

Sydney Trains



Engineering System Integrity
Engineering Standard
Signalling and Control Systems

ST S 43011

Assist in Inspection and Testing of Signalling Works (SCS11)

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Document control

Version	Date	Author/Prin. Eng.	Summary of change
1.0	28 May 2018	Mark Albrecht	First issue as Sydney Trains document
1.1	13 December 2022	David Mulley	3-year review: no content or technical changes. Date and version number updated.

Summary of changes from previous version

Summary of change	Section
Removal of Certificate of attendance for EI40 and ST46. Must complete the course assessment	1.5
UEENEEN111A updated to UEERS0012 – Install and maintain trackside signal and train protection equipment to reference the latest version	1.5

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Table of Contents

1	Assist in Inspection and Testing of Signalling Works (SCS11)	4
1.1	Elements.....	4
1.2	Performance Criteria.....	4
1.3	Range of Variables.....	5
1.4	Knowledge Requirements.....	7
1.5	Competency Requirements.....	7
1.6	Evidence Guide.....	8
1.7	Assessment Context.....	9

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1 Assist in Inspection and Testing of Signalling Works (SCS11)

This unit covers the application of knowledge and skill required to assist in the inspection and testing of new or altered signalling works.

1.1 Elements	1.2 Performance Criteria
SCS11.1 Prepare to assist in inspection and testing of signalling equipment	SCS11.1.1 Ensure information supplied by lead tester accurately identifies the work to be carried out
	SCS11.1.2 Clarify with the lead tester, the tests to be carried out, the sequence in which they are to be performed, and the methods to be used
	SCS11.1.3 Ensure independence of testing - that you have not installed or wired the work which is to be tested
	SCS11.1.4 Ensure that you have the appropriate tools and calibrated test equipment for the work
	SCS11.1.5 Ensure that all necessary arrangements for communication with the lead tester are available and functional
SCS11.2 Safely perform work to ensure that the inspection and testing do not compromise the integrity of the existing signalling system	SCS11.2.1 Ensure that your work practices minimise the risk of damage or disturbance to equipment under test and other equipment
	SCS11.2.2 Clearly understand the boundaries between the installation under test and operational equipment
	SCS11.2.3 Where damage or disturbance to operational equipment occurs, or is noticed, ensure it is protected and immediately reported to lead tester for appropriate response procedures
SCS11.3	SCS11.3.1 Carry out the test/checks as directed by lead tester

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1.1 Elements	1.2 Performance Criteria
Perform Installation Tests/Checks of signalling equipment	SCS11.3.2 Follow the appropriate procedures for use of tools and equipment to carry out the required tests
	SCS11.3.3 Ensure that all observations and test results are communicated to the lead tester using appropriate communication protocols, or recorded for later using appropriate recording methods
SCS11.4 Finalise testing and reporting activities	SCS11.4.1 Ensure that lead tester has correctly received the results of all test and observations
	SCS11.4.2 Ensure that all tools, test devices, and equipment are removed on completion of testing – links in place, temporary bridges etc., removed, inspection area is clear and location is secured

1.3 Range of Variables

Signal Location includes:

- relay rooms
- walk in locations
- apparatus cupboards
- signalling equipment outside of a relay room, walk-in location or apparatus cupboard.

Relevant standards and instructions include:

- SWMS and SWIs
- Project Safety Agreement, Interface Co-ordination Plan, Site Integrity Agreement, Project Safety Management Plan.
- Inspection and Testing Principles
- Inspection and Testing Procedures
- Signalling Safeworking Procedures:
 - Risks and Controls Associated with Testing and Certifying Equipment
 - Renewals Work
 - Security, Fire Protection, Weather Proofing and Cleanliness of Signalling Equipment, Housings and Locations
 - Use of Radio Transmitters Near Electronic Signalling Systems
 - Safety Issues for Signalling Personnel

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- Signalling Locations and Equipment – Security Locks and Keys
- Calibration of Tools and Instruments for Signalling Applications.

Standard configuration documents and records include:

- Circuit Books
- Track plan/signalling plan or Detailed Site Surveys(DSS)
- Work Instructions
- Testing Plan.

Work activities may include:

This Assistant Tester competency allows personnel to be able to work in a live signalling environment as outlined below:

- To assist the lead Tester in carrying out defined inspection and testing activities on new or altered signalling works in conjunction with (*SPG 0711.1 Roles, Responsibilities and Authorities Table 1 - Minimum Licensing or Authorisation requirements for suitably experienced personnel implementing New and Altered Works*).
- All testing work is carried out under the direction and supervision of the lead tester responsible.
- The work may be conducted as interface wiring or as standalone new work.

Tests may include:

The types of inspection and testing activities on new or altered signalling works is described in with *SPG 0711.3 Inspection and Testing Principles Section 2.3 Table of Typical Inspections & Tests to Verify Physical & Functional Compliance*.

- Apparatus Inspection
- Wire Count
- Null Count
- Insulation Test
- Bell Continuity Test
- Apparatus Function Test
- Contact Proving Test
- Circuit Function Test
- Circuit Strap and Function Test
- Function Test to Control Tables
- Through Circuit Function Test
- Through System Function Test
- Track Circuit Shunt Test
- Track Circuit Drop Shunt Test
- Track Circuit Polarity Test
- Aspect Sequence Test
- Points Correspondence Test
- Points Out of Correspondence Test

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- Track Insulation Plan (Bonding)
- Signalling Plan (Track Plan/Working Sketch).

Note:

All testing work is carried out under the direction and supervision of the lead tester responsible.

1.4 Knowledge Requirements

The following underlying knowledge elements are requirements for the achieving of this competence:

- Read and follow work instructions.
- Read and interpret signalling documentation.
- Recognise and identify signalling equipment and components.
- Use test equipment and gauges correctly.
- Test recording and documentation.
- Use appropriate communication protocol.
- Reporting and contact relationships.

1.5 Competency Requirements

The following knowledge, competency and entry requirements shall be achieved as a pre-requisite to the awarding of this competency.

Pre-Requisite Entry Requirements

- Rail Industry Safety Induction card (RISI)
- WHS General Construction Induction Training Card (GIT Card also known as White Card)
- Rail Safety Worker Category 2 Health
- Electrical Trades Certificate or Relevant Tertiary Qualification, or
 - Design Checking Competencies in Signal Design, or
 - IRSE Licence 1.3.150 – Signalling Test Assistant.
- Competency Standard *ST S 43002 Work Safely in a Live Signal Location*

Training Requirements

- TfNSW EI40 Sydney Trains Signalling Safeworking Procedures
- TfNSW ST46 Signal Circuit Inspection and Testing

Technical Competency requirements

- Sydney Trains Signalling and Control Systems Engineering Competency Standard *ST S 43011 Assist in Inspection and Testing of Signalling Works* using Competency Assessment Tool *MN S 43011 Assist in Inspection and Testing of Signalling Works*.
- UEERS0012 Install and maintain trackside signal and train protection equipment.

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Behavioural Competency requirements

Be assessed as competent as detailed in Behavioural Competency process for Signal Electrical Installer Authorisation which is based on the following OPQ categories:

- Adhering to principles and values.
- Planning and organising.
- Following instructions and procedures.
- Adapting and responding to change.
- Coping with pressures and setbacks.

1.6 Evidence Guide

This provides essential advice for the assessment of the unit and must be read in conjunction with the performance criteria and range statement.

Each element and associated performance criteria must be demonstrated on at least two occasions, one of which is a practical demonstration.

Before the critical aspects of evidence are considered, all pre-requisites must be met.

Candidates demonstrate their knowledge and understanding of assisting in inspection and testing work on a new or altered signalling installation by:

- Documentary evidence of appropriate training and qualifications held.
- Responses to questioning by the competence assessor.

Candidates demonstrate their competence to assist in inspection and testing of a new or altered signalling installation by:

- Log book showing relevant experience of inspection and testing of signalling works.
- Supervisor's report on testing and inspection performance.
- Practical demonstration of the required range of inspection and testing activities in a real or simulated signalling installation.

Critical aspects of evidence required to demonstrate competency in this unit

Demonstrated consistent performance across a representative range of contexts from the prescribed items below.

Assist in inspection and testing of signalling works including the following:

- Site access obtained correctly.
- Interpreting signalling documentation correctly.
- Awareness of the risks of inspection and testing in a Live Signal Location.
- Application of risk mitigations that have been identified.
- Communicating and responding effectively with lead tester.
- Perform each of the individual inspection and testing activities listed in the *SPG 0711.3 Inspection and Testing Principles Section 2.3*.
- Completing relevant records and documentation.
- Dealing with unplanned events by following appropriate procedures.

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1.7 Assessment Context

This unit should be assessed as it relates to normal workplace practice using procedures, information and resources typical of a workplace. This should include a suitable work environment, facilities, equipment and materials to undertake actual work as prescribed in this unit.

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible, replicate the real workplace environment both behaviourally and functionally.

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