

5th October 2011

No: IGSB 254

Infrastructure Group Safety Bulletin

Common factors in Isolation Incidents

This bulletin is for the attention of:

All employees (including contractors) whose work activity involves planning or undertaking work on or near electrified lines. This bulletin applies to both Infrastructure Maintenance and Infrastructure Project activities.

Background

Investigations into recent incidents involving flashovers of traction current at Hendon, North London, (March 2011) and Littlehampton, Sussex, (July 2011) have identified a number of common causal factors.

Although occurring on lines equipped with different electric traction supply systems, both incidents occurred at locations where connections from sidings joined the main line. Photographs of the locations are included below. In each case the isolated equipment is shown in green, with the live equipment shown in red. The blue arrows indicate the points at which the accidents occurred.

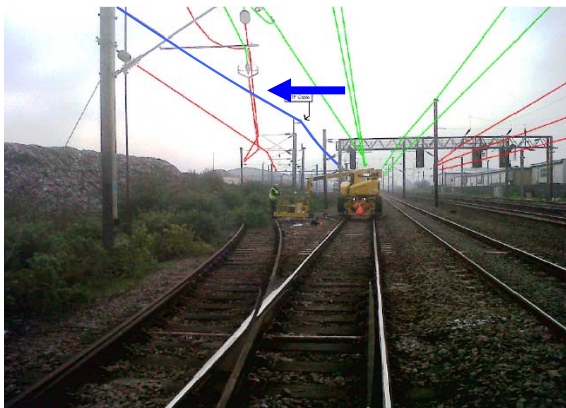


Figure 1: Hendon

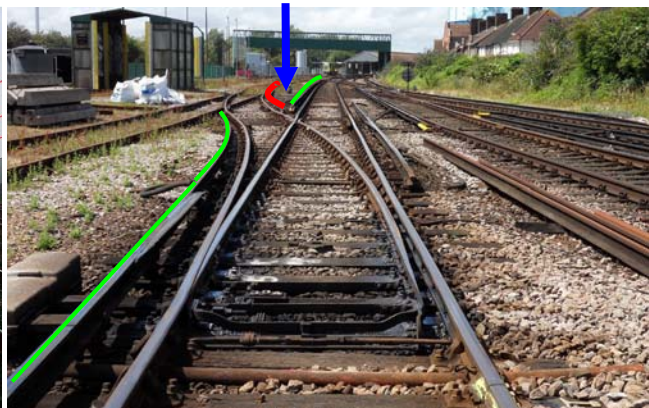


Figure 2: Littlehampton

The incident at Hendon occurred when the installer of an Autotransformer Feed (shown in blue on photo) came into close proximity with live OLE leading to the siding.

At Littlehampton staff commenced work on a section of live conductor rail in the mistaken belief that it had been isolated; flashover of traction current occurred when a piece of equipment came into contact with adjacent sections of live and isolated conductor rail, causing a short circuit. In both cases the permit to work* correctly showed that only the main lines were isolated.

** Note: In this bulletin, the term "Permit to Work" refers to the Conductor Rail Permit (DC systems) or OLE Form C (AC Systems), as appropriate.*

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Common factors

Investigation has identified the following causal factors common to both incidents:

- The planning stage did not identify that there was a need to isolate adjacent sidings whilst the particular task was being carried out;
- Whilst it had been previous practice to include the sidings in the isolation, this had not been done on these occasions, for operational reasons;
- Planning had not considered that it would have been possible to have used local switching arrangements to isolate traction power supply equipment immediately adjacent to the site of work, yet retain operational use of the sidings.
- On the day of the accident additional/amended work was being carried out that had not previously been planned in detail;
- Those undertaking the task assumed that sidings adjacent to the main line were isolated, even though the permit to work clearly showed that only the main lines were isolated.

Actions

Engineers, Project Managers, Line Managers and planning staff are reminded that, during the work planning stage, a full assessment of electrical risk must be undertaken in accordance with relevant instructions for working on electrified lines (AC lines – NR/SP/ELP/29987, modules 2 & 3; DC lines – NR/WI/ELP/3091). This assessment should include a site visit to all areas to check equipment configuration, feeding points, points of isolation and earthing/strapping points. Particular attention should be given to connections to/from sidings or adjacent lines, feeder stations, aerial busbars, live switches/terminals/equipment, etc.

Whenever work is to be added or amended at a late stage during the planning process, after the isolation has been planned, the Nominated Person (AC)/Isolation Planner (DC) must check that the isolation remains suitable for the work being carried out.

The COSS who receives the permit to work must include full details of the safe working limits of the isolation in his safe system of work briefing. It is the duty of the COSS to ensure that all persons in the workgroup are aware of, and fully understand, the safe working limits.

Extreme care must be exercised if tasks are added or changed during the course of the work. Whenever this occurs, the COSS must refer to the permit to work to verify that the safe working limits will not be exceeded. If this is not sufficiently clear, the COSS must seek advice from the person who issued the permit to work.

Employees working on or adjacent to electrified lines must **NEVER** assume that an isolation is identical to one previously granted, even if the activity is a continuation or repeat of previous work. The activity must always be governed by the safe working limits shown on the permit to work. **Every isolation must be considered to be unique.**

If there is any doubt as to whether a piece of electrical equipment is live, or whether it is safe to work in the vicinity, work must immediately cease and all persons must stand clear. Work must not resume until advice has been obtained from the person who issued the permit to work.

This Safety Alert must be displayed for 28 days on the Safety Notice Board

Issued by: Justin Page, Head of Infrastructure Maintenance Safety and Compliance