

Sydney Trains



Engineering System Integrity
Engineering Standard
Signalling and Control Systems

ST S 43029

Set to Work and Certify ETCS Fixed Balise

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Engineering System Integrity

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Document control

Version	Date	Author	Summary of change
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1 Set to Work and Certify ETCS Fixed Balise

This unit covers the application of knowledge and skill required to lead, manage, set to work and certify non-operational ETCS Level 1 and Level 2 fixed balises.

This includes:

- Balise programming/data installation
- Balise installation inspection checks
- Balise position measurements and checks
- Balise function test
- Recording of settings and values.

Terms shown as **(bold)** are detailed and explained in Section 1.3 Range of Variables.

1.1 Elements		1.2 Performance Criteria	
ST S 43029.1	Prepare to program, inspect, test and certify balise	ST S 43029.1.1	Scope of programming, inspection, and certification is determined from job specifications, design drawings and regulatory requirements
		ST S 43029.1.2	Materials needed for programming, inspection, and certification are obtained in accordance with workplace procedures and checked against job specifications
		ST S 43029.1.3	Tools, equipment and testing devices needed for programming, inspection, and certification are obtained in accordance with workplace procedures and checked for correct operation and safety
ST S 43029.2	Program balise	ST S 43029.2.1	Appropriate role independence is implemented in accordance with manufacturer manuals and/or relevant workplace procedures
		ST S 43029.2.2	Balise is programmed in accordance with manufacturer manuals and/or relevant workplace procedures
		ST S 43029.2.3	Programming results are documented in accordance with manufacturer manuals and/or workplace procedures

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1.1 Elements		1.2 Performance Criteria	
		ST S 43029.2.4	Programming faults are verified using relevant manuals , fault-finding and diagnostic techniques to identify faulty balise
		ST S 43029.2.5	Identified non-conforming balise is documented and immediate follow-up action is initiated to ensure faults are rectified
ST S 43029.3	Inspect balise	ST S 43029.3.1	Inspection is carried out and balise is checked to ensure it is in accordance with manufacturer and system specifications
		ST S 43029.3.2	Inspection results are documented in accordance with manufacturer manuals and/or workplace procedures
		ST S 43029.3.3	Installation and design faults are verified using relevant manufacturer manuals , fault-finding and diagnostic techniques to identify faulty balise
		ST S 43029.3.4	Identified non-conforming balise or components are documented and immediate follow-up action is initiated to ensure faults are rectified
ST S 43029.4	Check Balise Position	ST S 43029.4.1	Position testing is carried out and balise is checked to ensure it is in position in accordance with design and manufacturer and system specifications
		ST S 43029.4.2	Test results are documented in accordance with manufacturer manuals and/or workplace procedures
		ST S 43029.4.3	Position errors are verified using relevant manufacturer manuals , fault-finding and diagnostic techniques to identify incorrect position
		ST S 43029.4.4	Identified non-conformances are documented and immediate follow-up action is initiated to ensure faults are rectified

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1.1 Elements		1.2 Performance Criteria	
ST S 43029.5	Test & Certify Balise	ST S 43029.5.1	Balise testing is carried out and balise is checked to ensure it is in accordance with manufacturer and system specifications
		ST S 43029.5.2	Test results are documented in accordance with manufacturer manuals and/or workplace procedures
		ST S 43029.5.3	Balise faults are verified using relevant manufacturer manuals , fault-finding and diagnostic techniques to identify faulty balise
		ST S 43029.5.4	Identified non-conforming balise or components are documented, and immediate follow-up action is initiated to ensure faults are rectified

1.3 Range of Variables

ETCS Fixed Balise components include:

- Balise
- Balise mountings and fixings
- Balise labels.

Resources include:

- Personnel
- Balise programming and test tool
- Balise data
- Measurement device.

Information includes:

- Signalling Plan, Circuit Book, Site Certification Form (SCF) or similar linear reference design
- Data Design and Installed Data Form
- Inspection and Test forms
- Signalling Work Instructions.

Records include:

- Test certificates
- Programming/ data installation forms
- Inspection and test forms and checklists.

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Procedures, Standards and Manuals include:

- Sydney Trains and OEM equipment manuals
 - *MN S 41604 Alstom ETCS Trackside Maintenance Manual*
 - *MN S 41605 Alstom ETCS Set to Work and Commissioning*
 - *MN S 41617 Siemens Balise Maintenance Manual*
 - *PR S 47113 Inspection and Testing of Signalling: Inspection and Testing Principles.*
- Sydney Trains Signalling Safeworking Procedures (MN S 40000) in particular:
 - *PR S 40028 ETCS L1 – Alstom Trackside Equipment*
 - All applicable other Sydney Trains safeworking procedure that details level 1 and 2 balises.
- Asset Management Branch standards
 - *T HR SC 07111 ST Mandatory Requirements for Inspection, Testing and Commissioning of New or Altered Signalling*
 - *SPG 0706 Installation of Trackside Equipment.*

1.4 Knowledge and Skill Requirements

The following underlying knowledge and skill elements are requirements for the achievement of this competency.

Knowledge requirements:

- The critical nature and correct operation of ETCS balises.
- What factors might affect the installation and testing.
- What evidence is required from inspection and testing.
- Identify if inspection and testing results are missing, inaccurate or unsatisfactory and what action to take to address the situation
- Determine the resources provided for inspection and testing activities are sufficient and competent
- Skill requirements
- Be able to determine the extent of testing required for ETCS balise.
- Be able to perform balise programming and testing activities.
- Be able to determine if the records of inspection and testing are complete and represent an accurate record of the testing and have been undertaken as per procedures.
- Be able to read and interpret relevant signalling documentation.
- Be able to communicate using the correct protocols.

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1.5 Competency Requirements

The following knowledge, competency and qualification requirements shall be achieved as a pre- requisite to receiving this competency.

Entry Qualification Requirements

- UEE30820 - Certificate III in Electrotechnology Electrician
OR
- Relevant Tertiary Qualification (including Signalling or Control Systems as specified in MN S 41412)
- Demonstrated experience in ETCS balise testing.

Entry Authorisation Requirement

- *ST S 43002 Work Safely in a Live Signal Location (SCS02)*

Training Requirements

- The appropriate manufacturer’s training course for the type of balise being assessed.

Technical Competency Requirements

- Be assessed as competent in Competency Standard *ST S 43029 Set to Work and Certify ETCS Fixed Balise* using an approved Competency Assessment Tool

Behavioural Competencies

- Deciding and Initiating Action
- Applying Expertise and Technology
- Analysing.

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 in accordance with the “Assessment Guidelines UEE11”.

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

Candidates shall demonstrate their knowledge and understanding of ETCS Level 1 and 2 balise operation, inspection and testing using each of the following assessment methods:

- Documentary evidence of appropriate training and qualifications held.
- Evidence of completed training courses.
- Logbook showing experience in the relevant inspection and testing activities.
- Responses to questioning by the competence assessor.
- Practical Demonstration.

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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 workplace.

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