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Business Process Document

Requirements for TASS Infrastructure - Installation, Test and Maintenance

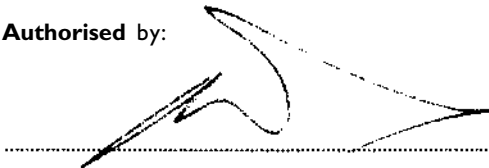
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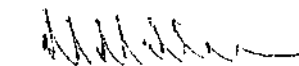
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Issue record

Issue	Date	Comments
1	December 2003	New specification
2	December 2005	Update to Signal Works Testing Process 6.2.2. Removal of Appendices where referenced standards have been updated. Document reference changed to new lettering system. Previous reference RT/E/S/02024.

Implementation

The requirements of this specification shall apply to all Tilt Authorisation and Speed Supervision (TASS) track-based sub-system equipment used on Network Rail controlled infrastructure.

Compliance

The requirements of this specification are mandatory and shall apply to Network Rail, their contractors and any other parties involved with TASS track-based sub-system equipment on Network Rail controlled infrastructure on or after 3 December 2005.

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I Purpose

This specification defines the installation, test and maintenance requirements for the track-based equipment associated with the Tilt Authorisation and Speed Supervision (TASS) system developed to deliver the principal requirements of Railway Group Standards [GE/RT8012](#) 'Controlling The Speed Of Tilting Trains Through Curves' and [GE/RT8019](#) 'Tilting Trains: Controlling Tilt Systems To Maintain Clearances'. This specification covers the following aspects of the system:-

- TASS track-based equipment installation processes with descriptions of the balise assembly.
- TASS balise assembly identification and labelling requirements.
- The TASS Balise Positioning Form and Balise Testing Form records.
- TASS track-based equipment commissioning.
- TASS track-based equipment maintenance, faulting and replacement requirements.

2 Scope

2.1

This document provides installation, test and maintenance details for the TASS system as developed by ALSTOM for use on Network Rail infrastructure in order to ensure that the functionality and ongoing requirements are understood.

2.2

Consideration is given to the following installations:-

- New or Revised Installation (Signal Works Testing Procedure).
- Missing, Broken or Faulty Installation (Signal Maintenance Testing Procedure).
- Like for Like Replacement. (Signal Maintenance Testing Procedure).

2.3

The track-based infrastructure requirements can be summarised as illustrated in Figure 1.

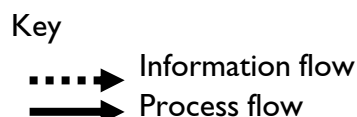
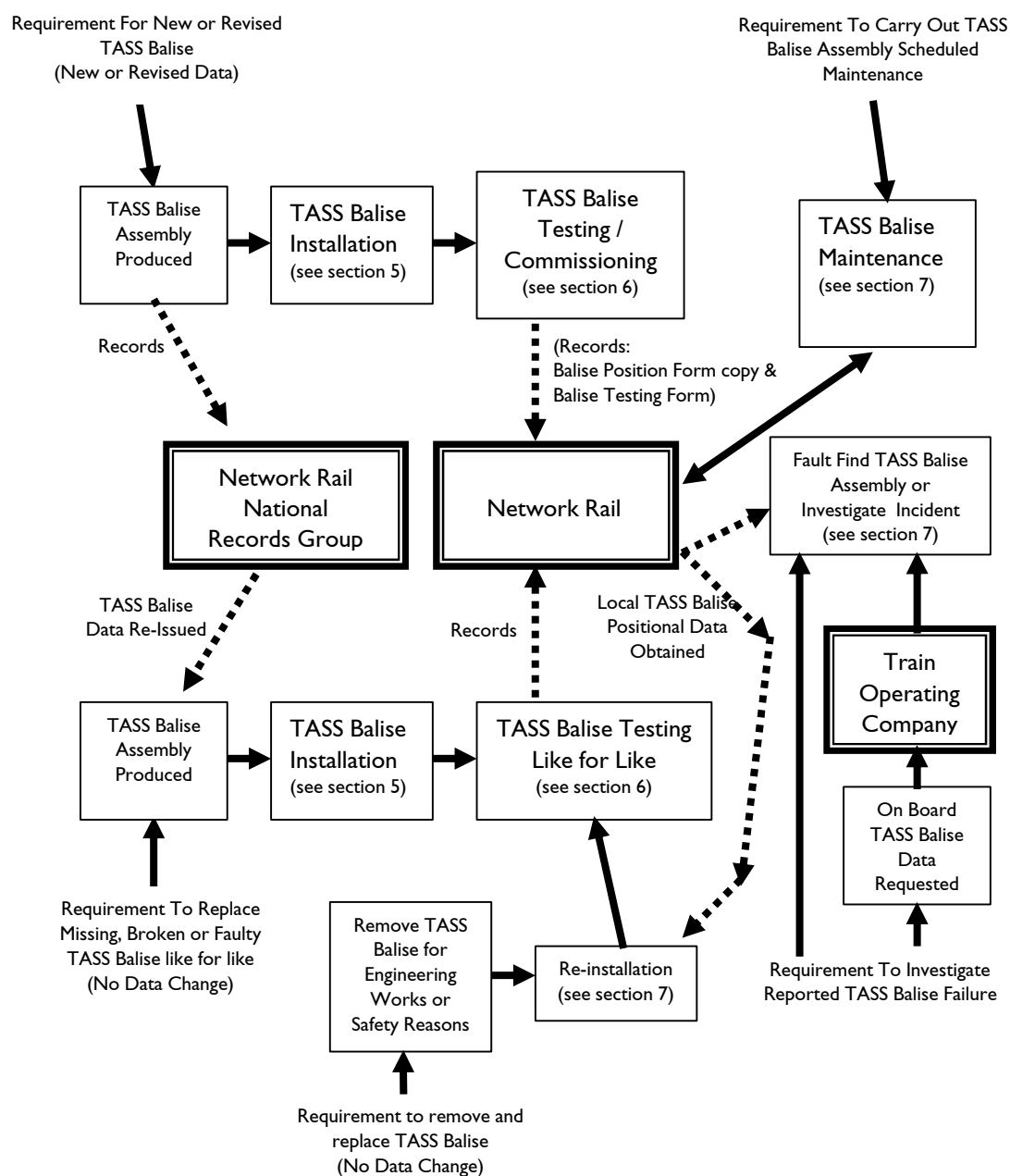


Figure I – Track-Based Infrastructure Requirements

3 Reference Documentation

C80056-SPEC-SYS-00166	BEPT User Manual
GE/RT8012	Controlling The Speed Of Tilting Trains Through Curves
GE/RT8019	Tilting Trains: Controlling Tilt Systems To Maintain Clearances
GK/RT0209	Testing and Commissioning of Signalling and Operational Telecommunications Systems
NR/SP/CIV/050	GEOGIS for Railtrack Asset Management
NR/GN/SIG/11210	Signalling Installation
NR/GN/SIG/11724	Signal Works Testing Specifications and Historical Test Value Data
NR/GN/SIG/11729	Maintenance and Missing Equipment Test Plans
NR/GN/SIG/11731	Signalling Failure Investigation
NR/GN/SIG/02025	Guidance for Consideration of TASS Balises During Railway Engineering Activities
NR/SP/SIG/02023	Requirements For TASS Infrastructure – System Design
NR/SP/SIG/10028	Inspection and Surveillance of Signal Engineering Activities
NR/SP/SIG/14002	Signalling Testing Staff Competence Assessment
RT/SMS BAL1	Signalling Maintenance Specification - Balise

4 Definitions

Approvals & Issue Record (AIR)

A record sheet issued by Network Rail identifying the additions and deletions to a new installation and subsequently used to produce an installation history of the system. The AIR shall be used conventionally.

Balise

A track mounted spot transmission unit that uses magnetic transponder technology. Its function is to transmit/receive messages to/from the train passing overhead. A TASS balise is passive with no interface to a Lineside Electronic Unit (LEU) and will therefore only transmit the fixed telegram stored in its memory. This data can only be changed by reconfiguration.

Balise Encoder Programming and Test (BEPT) Tool

The ALSTOM test and programming tool for use with the TASS track equipment.

Engineers Line Reference (ELR)

A unique alphanumeric code used by Network Rail to define each route segment of their network.

Global Positioning System (GPS)

A non-railway system used to determine geographical vicinity.

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Mileage

The distance along the track from a defined datum.

TASS

Tilt Authorisation and Speed Supervision system (ALSTOM's tilt management solution).

Track ID

The identity of the track that is equivalent to the Geogis Track Code.

5 Installation

5.1 General

5.1.1

The track-based elements consist of a balise with a specified data set loaded into flash memory, a mounting bracket arrangement that secures it to the sleepers, any necessary fastenings required, site specific documentation and identification labels. These elements of a TASS balise assembly may be provided as a complete kit (known as an Installation Kit) for new or changed installations under a contracted project.

5.1.2

The balise assembly shall only be installed by a suitably competent installer on Network Rail infrastructure using the documentation and the processes described or referenced in this standard.

5.2 Installation Kit

5.2.1

Where an Installation Kit is produced for a new or altered installation, it shall contain the following:-

- A programmed and labelled balise.
- A labelled balise mounting bracket arrangement with fastening type suitable for site sleeper type.
- Duplicate master sets of the balise data (paper and electronic) for forwarding to the Network Rail National Records Group (NRG).
- A Balise Positioning Form and a Balise Testing Form.

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5.2.2

Programming of the balise and the production of the balise assembly or Installation Kits shall be carried out in a suitable area within a workshop/office environment. Balise data shall be subject to management and configuration control (see [NR/SP/SIG/02023](#)).

5.2.3

Installation Kits shall be delivered with the balise attached to the mounting bracket arrangement. The equipment and a possible source of supply is listed in Table I. Although the assemblies are robust they should not be stacked for safety reasons. Balise assemblies and Installation Kits shall be stored in a secure location that is not on or near the line. It is not necessary to store the components under cover as they are designed for outdoor use.

5.3 Handling the Balise Assembly

5.3.1

If the assembly has been damaged in transit or whilst in storage, it shall not be used. Any damaged balise shall be quarantined and suitably dealt with under local procedures. Further information can be found in [NR/GN/SIG/I 1210](#) - Signalling Installation under the heading 'Handling The Balise Assembly' - section 2Y05.

5.4 Balise Assembly Identification

5.4.1

It is necessary to uniquely identify each balise assembly. Each balise assembly has a unique alphanumeric sequence of 14 characters made up as shown in Table 2, forming its identification reference. The means of identifying each balise is by the identification label fitted to the balise and mounting bracket arrangement.

Equipment	Supplier	Type	Supplier Part Number	PADS Number
Eurobalise Balise	Network Rail (manufactured by ALSTOM Transport Information Solutions)	Standard	(Alstom Part No BWDTRD 000021474)	089/048994
Data Plug Covers	ALSTOM Transport Information Solutions Borehamwood Industrial Park Rowley Lane, Borehamwood Hertfordshire, WD6 5PZ Tel: 020 8953 9922	Bouch pour connecteur fixe	BWMI322	
Balise Mounting Bracket Arrangement:	ALSTOM Transport Information Solutions	Pandrol	BWMI309	089/048995
		Timber	BWMI310	089/048996
		Fastclip	BWMI311	089/048997
		Concrete	BWMI312	089/048998
		Corus 600 Fastclip (used for Corus 600 steel sleeper only)	BWMI313	089/048999
	Or VORTOK International 6-7 Haxter Close, Belliver Industrial Estate Roborough, Plymouth Devon, PL6 7DD Tel: 0175270060	Pandrol	BM/001	089/048995
		Timber	BM/026T	089/048996
		Fastclip	BM/015	089/048997
		Concrete	BM/026C	089/048998
		Corus 600 Fastclip (used for Corus 600 steel sleeper only)	BM/031	089/048999
Mounting Bracket Arrangement Anchors for concrete	ALSTOM Transport Information Solutions	M12x80 st/stl anchor	BWMI315	
Mounting Bracket Arrangement fastenings for timber	ALSTOM Transport Information Solutions	M6x60 st/stl coach	BWMI316	
Mounting Bracket Arrangement fastenings for Pandrol	ALSTOM Transport Information Solutions	Pandrol E2001 Clip	BWMI317	057/048247
Mounting Bracket Arrangement fastenings for Balise	ALSTOM Transport Information Solutions	M8 Nylock Nuts	BWMI318	
Mounting Bracket Arrangement Penny Washer	ALSTOM Transport Information Solutions	8x25mm st/stl washers	BWL9101	
Balise Mounting Bush (Rubber)	ALSTOM Transport Information Solutions	Rubber Bush	BWMI319	

Table I

5.4.2

The Engineers' Line Reference, track identification and mileage can be directly deduced from the balise identification.

Field Name	Network Rail Engineers Line Reference (ELR)	Track	Absolute Mileage x1000	Data Step Number
Description	A unique alphanumeric code used by Network Rail to define each route segment of their network	A readable two-letter code, defined for TASS, identifying easily which track within the ELR the balise is installed on (e.g. UF for Up Fast). Separate codes are used to identify the two balises of a balise pair on a reversibly signalled line (e.g. RX and RY)	A number derived directly from the TASS balise location, in thousandths of a mile (rounded down) from the TASS mileage datum. This resolution (<2 metres) allows every balise on a route to be uniquely identified (minimum balise spacing is 3m)	The version number of TASS data for this particular balise. Initially set to 01, then incrementing as data is revised during system life.
Format A = Alphabetical N = Numeric (0 - 9)	AAAN N.B. ELRs with the format AAA will be used by TASS as AAA0 (e.g. GSM for Old Dalby, i.e. GSM0)	AA	NNNNNN	NN

Table 2

5.4.3

The balise reference marks are markings etched onto all six sides of the balise that give an indication of the centre of symmetry of the balise radiation pattern.

5.4.4

A colour coding arrangement has been applied to the balise mountings. Further information can be found in [NR/GN/SIG/11210](#) - Signalling Installation under the heading 'Balise Mounting Systems'- section 2Y05.

5.5 Balise Labelling

5.5.1

The labelling equipment and a possible source of supply is listed in Table 3.

5.5.2

Further labelling information can be found in [NR/GN/SIG/11210](#) - Signalling Installation, section IM20 – Labelling Balises for TASS.

Equipment	Supplier	Type	Supplier Part Number
Labelling System	ALSTOM Transport Information Solutions or	Mounting / Holding Rail	BWEMP/17
		Characters 0-9 & A – Z Per 100	BWEMC/17-0 to BWEMC/17-9 BWEMC/17-A to BWEMC/17-Z
	Silver Fox Limited Swallow Court Swallowfields Welwyn Garden City Herts AL7 1SA Tel: 01707 373727 Fax:01707 372193	Mounting / Holding Rail	EMP/17
		Characters 0-9 & A – Z Per 100	EMC/17
Label fixing system	ALSTOM Transport Information Solutions or	Cable tie packs Per 100	BWMI320
		Adhesive 20g Bottle	BWMI321
	RS Components Limited Unit 2a Watford Interchange Colonial Way Watford WD24 WW Tel: 01923 210050 Fax: 01923 211177	Cable tie packs Per 100	233-446
		Adhesive 20g Bottle	159-4023

Table 3

5.6 Installation and Testing Documentation

5.6.1

The following documentation is supplied to facilitate the correct installation and subsequent, test and commissioning of the TASS balise:-

- Balise Positioning Form.
- Balise Testing Form.

5.6.2

As a minimum these forms shall contain the information illustrated in the examples in Figures 2, 3 and 4.

5.6.3

The Balise Positioning Form is the primary record of balise identity and position and shall be provided for every balise and used in conjunction with the

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associated Balise Testing Form. Masters are controlled by NRG and issue controlled. The Balise Positioning Form shall be made available for use by site staff throughout the time the balise is installed. The form shall be referenced for all installation, re-installation and test activity and only amended where actual site details are in conflict. On appropriate resolution of the conflict the form shall, where necessary, be updated and re-issued. There is no need to amend the Balise Positioning Form for a change of track fitting type. This information is retained separately by Network Rail as part of asset records.

5.6.4

The relevant section of the Balise Testing Form shall be completed at appropriate stages of balise assembly, installation and testing / commissioning of new or altered TASS balises. A completed and signed section one assures that the balise assembly has been correctly programmed and constructed to a quality sufficient to enable installation. Section two shall be completed and signed by the installer. Completion and sign off of section two is an indication of an installation ready for test. The Tester shall undertake a full check of the correctness of the installation and the installed position before completing and signing off section three. The fully completed form shall be submitted to Network Rail as the test certificate. Under SMTH, section one of the form shall be used where new data is required for a replaced missing or renewed balise. In this case the form shall still be submitted to Network Rail although the remainder of the form is not used (the usual SMTH test record will suffice). The Balise Testing Form is not required at all for removal and replacement of the existing balise under SMTH. Network Rail shall arrange suitable control and storage processes for these forms. There is no need to amend the Balise Testing Form for a change of track fitting type. This information is retained separately by Network Rail as part of asset records.

5.6.5

Balise locations and identification numbers are required to be shown on signalling plans along with the speed signing. The means of showing this information should be appropriate to ensure clarity, taking account of plan scale and content complexity.

5.6.6

Balise location and fastening details shall be recorded in the Network Rail Asset Register.