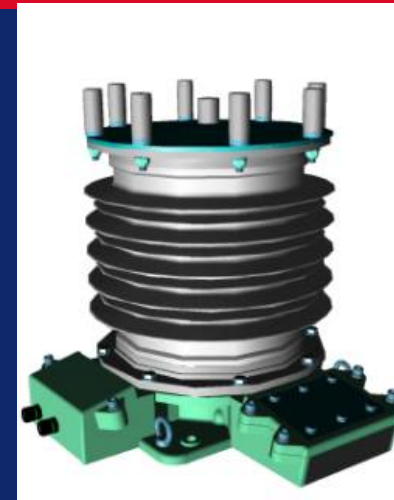
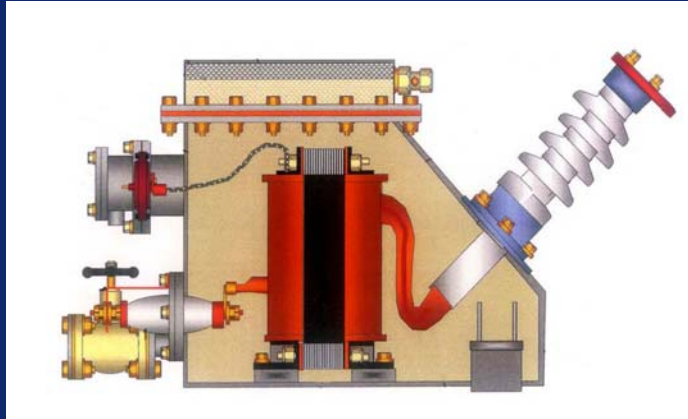
Passed the factory test in accordance with industrial norm

# Post-Incident On-going Monitoring Regime

- Enhance the frequency of Insulation test (previously once every 3 years as per manufacturer's instruction, now stepped up to every month )
- Train computer to monitor voltage level continuously during train service
- Monitor external temperature every three days
- Check transformer coil integrity weekly
- Annual high voltage test under laboratory conditions

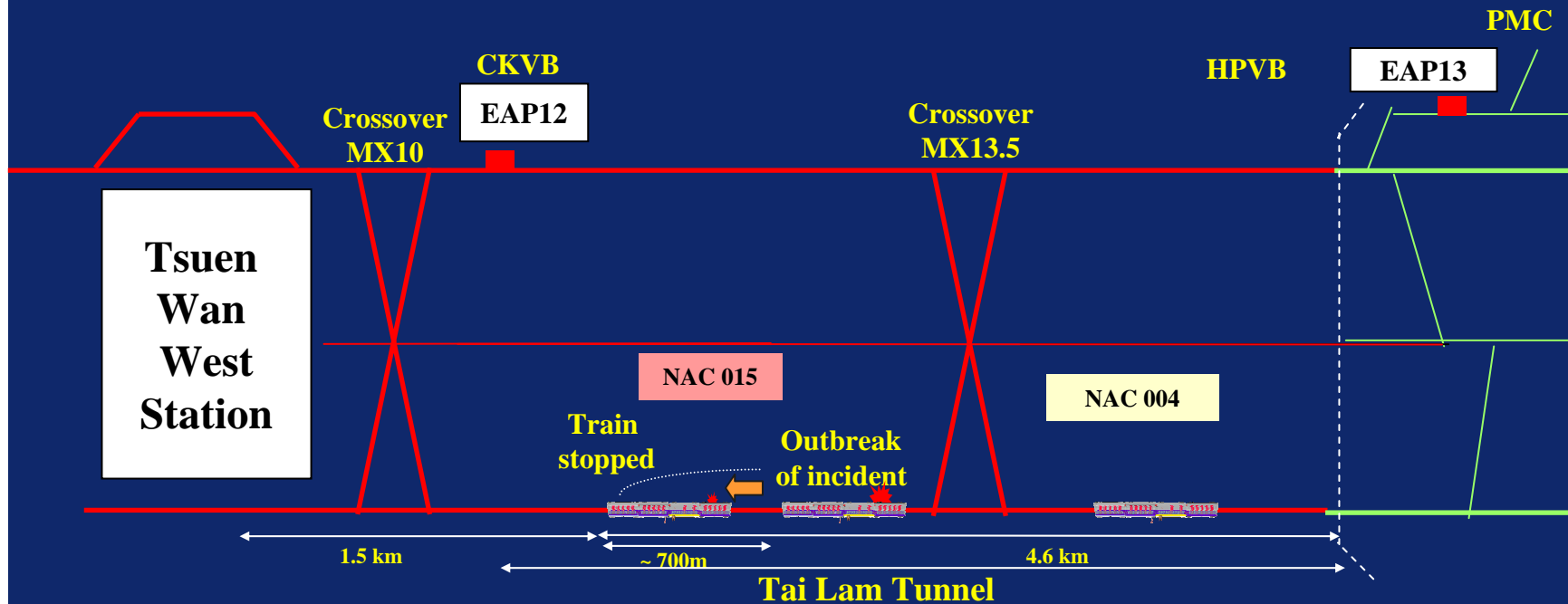
All testing and the enhanced monitoring confirms that the Voltage Transformer fleet in service is fit-for-purpose, and the failure was a random event of an isolated nature.

# Long-term solution to enhance the confidence of passengers in a safe service



- Replacement of existing oil type with oil-free and explosion-proof voltage transformers
- Explosive-proof transformers have been developed since 2001 and are in service in Europe
- Compared with the existing transformer, it has a greater capacity to withstand lightning strike
- Replacement will be completed by 2008 without affecting train services

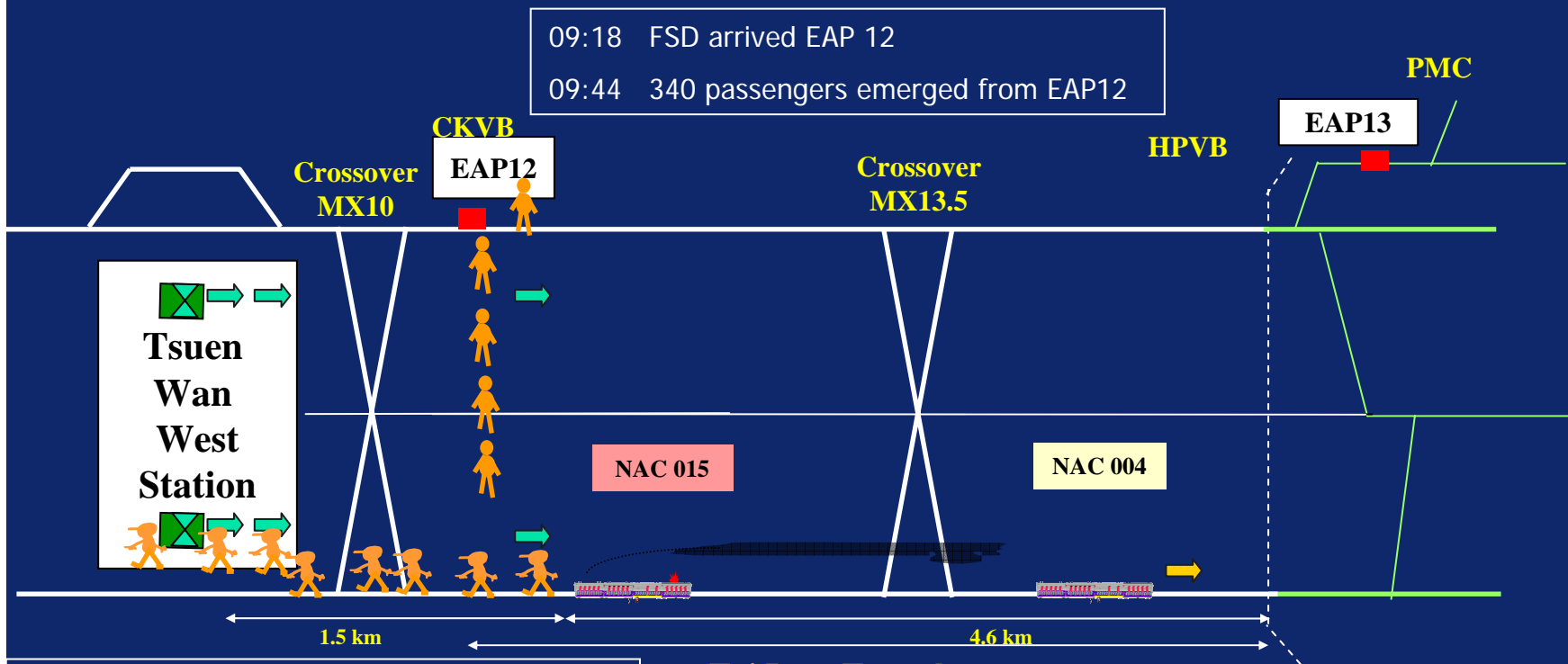
# Outbreak of Incident



09:17 OCC reported train/ tunnel status to FSD	OCC confirmed train location and fire status	09:15 all train doors opened. Driver/KCR staff directed passengers to TWW station	OCC cleared up track & authorized evacuation	OCC operated TVS & instructed TWW to switch on tunnel lights	Driver stopped the train	Driver received calls from passengers & observed smoke at rear cars through in-cab CCTV	Loss of traction power	09:13 bang sound heard by Driver  Automatic fire alarm sent to FSD
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# Evacuation

09:18 FSD arrived EAP 12  
 09:44 340 passengers emerged from EAP12



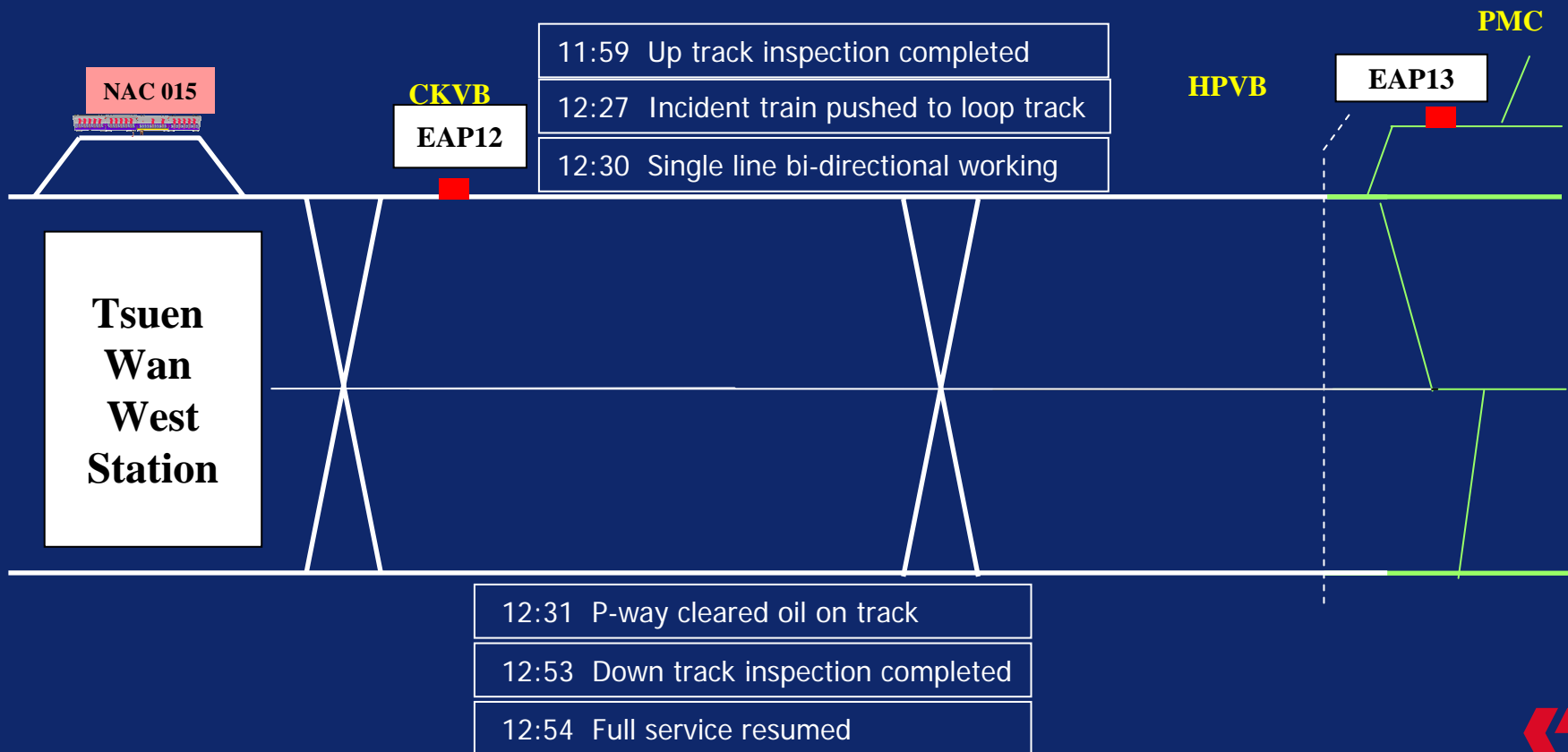
09:26 All passengers detrained and walked towards TWW as directed  
 09:45 626 passengers had reached TWW platform, and FSD arrived at incident train fire

## Tai Lam Tunnel

09:47 Re-energized overhead line for NAC004 to leave tunnel  
 09:54 Switched off traction supply  
 09:55 FSD started to put out fire by water

**Legend:**  
 Operating fan & direction of air flow

# Recovery of Service





Thank you

