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Level 3

Instructions for making out, issuing and cancelling high voltage Permits to Work, Sanctions for Test and Circuit State Certificates

Endorsement and Authorisation

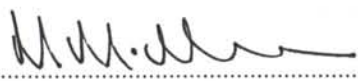
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Issue record

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1	March 1998	Issued as RT/E/S/21067.
2	April 2006	Re-issued as a SAF3 Business Process Document, NR/WI/ELP/21067.
3	August 2008	Phase 2A/Engineering reorganisation responsibility change. Issued as NR/L3/ELP/21067.
4	March 2011	Complete rewrite of standard following incident at Kenton substation.
5	December 2011	Standard amended following feedback from rewrite issued in March.

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 3 December 2011.

Reference documentation

Engineering Recommendation G38/1. *Operational Procedures associated with Electricity Supplies Traction Purposes on A.C. and D.C. Electrified Lines.*

NR/SP/ELP/21060, *Issue of safety documentation for work on 650/750 V D.C. apparatus.*

NR/SP/ELP/29987, *Working on or Near 25kV A.C. Electrified Lines.*

NR/WI/ELP/3091, *DC electrified lines working instructions.*

NR/WI/ELP/27051, *Working Instructions for D.C. electrified lines in the Liverpool Area.*

NR/WI/ELP/27052, *Work Instructions for DC Electrified Lines on the Northern City Line.*

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1 Purpose

This Level 3 standard forms part of a set of Network Rail standards that govern safe working on or near its electrical equipment, distribution systems and traction supply systems.

2 Scope

This Network Rail standard specifies instructions for the making out, issuing and cancelling of Permits to Work, Sanctions for Test and Circuit State Certificates for work on high voltage equipment.

Apart from the following exceptions, these instructions specify details of the actions required to make high voltage equipment safe prior to and during the issue of safety documentation. They apply to work on high voltage equipment in switching stations and substations, and on high voltage equipment forming part of Network Rail controlled infrastructure including electric traction systems.

This standard does not apply to equipment covered by the following Network Rail standards:

- a) electrical equipment in D.C. traction substations covered by NR/SP/ELP/21060;
- b) A.C. electrified track: any electrical equipment or overhead line equipment covered by NR/SP/ELP/29987;
- c) D.C. electrified track: any electrical equipment or overhead line equipment covered by NR/ WI/ELP/27316;
- d) D.C. electrified track: any electrical equipment covered by NR/WI/ELP/3091, NR/WI/ELP/27051 and NR/WI/ELP/27052.

However, for certain works, there will be an interface between them. In such circumstances, where the work activities covered by other Network Rail standards create an interface with this standard, a method statement is required to be produced to demonstrate the integration of both. This method statement is required to be authorised by the Electrification & Plant Maintenance Engineer (E&PME) for both maintenance and project work prior to any work being undertaken.

These instructions do *not* apply to high voltage electrical equipment that is permanently removed from all possible sources of HV supply and is not part of the operational infrastructure, nor to work on electrical equipment fitted to traction or rolling stock.

These instructions do not apply to signalling power supply networks operating at up to 650 volts AC earth free (IT systems).

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3 Definitions

For the purposes of this standard, the following terms and definitions apply:

additional earth	earthing equipment of Approved type that is applied after the issue of a safety document <i>NOTE An example is an earth applied at a point of work.</i>
Barrier	permanent or temporary obstacle designed to prevent approach to live equipment and exposed live conductors <i>NOTE A barrier may be in the form of a rope and flags, coloured tape or plastic fencing.</i>
Caution Notice	notice in approved form conveying a warning against interference with such additional words as Network Rail may determine
Circuit State Certificate (CSC)	form of declaration as detailed in Electricity Association Engineering Recommendation G38/1 (or equivalent), detailing the isolation, earthing and locking off carried out on high voltage electrical equipment where there is an interface between Network Rail and another authority, for example National Grid (NG), a Distribution Network Operator (DNO), or another railway-related company
Competent Person	Person with Distribution competence Level A, Level B, Level D or OLE Level A/Nominated Person (NR/L2/ELP/29987)
Danger Notice	notice in approved form reading "Danger" with such additional words as Network Rail may determine, used to draw attention to the presence of high voltage equipment remaining live.
Dead	at or about zero voltage and disconnected from any live system
Earth	conductive mass of the earth, whose electric potential at any point is conventionally taken as zero
Earthed	connected to earth through switchgear with an adequately rated earth capacity, or by approved earthing leads

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Electrical Control Operator (ECO)

Person having control of the power supply to the electric traction system and who is responsible for all switching operations or switching operations to facilitate isolations being undertaken by Level A persons

electrical equipment

includes anything used, intended to be used or installed for use, to generate, provide, transmit, transform, rectify, convert, conduct, distribute, control, store, measure or use electrical energy

high voltage (HV)

normally exceeding 1000 V A.C. or 1500 V D.C. between conductors or 600 V A.C. or 900 V D.C. between conductors and earth

Isolated

disconnected, separated and secured from all sources of electricity

Level A person

person responsible for the establishment of safe systems of work for HV electrical equipment for which they have equipment specific competence

NOTE Responsibilities include but are not limited to: planning and managing the isolation, communicating with persons involved in the isolation process and associated work activities, instructing the switching of equipment, instructing the application of earths and the issuing and briefing of safety documentation.

Level B person

person with equipment specific competences to isolate, test and earth those equipments under direction from a Level A person, receive and hold safety documentation and communicate with relevant persons involved in the isolation process and work activities

Level D person

person competent to receive and hold safety documentation and communicate with relevant persons involved in the isolation process and work activities

Live

electrically charged

lockout box

A device for securing keys to points of isolation which includes "key safes", "lock off boxes" and may also include systems utilising multi-locks and padlocks

method statement

document that details the methodology of safely applying the requirements of this standard in relation to the work to be undertaken

NOTE This term includes work package plans and task briefing sheets.

open

A device or piece of equipment that has been operated to the 'open' position or the 'off' position

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Permit to Work (PTW)

safety document in a format indicated in this standard, issued and signed by a Level A person, specifying the high voltage equipment which has been made safe to work on and the work which is to be carried out

safety documentation

Permit to Work, Sanction for Test or a Circuit State Certificate

Sanction for Test (SFT)

safety document in a format indicated in this standard, issued and signed by a Level A person, specifying the high voltage equipment that has been made safe for the purpose of testing, but which allows the temporary removal of specified earths for the facilitation of testing

Senior Authorised Person (Electricity Industry)

Electricity Industry Senior Authorised Person who has been appointed in writing to issue and cancel Safety documentation

Switching off

operation of a device (e.g. circuit breaker, switch/disconnector) to break the HV electrical circuit

testing

activity that requires a Sanction for Test to be issued in order to permit the application of a test voltage or current to HV electrical equipment or conductors

work

activity involving electrical equipment where safety documentation is required to be issued to mitigate the risk of contact with live equipment or conductors, or those that may become live, which would otherwise cause harm or injury

Working Party

persons under the direct supervision of the competent person holding the safety documentation including the competent person themselves when working alone.

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4 Forms

The following official forms shall be used in connection with these instructions.

- Form 21067/P (BR12012/1 until old stock exhausted), *Permit to Work for High Voltage Equipment*.
- Form 21067/S. Version 2, *Sanction for Test for High Voltage Equipment*.
- Form 21067/C (BR12012/10 until old stock exhausted), *Circuit State Certificate for High Voltage Equipment*.

Caution Signs and Danger signs shall be as specified in Appendix A.

An example Form 21067/PF – HV Planning Form (Southern Routes specific) is [attached](#) in Appendix B.

An example Distribution Isolation Details Form (IDF) for use within AC OLE areas is [attached](#) in Appendix B.

5 Work on, or testing, high voltage electrical equipment

5.1

Work or testing shall not be carried out on any high voltage electrical equipment covered by these instructions until such times as the equipment has been made safe and the applicable safety documentation has been issued for that equipment. The safety documentation required shall be either a Permit to Work or a Sanction for Test.

5.2

A Permit to Work and Sanction for Test shall have equal status.

5.3

For work to be undertaken on high voltage electrical equipment, a Permit to Work shall be issued.

5.4

For testing to be undertaken on high voltage electrical equipment, a Sanction for Test shall be issued.

5.5

A Sanction for Test shall not be issued at the same time as a Permit to Work on the same equipment or vice versa. Only one SFT can be issued at a time on a given piece of equipment.

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5.6

When testing for which a Sanction for Test has been issued is not completed, the work shall be suspended and the SFT shall be cancelled. It is not permissible for the SFT to remain in force with testing suspended and it shall be cancelled and earths re-applied.

5.7

Where required, a Circuit State Certificate (CSC) shall be issued with either a Permit to Work or a Sanction for Test. The same CSC shall not be issued with both safety documents.

5.8

A Permit to Work does not need to be issued prior to a Sanction for Test if testing is the sole purpose of the isolation. Where equipment specific instructions require a Permit to Work to be issued prior to a Sanction for Test, these equipment specific instructions shall take precedence.

5.9

The issue of any safety documentation shall be preceded by:

- a) an outage planning process;
- b) communications with relevant personnel (ECO where applicable);
- c) a process to isolate, test, earth and secure the isolation;
- d) effective and sufficient application of Danger Notices and Caution Notices; and
- e) deployment of barriers to maintain minimum clearances.

5.10

The Level A person shall be responsible for planning, selecting and issuing the correct safety documentation applicable to the work or testing being undertaken within the constraints of relevant Network Rail standards and work instructions.

5.11

There shall be a permanent written record of the issue of each safety document. A detailed record entry shall be made within the substation log book.

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5.12

When the HV electrical equipment concerned is under the jurisdiction of an Electrical Control Room, arrangements associated with the issue, transfer and cancellation of safety documentation shall be communicated to the Electrical Control Operator.

The Electrical Control Operator shall record specific details of the safety documentation within the control room Log Book, including:

- a) whom issued by;
- b) whom issued to;
- c) time and date of issue;
- d) document unique number; and
- e) the purpose for which it has been issued (task description).

5.13

Where there is no Electrical Control Room involvement, other suitable arrangements shall be made by the Maintainer to provide effective co-ordination of safety documentation and log book entries.

5.14

By exception where it is necessary for testing purposes to restore the normal HV supply to equipment covered by an SFT, a special procedure shall be produced in advance by the Competent Person and written approval by the Electrification & Plant Maintenance Engineer (E&PME) obtained.

5.15

During the Isolation & Earthing process, the Level A shall instruct all personnel not directly involved with the I&E to move to a position safe from the equipment to be operated. Additionally, during switching operations, all personnel shall move to a position of safety that is external to the substation.

5.16

During the implementation of the Isolation & Earthing, all personnel not directly involved with the work shall, at all times, remain unobtrusive to the process being undertaken.

5.17

Where a specific HV cable to be worked upon has been identified, through visual/hand tracing over its whole length from the point of work to the termination where earths are applied, the normal I&E process shall be followed including the issuing of safety documentation prior to any work being undertaken on the cable.