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Date:	06/09/2014
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Level 2

Signalling Testing Processes for Modular S&C Schemes

Endorsement and Authorisation

For endorsement, authorisation and issue record of this document, please refer to NR/L2/SIG/30014

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Issue record

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Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 7 March 2014.

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 3 (Option Selection) to continue to comply with the issue of any relevant Network Rail standards current when GRIP Stage 3 was completed and not to comply with requirements contained herein, unless stipulated otherwise in the scope of this standard.

Reference documentation

Group Standards

GE/RT8000	Rule Book
GC/RT5021	Track System Requirements

Company Standards

NR/L3/INI/CP0044	Work Package Planning
NR/L2/INI/CP0075	Procedure for the Entry into Operational Service of Railway Infrastructure
NR/L3/INI/CP0077	Signalling Pre Commissioning Verification Requirements
NR/L3/RSE/100/02	Safety Verification
NR/L2/SIG/10064	General Instructions to Staff Working on S&T Equipment
NR/L2/SIG/11201	Signalling Design Handbook
NR/L3/SIG/11303	Signalling Installation
NR/L2/SIG/30014	Signalling Works Testing Handbook
NR/L2/SIG/30014/C510	Handover for Signalling Works Testing
NR/L2/SIG/30014/D110	Signalling Works Test Specification and Certificate Requirements
NR/L2/SIG/30014/D115	Signalling Works Defined Checks and Tests
NR/L2/SIG/30014/D120	Signalling Works Test Specifications
NR/L2/SIG/30014/E110	Signalling Works Testing Glossary
NR/L3/SIG/30070	Signalling for Modular S& C Renewals
NR/L3/SIG/30071	Specification for Points Interface Location
NR/L3/TRK/2070	Design Specification for S&C System for NR60/HPSS & NR60/Hydrive Configurations

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1 Purpose

This document is part of the suite of documents relating to the Modular Switch and Crossing activities and contains the process for testing and commissioning signalling equipment associated with new S&C layouts that have been designated as Modular at the inception stage of the End to End process.

This Level 2 document sets out the mandatory procedures and process controls necessary to confirm that new signalling associated with Modular S&C installations, and alterations to existing installations, are independently tested in a manner that assures:

- Compliance with the Project specifications and Design Details; and,
- Fitness for purpose before they are offered for Entry into Operational Service.

It also provides a framework of procedures and process controls that are, as far as practicable, consistent across the Network Rail infrastructure for this type of work.

2 Scope

This level 2 standard applies to testing of signalling equipment associated with Modular S&C installations.

Modular Signalling testing requirements are detailed in [NR/L2/SIG/30097](#), and that standard shall take precedence over this standard with respect to Modular Signalling Projects. However, where [NR/L2/SIG/30097](#) is silent on any aspect of signalling works testing, this standard shall apply instead.

Manufacturer's product testing is the quality assurance testing in the factory of discrete off the shelf products or equipment. This testing would be carried out to standard drawings in accordance with manufacturer's Quality System, and is certified by the issue of Certificates of Conformance. Manufacturer's product testing is outside the scope of signalling works testing, and is considered to be part of the supply chain quality management system. Where this type of testing is used for equipment provided as part of the Modular S&C systems, the product or equipment shall be supplied with a Certificate of Conformance and form part of the Chain of Custody

Off Site Testing comprises any testing of bespoke, uniquely wired equipment, bespoke systems, data or software – but may involve products already Quality assured by the manufacturer - that is carried out before such equipment, systems, data or software is installed on site in its final configuration. Off-site testing of signalling equipment associated with Modular S&C installations is within the scope of signalling works testing, and shall be carried out in accordance with the requirements of this standard.

Where there is a conflict between the processes and requirements shown in this standard and [NR/L3/SIG/30071](#), this standard shall take precedence. Similarly, where this specification is silent, the requirements of [NR/L3/SIG/30071](#) shall be followed.

Where neither this specification nor standard [NR/L3/SIG/30071](#) contains a requirement, [NR/L2/SIG/30014/A110](#) shall be followed.

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3 Flowchart

See Appendix A.

4 Procedure

4.1 Background

The introduction of the 24 hour railway and the resultant shortened possession availability has promoted the development of Modular S&C approach to allow the installation of a set of single point switches in under 8 hours. To achieve this, the signalling requires a much curtailed testing window of around ½ hour at the end of the possession. The majority of the testing (c.95%) is required to be undertaken in advance of the possession for the site installation of the switches and as much as possible to be automated if this 30 minute window is to be achieved.

The setup of the switches has to be fully and correctly undertaken whilst the switches are on the manufacturer's premises, and then transported to site in such a manner that the setup requires no adjustment or re-setup on site. Once the set-up has been proven to be undisturbed, the testing carried out in the manufacturer's depot remains valid and only a very simple series of tests is required to be completed on site before the layout can be commissioned.

4.2 Prerequisites

This specification shall to be used when the decision has been taken that the Modular S&C approach is appropriate for the works and any site deviations have been fully assessed to confirm they can be properly catered for.

The Chain of Custody, as detailed in this process standard, has to remain unbroken in the entire process if the advantages of the Modular S&C approach are to be fully realised. All equipment supplied shall come with a Certificate of Conformance, without which the Chain of Custody is considered to be broken.

Equipment required to be covered by Certificates of Conformance is not limited to the usual items such as plug coupled cables and clamp lock pump units but also the more unusual items such as IBJs (this allows the Joint to be commissioned without extensive on site testing). Additionally, when the S&C is delivered it shall be on modular wagons and it shall be off-loaded, using the correct lifting beams directly onto the prepared ballast formation, or onto a prepared flat piece of ground; it shall not be placed in the cess pending being lifted at some future opportunity onto a prepared ballast formation due to the risk of affecting the configuration of the layout.

If the Chain of Custody is broken for any reason, advantage can still be taken of the sections which are intact to allow for a more efficient installation and commissioning of the S&C layout without the full advantages of the modular process being realised

If the S&C layout is within the strike in point of a level crossing, the feasibility of the Modular approach shall to be carried out prior to design being commenced as additional works may extend the installation and testing times beyond the available possession windows.

Where documents identified in this process specification have not yet been issued, it is permissible to test to an existing version issued by the tester's employer.