

TECHNICAL INSTRUCTION

TI 077
Issue 1
September 2007
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NETWORK RAIL - SIGNAL ENGINEERING Equipotential Bonding of Metalwork

Relevant Standard: NR/SP/SIG/10664 General Instructions to Staff Working on S & T
Equipment: NR/GI/A012 Competency

Purpose of TI

SIN 091 was issued to assist in assessing the risks of touch potential where equipotential bonding is not provided. This TI amends the General Instruction A012 on Competency to incorporate a safety warning where metallic signalling housings are not bonded.

Scope

Any metallic surface where there is a risk of electrical potential difference.

Background

Following a staff injury, SIN 091 was issued. A survey gathered information on the state of equipotential bonding covering location cases, equipment rooms, relay rooms and signal boxes housing signalling equipment. Results showed that a high proportion of equipotential bonding was not to the current standard for new work. A risk analysis later indicated that there is only a very low risk to staff, as there have been an extremely low number of minor injuries caused by touch potential differences of adjacent metallic surfaces. In the vast majority of instances, there is no significant touch potential difference and therefore no electrical shock hazard, whether equipotential bonding is present or not.

From the SIN 091 survey results, it was found that remedial installation of equipotential bonding was not reasonably practicable, based on risk and the number of incidents over many years. Although modern installations are equipotential bonded, older sites are installed to the standard of the time and such bonding is almost certainly not present.

Abbreviations & Definitions

GI – General instructions

NR/GI/A012 Clause 6.

Add the following to the end of clause 6:

Modern practice provides equipotential bonding for metallic surfaces within touching distance. This bonding reduces the risk of electric shock. Many older installations have no such bonding. A small risk of electric shock arises where adjacent metallic structures are not electrically bonded together and are within touching distance (typically 2.5 metres or less). Electric shock is possible if there is a touch potential difference between metallic surfaces. To avoid the small risk of electric shock, staff shall not touch adjacent metallic surfaces at the same time unless absolutely essential.

If adjacent surfaces need to be touched at the same time, staff shall take care to confirm that no potential difference exists. If touching adjacent metallic surfaces is either necessary or likely to occur accidentally options for reducing the risk include temporary insulation shielding or insulating gloves. If no potential difference exists but there is reason to anticipate one developing during work, temporary bonding may be necessary.

For signal engineering purposes, location cases, relay room and signal box racks, may typically be within touching distance of other location cases, metal staging, handrails, metal fencing and other racks and cubicles.

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Compliance Requirements

Immediate.

Action Required

This TI is a reminder of the danger of touch potential difference.

Staff to be Briefed

All Signal Engineering Staff.

Expiry Date

To be withdrawn on update of NR/SP/SIG10664 NR/GI/A012.

END

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