AGENDA ITEM 5

TRANSPORT FOR LONDON

SAFETY, HEALTH AND ENVIRONMENT ASSURANCE COMMITTEE

SUBJECT : A REVIEW OF SPAD AND SPAD MANAGEMENT ON LONDON OVERGROUND

DATE : 5 OCTOBER 2011

---

1 PURPOSE AND DECISION REQUIRED

1.1 The Committee has requested further assurance about the Signals Passed at Danger (SPAD) performance on London Overground. This paper outlines what has been achieved and further work in progress.

2 BACKGROUND

Why SPADs matter

2.1 Signals are a key part of ensuring safety on the railway as they control access to sections of track (or signal blocks) and thus keep trains apart. If a driver misses a signal (and this can be for a variety of reasons), depending on the speed at the point of passing the signal, then the train may continue for a considerable distance before coming to a standstill. This can lead to a collision with another train that may be occupying the same block.

2.2 SPADs are therefore seen as key measures of safety on the railway and monitoring SPADs and ensuring effective management of SPAD risks is key to delivering a safe railway. Many SPADs occur at low speed, where the driver has applied the brakes too late and there is no chance of collision, and are lower risk. The rail industry applies a risk ranking of all SPADs to determine the potential for each event to cause harm. The risk ranking determines the level of investigation for each incident. A SPAD where the fault lies with the driver is termed a category A SPAD, and when a SPAD occurs where the signal has a defect it is termed a Category B SPAD. Also, the fitment of Train Protection Warning System (TPWS) at most junctions on the national network has greatly reduced the consequences of a SPAD event.

The Infrastructure

2.3 The London Overground is made up of five lines (North London (NLL), West London (WLL), East London (ELL), Gospel Oak to Barking (GOB) and Watford to Euston (DC)). Together these services cover 86 km of track, calling at 78 stations. On the majority of the system, Network Rail is the Infrastructure Manager, although on the core route of the East London Line (Dalston Junction to Surrey Quays) Rail for London (RfL) fulfils this role.

2.4 The trains on the majority of the lines are Electrostar four car Class 378s, with the capability to operate on 25kv Overhead line voltage, or 750v DC on the four rail

system, but on the GOB they are Diesel Turbostar two-car Class 172 trains. The cab design is unique on the 378s, incorporating both an end door assembly for detrainment and CCTV monitors for the in-cab Driver Only Operation (DOO) systems which are employed. Class 172 do not have end door detrainment and are not fitted with DOO camera systems as the Gospel Oak to Barking route is not DOO cleared.

2.5 The Train operator is London Overground Rail Operations Limited (LOROL), a joint venture between Deutsche Bahn and MTR. All the in service drivers are employed by LOROL, although a small number of Bombardier technicians shunt the 378s in the New Cross Gate depot, or when trains have a significant fault.

2.6 The Overground network is signalled by traditional colour light signalling, with trip cock protection on the section from Queens Park to Harrow and Wealdstone and Gunnersbury to Richmond. A TPWS is in place for all signals on the East London Line Core Route and on all high risk signals and junctions on the other lines in the Overground Network that are controlled by Network Rail. The depot at New Cross Gate is signalled, but these signals are not protected by TPWS.

2.7 TPWS is designed to stop trains which pass a signal at "danger", well before the point at which a collision with another train could occur. Any train that tries to pass a signal at danger will have its emergency brakes activated and the equipment is positioned to bring the trains safely to a stop; trains will be protected provided the speeds are 75 mph (120 km/h) or less. The maximum line speed of both 378s and 172s is 120 kph (75mph), but of course they average less.

3 THE LOROL DRIVER TRAINING AND DRIVER MANAGEMENT PROGRAMME

Background to the training programme

3.1 LOROL developed its approach to training based on the following criteria:

(a) the Office of Rail Regulation (ORR) Railway Safety Principles 1 (RSP1) that support the Railway and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS);

(b) a training structure to cover Normal – Degraded – Emergency modes of operation, to ensure learners had practical experience of normal activities before being asked to imagine potential degraded and emergency situations;

(c) develop and follow risk-based competence criteria created from a detailed task analysis and risk assessment;

(d) use the latest active learning approaches: Provide experience first where possible; Use simulation and safety discovery learning (SDL) methods; ensure learners take joint responsibility for their learning;

(e) require learners to complete daily learning experience logs to ensure that they recorded their experience, thoughts and learning points. As well as recording the amount of experience an individual gained, it also was a way of getting them to think about what they had learned;

(f) build in human factor controls and make information as user-friendly as possible;

(g) validate independently and seek to be the best in the industry;

(h) develop the managers who need to deliver competent drivers and provide them with any necessary guidance (trainers, driver instructors and driver managers); and

(i) once lessons have been learned and any necessary adjustments made through experience, seek formal independent inspection and certification of the driver training and the Competence Management System (CMS) against the RSP1 principles.

Staged independent validation

3.2 To ensure that the driver training and competence management system was as robust as it could be, LOROL commissioned industry specialists to validate independently the development work. This included the following validation exercises:

(a) a risk-based review of the competence standards and training programme was undertaken to validate that an appropriate risk-based approach had been taken;

(b) a validation and review after the first 12 months of experience was undertaken. This identified that the programme was appropriate, but recommended some strengthening to certain aspects including SPAD risk awareness and human factor elements of the programme. The recommendations were implemented for all training programmes;

(c) a second validation by Halcrow after several months of experience, which concluded that the programme was an example of industry good practice;

(d) an independent UKAS inspection of the driver competence management system (CMS) (training and ongoing assessment) was carried out in January 2011 and from that, further refinements have been made. UKAS accreditation has since been achieved, making LOROL the first Train Operating Company in the UK to achieve this status.

Current position of drivers

3.3 LOROL drivers currently operating are a mix of experienced drivers, some with over 20 years' driving experience, who were mainly transferred across to LOROL from London Lines/Silverlink and the newer ones who have been trained through the dedicated LOROL process.

3.4 There have been 23 SPADs across London Overground since June 2009; 20 have involved LOROL drivers, while three have involved Bombardier technicians undertaking shunting duties. Of those drivers transferred into LOROL from Silverlink, 9 out of the 20 SPADS were experienced by this group, while 11 were experienced by the newly trained group. However, there are 120 ex Silverlink drivers, while there are 200 LOROL trained. There are no signals with repeat SPADs. It is also clear that changes seem to be linked to slightly elevated rates; the LOROL drivers predominate in the year after the opening of ELL, while the Silverlink drivers predominate after the works re-signalling the North and West London Lines.

Further actions be taken by LOROL

3.5 LOROL has maintained a close focus on SPAD incidents and has set an approach that is designed to deliver zero SPADs and the following activities are in place:

(a) LOROL has created a new role of Driver Assessment Manager (DAM) to improve the quality, focus and commitment of DIs and Driver Managers (DMs);

(b) DI forums have been developed with a focus on improving clarity of the roles, and developing skills, knowledge and approaches;

(c) introduction of risk-based competence criteria and competence management processes for trainers, DIs and DMs;

(d) holding briefing sessions with drivers;

(e) LOROL has procured research to identify and analyse patterns and trends between recruitment, selections, assessment decisions and incidents and has made modification to the processes as a result;

(f) Trainees and drivers have been reassigned to other duties where appropriate;

(g) developing the routes (diagrams) that the train operators drive; and

(h) developing an awareness campaign to highlight key principles.

4 CONCLUSIONS

4.1 The LOROL driver training programme is structured to align with the ORR RSP1 principles and has been independently validated to be robust following four independent reviews of the programme against national criteria.

4.2 Recently, the ORR undertook a review of driver training at LOROL and concluded that there were no areas of concern.

4.3 Analysis of incident data across ELL and NLL does not highlight any specific trends or patterns. The balance of incidents is spread among the experienced and more recently qualified, with the more experienced being slightly more likely to have had a SPAD.

4.4 The programme of training and driver management is specifically directed to key issues.

4.5 LOROL has created some good models of thinking and managing concentration to help individuals control human factor issues. This is being further developed through the driver management programme.

4.6 Application of the defined procedures and processes can be improved through better day to day monitoring, focus of attention and development. That is now the focus of management attention.

4.7 LOROL is taking the continuing, but low, SPAD risk very seriously and will continue to review and where necessary implement further controls as

5 RECOMMENDATION

5.1 The Committee is asked to NOTE this paper.

6 CONTACT

6.1 Contact: Martin Brown, Director HSE London Rail
Number: 020 7027 8904
Email: MartinBrown@tfl.gov.uk