Rail Accident Investigation Branch

Presentation to the London TravelWatch Board

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RAIB
Rail Accident Investigation Branch

Ladbroke Grove, Oct 1999 – Cause: SPAD
Outcome: head on collision (130 mph)
31 fatalities, > 500 injuries

Why was the RAIB established?

- The public inquiry into the 1999 Ladbroke Grove accident recommended that an independent organisation should be established to investigate rail accidents
  - This should be independent of government, safety regulators, police and all industry parties
- UK legislation:
  - Railways and Transport Safety Act 2003
  - Railways (Accident Investigation and Reporting) Regulations 2005
    - Guidance for the use of the Regulations is published by the RAIB (www.raib.gov.uk)

The RAIB – Key facts

- Independent from all parts of the rail industry
  - Forms a part of the Department for Transport, although is functionally independent
  - Chief Inspector reports to Secretary of State on investigation matters
- Sole purpose to improve safety
  - Does not apportion blame or liability
- Acts as the lead party in most investigations
- Became operational in October 2005

RAIB's scope includes:
Mainline, metros, trams and heritage rail

Key themes of our Annual Report for 2016

- Failure of earthworks and structures.
- Track worker safety.
- Condition and maintenance of freight and engineering rolling stock.
- Level Crossings.
- **Platform train interface (PTI).**
- Fatigue.
- Collisions in long work sites.

Platform Train Interface

Platform train interface risk

- There are 3 billion platform train interface interactions every year
- 1,245 injuries per year
- 48% of the total passenger fatality risk occurs at the PTI

What PTI incidents has the RAIB investigated?

Investigations since Oct 2005;

National rail network	9
LUL	3
DLR	1
Tyne and Wear	1

Of the 9 investigations on the national rail network;

- 8 related to train dispatch

Of the 8 train dispatch investigations on the national rail network;

- 4 were dispatched by drivers (incl. 3 trap and drag)
- 2 were dispatched by platform staff (incl. 1 trap and drag)
- 2 were dispatched by conductors (incl. 1 trap and drag)

RAIB PTI investigations since Oct 2005

(London incidents shown in red)

2006	**Huntingdon (serious injury)**	*Trap and drag*
2007	**Tooting Broadway (LUL)**	*Trap and drag*
2011	**Brentwood**	*Train dispatched with person in platform edge gap*
2011	**Kings Cross**	*Trap and drag*
2011	**James Street (fatal)**	*Train dispatched with person in platform edge gap*
2012	**Jarrow - Tyne and Wear**	*Trap and drag*
2012	**Charing Cross (serious injury)**	*Person fell in platform edge gap after train dispatched*
2013	**Newcastle Central**	*Trap and drag*
2013	**Southend & Whyteleafe**	*Wheelchair and push chair rolled onto track*
2014	**Holborn (LUL)**	*Trap and drag*
March 2015	**Clapham South (LUL)**	*Trap, drag and fell down gap*
April 2015	**West Wickham (serious injury)**	*Trap, drag and fell down gap*
July 2015	**Hayes & Harlington**	*Trap and drag*
Feb 2017	**Bank (DLR)**	*Potential trap and drag*

Important learning
- for passengers

The PTI can be dangerous, special care is always needed

- slow down and step carefully
- good behaviour on crowded platforms
- any obstruction of the doors can be dangerous
- alcohol and drugs can exacerbate the risk

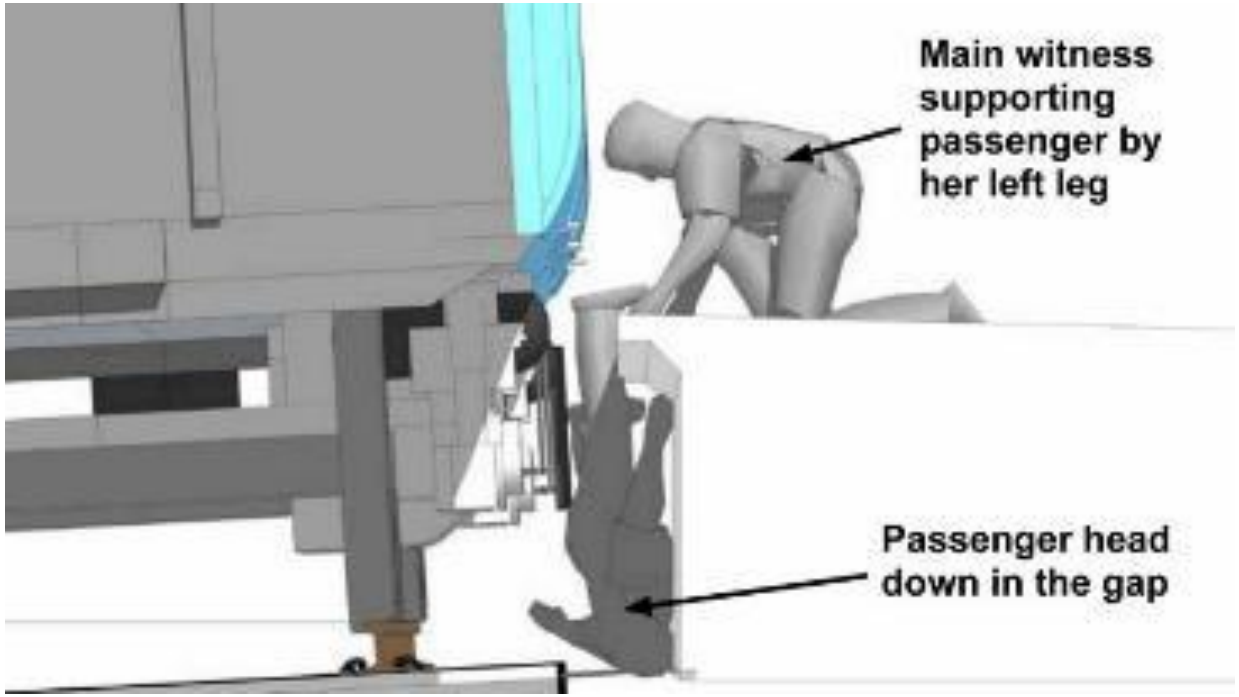
Important learning
- for passengers

Train doors do **not** behave like lift doors

- they may not re-open when obstructed
- they have higher closing forces
- they may not detect small objects like fingers, straps, scarfs
- it can be harder to extract trapped objects
- …..and much harder when the train starts moving

Important learning
- for dispatchers (drivers, conductors, platform staff)

- Where practicable, observing the doors as they close (looking for anything unusual)
  [Brentwood 19/2011; West Wickham 03/2016; Hayes & Harlington 12/2016]



Important learning
- for dispatchers (drivers, conductors, platform staff)

- Always remembering that door interlock can still be obtained with a hand, or other small object, trapped between the door's leaves [Newcastle Central 19/2014; Holborn 22/2014; West Wickham 03/2016; Hayes & Harlington 12/2016]

Important learning
- for dispatchers (drivers, conductors, platform staff)

- Undertaking an adequate final safety check after doors are closed [Brentwood 19/2011; Kings Cross 09/2012; Jarrow 26/2012; Newcastle Central 19/2014; West Wickham 03/2016; Hayes & Harlington 12/2016]

Important learning
- for fleet engineers and rolling stock owners

- The need for a review of design of certain types of door control systems to prevent doors being opened by passengers after the driver has initiated the closure sequence
  [West Wickham 03/2016]

Important learning
- for fleet engineers and rolling stock owners

- The need to ensure reliable operation of door detection systems [Jarrow (T&W Metro) 26/2012]
- The need to better understand the design of sensitive edge obstruction detection systems [Newcastle Central 19/2014]

Important learning
- for station managers and train operators

- Risk assessment of train dispatch arrangements, particularly when platforms are crowded, and the identification of suitable risk control measures (eg altered camera positions) [Brentwood 19/2011, Newcastle Central 19/2014 Clapham South (LUL) 04/2016]

Important learning
- potential improvements in the design of the PTI

- Adapting trains and/or platforms to reduce the platform edge gap [James St 22/2012; Charing Cross 10/2013]

Class 508 in 2011

1906 stock (in 1955)

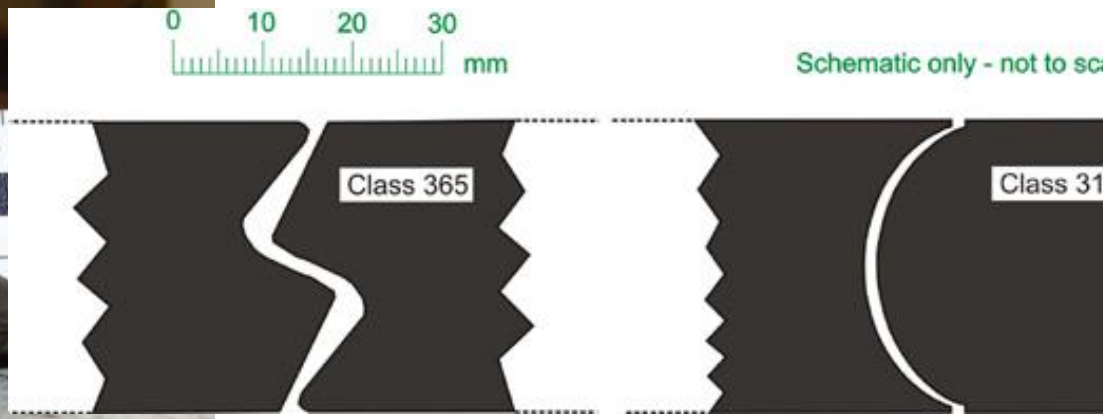
Important learning
- potential improvements in the design of the PTI

- Ways of enabling dispatchers to stop trains quickly in an emergency (including after the signal to start has been given) [James St 22/2012; Charing Cross 10/2013]

Important learning
- potential improvements in the design of trains

- Minimisation of force needed to extract an object from between door leaves
  - Forces applied by doors and locking devices
  - Design of seals

[Huntingdon 11/2007, Kings Cross 09/2012; Hayes & Harlington 12/2016]



Important learning
- for the entire industry

- improved information on door trapping incidents;
- strategies to manage over-crowding
- continuation of the work of the PTI risk strategy group
- **how to engage the public on PTI safety**

PTI incident at Bank (DLR) (ongoing investigation)

At around 21:30 hrs on 6 February 2017

- A passenger became trapped by their coat, in the closing doors of a train preparing to depart.
- The passenger managed to quickly get out of the coat, which remained trapped.
- A short time later, the coat was dragged into the tunnel by the train

The investigation will consider:

- how the train was dispatched
- the design and operation of doors
- processes used by DLR to manage dispatch of trains from stations
- the adequacy of the train and platform equipment used for train dispatch
- any relevant underlying management factors

Overturning of tram at Sandilands jct, Croydon

9 Nov 2016: Fatal tram accident at Sandilands Junction, Croydon

- tram overturned at about 70km/h (43.5 mph) on curve with 20 km/h speed limit
- about 70 passengers + driver
- 7 deaths and 16 serious injuries
- driver appears to have been unaware of his proximity to the junction until shortly before the curve
- although there was some limited braking, the hazard brake was not applied

The ongoing investigation (1)

The tram was transported to RAIB/AAIB site at Farnborough for detailed examination and testing

The ongoing investigation (2)

The RAIB's ongoing investigation will include consideration of:

- the sequence of events before and during the accident;
- events following the accident, including the emergency response and how passengers evacuated from the tram;
- the way in which the tram was being driven and any influencing factors;
- the design, configuration and condition of the infrastructure on this section of the route, including signage;
- the tram's behaviour during the derailment and how people sustained their injuries;
- any previous over-speeding incidents at Sandilands Junction; and
- any relevant underlying management/regulatory factors.

Questions?