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Level 2

Principal Supply Point (DNO + DG) Specification

Endorsement & Authorisation

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Compliance

This Network Rail Work Instruction is mandatory and must be complied with by Network Rail from 6 October 2007.

When this Work Instruction is implemented, it is permissible for all projects, which have formally completed GRIP Level 4, to continue to comply with the Issue of any relevant Network Rail Standards current when GRIP Level 4 was reached and not to comply with requirements contained herein unless the head of electrification and plant engineering has stipulated otherwise in the accompanying Briefing Note.

Where the head of electrification and plant has specified that all projects will comply with the requirements, specific authority not to comply can be sought in the usual manner using the appropriate non-compliance authority processes described in Network Rail Standard, [NR/L2/STP/001](#) Network Rail standards management – Process requirements.

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1 Purpose

This specification describes the requirements for a 'DNO and DG' (Distribution Network Operator and diesel generator set) based principal supply points.

Assessment of compliance with the guidance contained herein shall be made at the AIP stage of a project.

2 Scope

This document specifies the requirements for 'DNO and DG' installations used to provide a secure electrical supply to signalling and other safety critical loads.

Requirements for the design, manufacture, testing at both supplier premises and at site, delivery and commissioning of a PSP utilising a DNO and a diesel generator supply, together with the preparation and supply of associated documentation, drawings and manuals are specified in this document.

The accommodation for the equipment is not prescribed in this specification, but the equipment shall be constructed in a manner that enables it to be installed in existing rooms/spaces as well as bespoke containers. Refer to NR/PS/ELP/00021 for a list of typical accommodation for diesel generating sets.

3 References

BS7671	16 th Edition Wiring Regulations
ER G59/1	Recommendations for the connection of embedded generating plant to the Public Electricity Suppliers Distribution System
GM/RC/1500	
GM/RT/1031	
GI/RT7017	Signalling and Safety Related Power Supplies
NR/PS/ELP/00021	Product Specification for Diesel Generators for Signalling Supplies.
NR/GN/ELP/27319	Fixed plant standards maps (Appendix H)
NR/L2/ELP/27238	Maintenance specification for fixed plant equipment

4 Abbreviations and Definitions

DNO	Distribution Network Operator
PSP	Principal Supply Point
NRV	Non Return Valve

5 General Requirements

5.1 Standards and Legislation.

The installation shall be compliant with the Statutory Instruments (SI), Regulations, and Orders, Railway Group and Network Rail Standards including:

- a) The Health and Safety at Work etc. Act 1974;
- b) The Electricity at Work Regulations 1989;
- c) Supply of Machinery (Safety) Regulations 1992;
- d) Pressure Vessel (Safety) Regulations 1991;
- e) The Control of Substances Hazardous to Health Regulations (COSHH) 1999;
- f) Control of pollution (Oil storage) Regulations England 2001
- g) BS7671: IEE Wiring Regulations
- h) NR/SP/ELP/00021 Standby Diesel Generators for Signalling Supplies
- i) ER G59/1 Recommendations for the connection of embedded generating plant to the Public Electricity Suppliers Distribution System

5.2 Design

The PSP shall be designed with acknowledgement for both the safety of the maintainer, and the desire to achieve the minimum maintenance requirements and repair times.

Measures shall be taken to ensure the safety of persons concerned in its construction, operation, maintenance, repair and eventual disposal. Equipment required for the safe and satisfactory operation, control and protection of the PSP shall be installed.

Safe and appropriate access to equipment requiring operator interaction or maintenance shall be provided. In particular, facilities for interlocking, padlocking, earthing, insulating, screening, access and enclosing equipment shall be provided as appropriate. The generator and associated switchgear/controlgear shall be installed in separate rooms/compartments.

The 'DNO and DG' installation shall comprise of the following components:-

- a) One or more electrical supplies sourced from the DNO. Where more than one supply is obtained from the DNO, the supplies must as far as practicable be from different sources.
- b) Diesel generating set.
- c) Means of automatically exchanging the DNO supply for one fed by the diesel generator and vice-versa.
- d) Insulation Monitoring
- e) Distribution Switchgear
- f) Remote Condition Monitoring Facilities
- g) Domestic/Trackside Distribution
- h) Domestic Facilities
- i) Provision for subsequent installation of a UPS

NOTE When selecting equipment, due regard shall be paid to the existing asset base i.e. duplicate equipment where appropriate.

5.3 Construction

Each PSP shall be designed and constructed so as to provide safe and reliable operation throughout the working life of the equipment.

A risk assessment report shall be provided for materials used to construct or maintain the 'DNO and DG' installation if they fall within the scope of the COSHH regulations. The risk assessment report shall cover the service life of the equipment and its eventual disposal.

5.4 In-service Life

All PSP equipment, which has been maintained in accordance with the supplier's instructions, excluding the battery system and other consumable items, shall be capable of performing its intended function, whilst meeting its reliability target, for a service life of a minimum period of 30 years.

NOTE Compliant proposals to the stated design life are required, however alternatives which may provide business benefits will be considered. Where an alternate proposal is deemed beneficial, application for non-compliance to the design life would be made with a whole life cost assessment during to GRIP stage 3.