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RAILTRACK
Safety & Standards

Briefing Notes for:	Electrified Lines Traction Bonding		
Document No:	GL/RT1254	Issue:	1
Subject Committee(s)	Electrification Subject Committee Operations Standards Subject Committee		
Issue date:	01/04/2000		
Initial Compliance Date	03/06/2000		

BACKGROUND

This document incorporates amendments to the existing GM/RT1010, but due to recent changes in the numbering format of Railway Group Standards it now appears as Issue One of GL/RT1253 and supersedes GM/RT1010.

The amendments resulted from a review of GM/RT1010 against the background of higher speed (in excess of 125mile/h); tilting operations and the introduction of a new traction power supply system. This review identified that the following needed further consideration:

- the requirement to bond all return current circuits to earth as this is inappropriate for some traction power supply systems such as the auto-transformer power supply system;
- control of the risk of signalling rails becoming live from inadvertent contact with live conductors; and
- management of the risk caused by failure of traction bonding.

A primary objective of the draft of the document was to make it generic, and therefore applicable to envisaged future traction power supply arrangements. The document prescribes the measures necessary to control the risk of propagation of stray currents from DC traction systems, with particular reference to the additional hazards presented by dual-electrified DC / AC interfaces (including interfaces with auto-transformer systems).

KEY CHANGES INTRODUCED BY THIS STANDARD

- Withdrawal of GM/RT1010 Issue One– Electrified Lines Traction Bonding
- Introduction of GL/RT1254 Issue One – Electrified Lines Traction Bonding

The document has been categorised in the GL (Electrification) series.

The following aspects were considered in the drafting of the document:

- Consideration of the general bonding needs of auto-transformer systems, and the higher currents associated with high speed / tilt;
- revisions to align definitions and principles with EN 50122-1, and to concentrate on the control of *exported* DC stray currents and risks of electric shock, in contrast to GL/RT1253 which is now restricted to the effects of *imported* DC stray

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- currents;
- the treatment of protection of 'conductive parts' has been clarified, with particular reference to signalling rails and site specific risk assessments. Clauses have been added to deal with the situation where load or fault currents have increased beyond the capability of the bonding;
 - additional wording now covers the special safeguards required in dual-electrified areas and at interfaces with other systems. A clause also covers possible effects on trains at insulated rail joints;
 - the clause concerning inflammable gases and liquids has been expanded to include operating procedural needs;
 - clause 5.1 on 'Processes' now includes the requirement to enforce minimum times to repair defective bonding, based on risk assessment; and
 - a new clause, transferred from GL/RT1253 at drafting, mandates the Infrastructure Controller to co-operate with affected third parties to mitigate effects through joint corrective action.

These measures are complimentary to those contained within GL/RT1253 in that they control the propagation or export of DC stray current from DC electric traction systems. The standard mandates maximum values for accessible and touch voltages and ensures the specific requirements to reduce the risk of arcing and hence explosion at installations where inflammable gases or liquids are transferred are maintained. They also require the Infrastructure Controller to establish the safety criticality of the bonding arrangements and to institute systems or procedures to correct failures based on risk assessments.

COMPLIANCE

The provisions in this document, GL/RT1254 are to be complied with from 3 June 2000.

Railway Group Standard GM/RT1010 will be withdrawn with effect from 3 June 2000.