



Share With Pain

Thameslink Programme

**Train Conductor Shoe Damage Following Track Works on 17 June
and lessons learnt from IBJ failure on 27 May.**

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At 05.15 on 17th May following the hand back of a Thameslink Possession, the first passenger service travelling on the Up Charing Cross between Spa Road & London Bridge caught a traction cable with its conductor shoe.

The cable was severed and left a stub sticking up in the air, which was then caught by a second train causing it to lose all complete conductor shoes and damaging the connector beam on four carriages and disabling the train. It appears the cable had been left sitting high on the ballast near to the conductor rail following work in the area.



This caused severe disruption to the morning peak services and lead to 71 train cancellations, further train diversions and 2124 delay minutes.

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The investigation is underway and we know the cables were moved to allow the movement of tracked excavators along the ballast where a road had been removed

Immediate Lessons So Far.....

- Where cabling or other track equipment is moved for protection, the person moving the equipment takes responsibility to make sure its re-instated before leaving the area
- As part of Track Hand back processes, there are robust plans in place to check and be informed where work has been carried out
- Consider highlighting all cables with paint to make them more visible to check
- Make sure all personnel are familiar and competent in working and understanding 3rd rail traction areas

Key Findings

- ▶ Unable to establish when cables were moved. No 'Site-Eye' footage (nearest camera 600m away) or train mounted footage available to examine. Assumption must be cables were displaced on the night.
- ▶ Cable displacement believed to have occurred at 02:30 - 03:00hrs as 2 no. RRVs were moved towards C/E to finish scrap loading to 6C01.
- ▶ BBR have completed witness interviews. No one claimed responsibility for moving cables or noticed potential risk to cables.
- ▶ The 'Track Hand Back' Authorised Person failed to notice the displaced cables. On the night he had multiple tasks; was responsible for filling out the Form 'G' suite of paperwork (TEF3203) at two locations and engineering train management. He was propelling 6C01 on the UCX in order to stable on the 'OOU' former UPL and may have been distracted by having to step clear of rails in the fourfoot at the incident location (see photo on previous slide) causing him to miss the displaced cables. In addition there was no specific task lighting in operation at the time.

Key Actions

- ▶ BBR to review future site works and identify where jumper cables potentially intrude into the work 'envelope' and if appropriate cut back to reduce 'slack' (easy for jumpers, less so for transposition cables). All affected cables to be sprayed up to enhance visibility.
- ▶ Management of the Form 'G' process has been reviewed by BBR with particular focus on ensuring allocation of APs is balanced, pre-arranged and documented. This will ensure that APs are not overloaded with physical tasks. Ironically, on the night of the incident there were other AP qualified supervisors on site who could have shared the workload. During core weekend possessions a dedicated AP is nominated for hand back checks and imposing TSR/ESRs as required.
- ▶ The requirements for a Form 'G' is now stipulated on the weekly 'Race Card' and confirmed at the nightly pre-possession construction meeting. The APs will confirm to the ES that the track is fit for the 'Planned Opening Speed' (or otherwise) and issue a copy of the Form 'G'. This will ensure the ES position is not compromised when 'clearing' the site and he receives the correct number of Form 'G's and can confirm to the PICOP that the work site is safe for the passage of trains.
- ▶ The Form 'G' process is explained in next slide.

Form 'G' TEF3203 issue 4 Dec'2014

- ▶ Form 'G' Infrastructure Conformance Certificate is an overarching document that draws together Forms 'A' to 'F' and is produced by the Track-Back Authorised Person (AP). It certifies that the supporting "information is accurate and deem the track to be safe for the passage of trains at the Opening Speed" as determined by the AP. The Form 'G' suite also contains two appendices of guidance notes. Generally there will be a Form 'G' per affected track.
- ▶ Forms 'A' to 'F' are produced either by the AP or a competent 'checker' who also confirm compliance with planned opening speed or otherwise. The AP will sign to confirm receipt of Forms 'A' to 'F'.
- ▶ Form 'A' Track Geometry Certificate verifies geometry, clearances, variations from design, Standard tolerances, non-compliances and compliance with the planned opening speed (could be Line Speed or planned TSR or ESR). This certificate will be completed either by the AP or a 'Checker' who is often an engineer if tamping has been undertaken.
- ▶ Form 'B' Systems Component Certificate verifies componentry compliance. Item 8 specifically refers to conductor rail equipment and confirming "obstruction free."
- ▶ Form 'C' CWR Stress Condition Record covers adjustment switch settings, stress status, CRT assessment which could be imposition of a heat ESR. This certificate will be completed by a competent 'Person in Charge of Stressing'.

Form 'G' TEF3203 issue 4 Dec'2014

- ▶ Form 'D' Signalling Reconnection Certificate verifies equipment affected by the works and which signalling test procedure is used, SMT, G110, A210 or A110 with any non-compliances and mitigations. This form is signed either by the SMT/G110 Tester or Signalling Works Tester.
- ▶ Form 'E' Electrification Certificate is a conductor rail compliance statement verifying that the ETE has been installed either in “accordance with the design for new works or in accordance with the installation that existed prior to the renewal.” This certificate will be completed by a competent ETE/ETM checker.
- ▶ Form 'F' Site Condition and Speed Restriction Signage Certificate covers level crossings (n/a), TSR/ESR compliance, site tidiness and security statements. Item 23 specifically addresses “tools, equipment, scrap, particularly rail off-cuts, and any other item that could compromise the safe passage of trains if placed on or near the line have been cleared away or secured” and should have been a prompt in the case of the displaced cables.
- ▶ On completion of compliance checks the AP(s) will confirm to the ES that the track is fit for the 'Planned Opening Speed' (or otherwise) and issue the ES a copy of the Form 'G'. The Form 'G' pack is retained and available for audit purposes by BBR as part of their Competency Management System. .

Key Actions

- ▶ WPP to refer to risk in Sections A2/B3 Activity and Site based risks and reference within Task Briefing Sheets.
- ▶ TLP is proposing, where appropriate an additional ODM may be rostered to walk through with the AP with more of a focus on operational issues.
- ▶ Communications protocol from and to KICC will initially be via the TLP ODM who will, as necessary contact the site team(s). As circumstances unfold the NR Construction Manager may become involved but the ODM will remain the conduit. The ODM is also available to the MDU if an incident occurs within the TLP possession.
- ▶ Driving Cab Passes to be made available to nominated BBR staff to cab ride weekly to check materials, tools and scrap clear of the track. BBR/NR staff be able to cab ride on first trains from NX and or NXG as circumstances.
- ▶ NR Construction staff to focus site compliance checks on 'riskiest' activities.
- ▶ NR Construction Manager, BBR and SRA teams to remain at NXG until after first few trains have run without operational issues. This will include a now more robust pre and post possession meeting chaired by NR Construction Manager on duty and discussed further by day teams at 08:30hrs construction meeting.
- ▶ Implement a scrap recovery strategy (all parties including MDU) scrap clearance with 'holding area' adjacent to BDU site for recovery by scrap trains). NR PM nominated.
- ▶ BBR and NR to carryout 3 monthly audit of Form 'G' records.

Lessons following PE/PF IBJ incident 27 - 29 May

- ▶ Benkler site assembled IBJs generally only temporary works or where shop made joints are not practical, for example within or abutting S&C. Shop made joints could have been used for HL03 but would have generated considerable welding which would have impacted stressing programme.
- ▶ Benkler IBJs to fitted by BBR staff (not subcontractors) and supervision to maintain quality. On site training/practice will be arranged on 'OOU' lines.
- ▶ Benkler IBJ specific tool chest to be used. Regular checks to saws and drills to ensure accuracy of cutting and drilling. New Cembre automatic rail saw to be used which eliminates operator errors. Mag-wands and magnetic mats to be used to trap swarf and steel filings.
- ▶ BBR QA sheet for IBJ installation to be mandated and associated track circuit record card NR/SMS/T260/RC/02 photographed.
- ▶ Photo record showing rail end preparation and application of 'Elmotherm' anti-tracking varnish. Air wand compressed air cans to be used.
- ▶ Tenconi 'Labyrinth' lipped End Posts to be used vice standard Benkler items.
- ▶ Permanent Particle Rail Magnets to be used where tight curves and sidewear iron filings is considered a risk.

Lessons following PE/PF IBJ incident 27 - 29 May

- ▶ Post installation follow up kango packing and check tightening of bolts.
- ▶ Weekend 14 – visual inspection of 6 Benklers installed in UCX during HL03 between 735B and 717B pts.
- ▶ Use of Rocoil testing method – subject to availability and training of SRA staff. Further discussion required with the SME as this method only proves IBJ integrity when in failure mode

What will be different going forward

- ▶ Milestone incentive payments are being withheld post commissioning until “satisfactory asset performance” is achieved. This will retrospectively be applied to EA04 and HI03.
- ▶ Periodic audits on site by NR Construction team to ensure compliance with Form ‘G’ checking requirements.
- ▶ Joint NR/BBR/SRA Project Manager mid-week site surveillance inspections on a quarterly basis.