RISSB

RAIL INDUSTRY SAFETY AND STANDARDS BOARD



# Management of Rail Traffic with Unreliable Track Circuits

## Guideline

This Rail Industry Safety and Standards Board (RISSB) product has been developed using input from rail experts from across the Rail Industry. RISSB wishes to acknowledge the positive contribution of all subject matter experts and DG representatives who participated in the development of this product.

The RISSB Development Group for this Guideline consisted of representatives from the following organisations:

| | | |
|---|---|---|
| Roy Hill | BHP Billiton | Sydney Trains |
| NSW Trainlink | Sydney Trains | Queensland Rail |
| ARTC | | |

Development of this Guideline was undertaken in accordance with RISSB's accredited processes. It was approved by the Development Group, endorsed by the Standing Committee, and approved for publication by the RISSB Board.

I commend this Guideline to the Australasian rail industry as part of the suite of RISSB products assisting the rail industry to manage rail safety, improve efficiency and achieve safety outcomes through interoperability and harmonisation.

**Paul Daly**
Chief Executive Officer
Rail Industry Safety and Standards Board



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# Document Control

### Identification

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# Copyright

# Contents

# 1 Introduction

## 1.1 General

This guideline is produced by RISSB in conjunction with representatives of the rail industry.

The purpose of this guideline is to provide guidance that supports the application of:

- AS 7502 Rail Road Vehicles;
- AS 7711 Signalling Principles;
- AS 7505 Signal Detection Interface;
- National Rules (in development).

The aim of this guideline is to encourage rail organisations to work collaboratively towards consistent implementation of technology and / or safeworking practices to manage vehicles with unreliable rail vehicle detection, providing benefits for the whole of the rail industry.

For all railways, there may be advantages of shared corridors, shared tracks or compatibility of communications systems, rolling stock, infrastructure components, procedures and practices that warrant consideration of interoperability principles.

Rail networks throughout Australia are owned and operated by various entities and in all cases have their own specific network rules and procedures to manage the operation of unreliably detected vehicles.

## 1.2 Purpose

This guideline describes the issues with detection of certain types of rail traffic and their non-detectable or unreliable operation of track circuits. It also describes preventative measures, including engineering and operations, to minimise the potential risk of rail traffic collision or derailment collision between detectable rail traffic and non-detectable rail traffic.

This guideline will focus on unreliable track circuit operation and refers to means of detecting the presence of rail traffic other than the use of track circuits.

This guideline applies to:

- new, existing and upgraded or renewed rolling stock;
- the infrastructure of Australian rail systems that form intrastate and interstate networks that are currently linked or may be linked in the future.

As this guideline encourages collaboration and uniformity of practice, it can also apply to rail systems that fall within one or more of the following categories:

- Metros, tramways or other light rail systems.
- Networks that are separate from the rest of the rail system, as well as railway undertakings operating solely on these networks.
- Infrastructure or vehicles reserved for a strictly local, heritage or tourist use.

- Privately owned railway infrastructure and vehicles exclusively used on such infrastructure that exist solely for use by the owner for its freight operations.

## 1.3 Scope

This guideline is applicable to rail vehicles and track circuits that are currently in use on Australian networks ensuring the safe working and operation of non-detectable or unreliably detected rail traffic under normal operating conditions and degraded modes. This guideline will support the content of the national rules.

This guideline also details existing procedural and technological solutions that can be implemented to mitigate against undetectable or unreliably detected rail vehicles, to ensure safe operation.

## 1.4 References

The following documents to be referenced where applicable in the application of this guideline:

- AS 7502 Road Rail Vehicles.
- AS 7505 Rolling Stock Signal Detection Interface.
- AS 4292 Rail Safety Management.
- ANRP 3019 Track Vehicles.
- ANRP 3020 Track Vehicle Travel.
- NGE 220 Unreliable Track Circuit Operations.

## 1.5 Definitions and Abbreviations

For the purposes of this guideline a number of definitions and abbreviations apply. The following definitions are specific to this guideline, while all other definitions are can be located in the RISSB glossary.

**Alternative Proceed Authority (APA):** An APA may be used to authorise rail traffic movements when the Proceed Authority normally provided by the system of Safeworking is not available.

**Data Pickup Units (DPU):** A tuned inductive pickup device.

**GPS (Global Positioning System):** Satellite positioning system.

**Rail Vehicle Detection (RVD):** The portions of line where the system of Safeworking relies on track circuiting or axle counters.

**Rolling Stock Operator (RSO):** A person who has effective control and management of the rolling stock on rail infrastructure for a railway, but does not include a person by reason only that the person drives the rolling stock or controls the network or network signals.

**Rail Infrastructure Manager (RIM):** In relation to rail infrastructure of a railway, means the person who has effective control and management of the rail infrastructure, whether or not the person-
(a) owns the rail infrastructure; or
(b) has a statutory or contractual right to use the rail infrastructure or to control, or provide, access to it.

**Track Circuit Assistors (TCA):** Track circuit device.