Rail Industry Standard
RIS-3708-TOM
Issue: Two
Date: September 2017

Arrangements Concerning the Non-Operation of Track Circuits During the Leaf Fall Contamination Period

Synopsis

This document details the requirements for identifying the need for, introduction and subsequent removal of, restrictions to normal operations to mitigate the effects of the non-operation of track circuits during the leaf fall contamination period.

Published by RSSB

Arrangements Concerning the Non-Operation of Track Circuits During the Leaf Fall Contamination Period

Issue Record

Issue	Date	Comments
One	04/06/2016	Original document.
Two	02/09/2017	Corrections and clarifications following 12-month review.

This document will be updated when necessary by distribution of a complete replacement.

Revisions have been marked by a vertical black line in this issue.

Superseded Documents

The following Railway Group documents are superseded, either in whole or in part as indicated:

Superseded documents	Sections superseded	Date when sections are superseded
RIS-3708-TOM issue one	All	02/09/2017

Supply

The authoritative version of this document is available at www.rssb.co.uk/railway-group-standards. Enquiries on this document can be forwarded to enquirydesk@rssb.co.uk.

Contents

Part 1 Purpose and Introduction **4**

1.1 Purpose 4
1.2 Application of this document 4
1.3 Health and safety responsibilities 5
1.4 Structure of this document 5
1.5 Approval and Authorisation 5

Part 2 Requirements Relating to the Preparation for the Leaf Fall Contamination Period **6**

2.1 Responsibilities common to the IM and RUs - planning 6
2.2 Responsibilities common to the IM and RUs - information dissemination 6
2.3 Developing joint special working arrangements 6
2.4 Responsibilities of the IM - monitoring, recording and communicating 8
2.5 Responsibilities of the IM - publishing 8
2.6 Responsibilities of the IM planning - central point of contact 8
2.7 Responsibilities of the IM planning - geographical areas 9
2.8 Responsibilities of the IM - implementation 9
2.9 Responsibilities of the IM - resumption of normal working 10
2.10 Responsibilities of RU planning - central point of contact 10

Definitions **11**
References **12**

Part 1 Purpose and Introduction

1.1 Purpose

1.1.1 This document is a standard on arrangements concerning the non-operation of track circuits during the leaf fall contamination period, for members of RSSB to use if they so choose.

1.1.2 This document supports transport operators (TOs) in satisfying their legal obligations in respect of providing contingency arrangements. It contains elements for identifying the need for, introduction and subsequent removal of, restrictions to normal operations in the event of problems being encountered with the operation of track circuits during the leaf fall contamination period.

1.1.3 The maintenance of a safe distance between trains is normally achieved by the provision of lineside signals or block markers, effectively dividing the line into several sections.

1.1.4 On many lines, track circuits are used to detect the presence of a train in any of the sections and in doing so influence the signalling system. If a track circuit fails to detect the presence of a train, commonly referred to as wrong-side failure, then the integrity of the system is destroyed and the protection normally provided by the interlocking is lost. Locations equipped with axle counters for the purposes of train detection are excluded from these requirements.

1.1.5 A wrong-side failure of this nature exposes the system users to the following hazards:

a) Collisions between trains.
b) Derailments.
c) Failure of trains to initiate the operation of level crossings, leading to a train colliding with a person or vehicle.

1.1.6 Experience over a number of years has shown that the likelihood of a wrong-side failure occurring at certain locations increases during the leaf fall period each year.

1.1.7 A high proportion of wrong-side failures during the leaf fall contamination period can be attributed to a build-up of compacted leaves on the rail surface: this may form an insulating layer that results in poorer electrical contact between wheel and rail than when the rail surface is clean.

1.1.8 Historical data are available as evidence to identify high-risk locations at which special working arrangements might be introduced to reduce the likelihood of wrong-side failures and mitigate their effects.

1.2 Application of this document

1.2.1 Compliance requirements and dates have not been specified since these will be the subject of internal procedures or contract conditions.

1.2.2 The Standards Manual and the Railway Group Standards (RGS) Code do not currently provide a formal process for deviating from a Rail Industry Standard (RIS). However, a member of RSSB, having adopted a RIS and wishing to deviate from its requirements, may request a Standards Committee to provide opinions and comments on their proposed alternative to the requirement in the RIS. Requests for opinions and comments should be submitted to RSSB by e-mail to proposals.deviation@rssb.co.uk. When formulating a request, consideration should be given to the advice set out in the 'Guidance to applicants and members of Standards Committee on deviation applications', available from RSSB's website.

1.3 Health and safety responsibilities

1.3.1 Users of documents published by RSSB are reminded of the need to consider their own responsibilities to ensure health and safety at work and their own duties under health and safety legislation. RSSB does not warrant that compliance with all or any documents published by RSSB is sufficient in itself to ensure safe systems of work or operation or to satisfy such responsibilities or duties.

1.4 Structure of this document

1.4.1 This document sets out a series of requirements that are sequentially numbered.

1.4.2 This document also sets out the rationale for the requirement. The rationale explains why the requirement is needed and its purpose. Rationale clauses are prefixed by the letter 'G'.

1.4.3 Where relevant, guidance supporting the requirement is also set out in this document by a series of sequentially numbered clauses and is identified by the letter 'G'.

1.5 Approval and Authorisation

1.5.1 The content of this document was approved by the Traffic Operation and Management Standards Committee on 11 July 2017.

1.5.2 This document was authorised by RSSB on 24 August 2017..

Part 2 Requirements Relating to the Preparation for the Leaf Fall Contamination Period

2.1 Responsibilities common to the IM and RUs - planning

2.1.1 The infrastructure manager (IM) and railway undertaking (RU) shall jointly develop special working arrangements for any location affected by wrong-side track circuit failures caused by leaf-fall contamination. Special working arrangements shall be based on those specified in *2.3 Developing joint special working arrangements* on page 6, appropriate to local circumstances, and make provision for the inspection of the infrastructure and trains.

Rationale

G 2.1.2 Special working arrangements are designed to maintain the integrity of the signalling system at a time when track circuits cannot be relied upon to detect the presence of a train.

Guidance

G 2.1.3 The IM produces a provisional list of locations classified as high-risk sites in respect of non-operation of track circuits during the leaf fall contamination period and forwards this to RUs for comment. It is common practice for any proposals for additional locations to be included or removed from the provisional list to be supported by written justification from the RUs, including documented historic evidence where available.

G 2.1.4 The IM and RUs have processes for examining the rail head and the train wheels. This enables the ability of a track circuit to detect the presence of a train to be assessed.

G 2.1.5 The IM has a process in place to issue signal box special instructions for the appropriate signal box.

2.2 Responsibilities common to the IM and RUs - information dissemination

2.2.1 The IM and RUs shall jointly determine a common method of transmission, format and content for the information to be disseminated concerning the non-operation of track circuits by a train.

Rationale

G 2.2.2 This is to ensure that the information passed between the IM and the RUs is relevant and compatible and therefore useful and understandable.

Guidance

G 2.2.3 There is no guidance associated with this requirement.

2.3 Developing joint special working arrangements

2.3.1 IMs and RUs shall jointly publish special working arrangements to be implemented where wrong-side track circuit failures occur due to leaf-fall contamination.

Rationale

G 2.3.2 Special working arrangements are used to mitigate the effects of the loss of integrity in the signalling system caused by the wrong-side failure of track circuits due to leaf-fall contamination.

Guidance

G 2.3.3 Special working arrangements are designed to avoid or reduce the need for trains to be authorised past signals at danger or, on a line with European Rail Traffic Management System (ERTMS) signalling, to be authorised to pass an end of authority (EoA) without a movement authority (MA).

G 2.3.4 The list below provides examples of special working arrangements for IMs and RUs to consider in the event of the non-operation of track circuits due to leaf-fall contamination; it is not necessarily exhaustive.

a) The immediate actions that signallers are required to take in the event of a train failing to operate track circuits may be applicable. These are specified in the GERT8000 Rule Book, and include:
    i) Protecting the affected section using signals or route-setting positions (RSPs) under the direct control of the signaller.
    ii) Ensuring that the signaller can establish that a train has passed clear of the affected section before allowing a subsequent train to proceed beyond the controlling signal or RSP.
    iii) Ensuring that, where points are normally locked by track circuits affected by a wrong-side failure, these points are not operated until a train has passed clear of them. On a route-setting system this includes setting the route using individual point controls.
    iv) Applying reminder appliances to the appropriate levers, switches, buttons or workstation controls.
    v) Instructing train drivers to stop on the approach to any automatic level crossing operated solely by track circuits, and not to pass over the level crossing until they are sure it is safe to do so.
    vi) Operating level crossings with ‘auto raise’ facilities in ‘manual raise’ mode.
b) Where barrow crossings or other warning apparatus are operated solely by track circuits, instructions may be issued to users to mitigate the effects of wrong-side failure of track circuits. This equipment may, alternatively, be disconnected.
c) The use of train-operated warning systems (TOWS) may need to be prohibited.
d) Disc-braked diesel multiple units (DMUs) may be prohibited from operating over sections of line where automatic half-barrier level crossings (AHBCs) are operated solely by track circuits.
e) Special working arrangements may be applied to all trains, except where occurrences of non-operation of track circuits have been associated with specific traction unit types or classes of train and the signaller is given advice regarding train formations. In this case special working arrangements may be applied only to the specific traction unit types or classes of train concerned.
f) Units fitted with auxiliary tread brakes may not be subject to special working arrangements except where these apply to all traction or all trains in a particular class.

G 2.3.5 Disc-braked DMUs can be relied upon to activate track circuits, and may therefore be exempt from special working arrangements, if one of the following applies:

a) A disc-braked DMU is coupled to another DMU where at least one vehicle is fitted with tread brakes (mixed formation).
b) A DMU is formed of vehicles of different classes, including at least one vehicle fitted with tread brakes (hybrid formation).

G 2.3.6 There can be operational advantages in applying the same working arrangements to all trains. Mixed formations and hybrid formations may therefore be included in special working arrangements if this is operationally appropriate.

2.4 Responsibilities of the IM - monitoring, recording and communicating

2.4.1 The IM shall have arrangements in place for monitoring, recording and communicating occurrences of the build up of leaf fall contamination and non-operation of track circuits by a train.

Rationale

G 2.4.2 This will enable the IM to:

a) Establish a process of monitoring the rail/wheel interface, both proactively and reactively, for the build-up of leaf fall contamination.
b) Identify any location which may be classified as a high-risk site in respect of likely occurrences of wrong side track circuit failures under leaf fall contamination conditions.
c) Respond to emerging trends.
d) Target resources effectively, to manage instances of non-operation of track circuits during the leaf fall season.
e) Review the effectiveness of the special working arrangements previously implemented.

Guidance

G 2.4.3 There is no guidance associated with this requirement.

2.5 Responsibilities of the IM - publishing

2.5.1 The IM shall publish the arrangements for monitoring, recording and communicating occurrences of the non-operation of track circuits by a train and make them available to RUs by 15 September each year.

Rationale

G 2.5.2 Publishing the arrangements by 15 September each year provides RUs with sufficient time to review and, where necessary, change their internal arrangements prior to the leaf fall period commencing.

Guidance

G 2.5.3 There is no guidance associated with this requirement.

2.6 Responsibilities of the IM planning - central point of contact

2.6.1 The IM shall inform RUs of its point of contact in each Network Rail route for receiving and giving information about the non-operation of track circuits by trains.

Rationale

G 2.6.2 A single point of contact in each Network Rail route for issues relating to the non-operation of track circuits reduces the potential for communication errors and provides a single focal point for discussing special working arrangements.

Guidance

G 2.6.3 On Network Rail-managed infrastructure, the Route Control is the point of contact for the non-operation of track circuits within the route and provides real-time information on wrong-side track circuit failures.

2.7 Responsibilities of the IM planning - geographical areas

2.7.1 The IM shall define the geographical areas for the purpose of implementing special working arrangements.

Rationale

G 2.7.2 Geographical areas with similar physical and botanical characteristics are likely to have a similar propensity for wrong-side track circuit failures due to leaf-fall. This enables a proactive approach to be taken to the implementation of special working arrangements.

Guidance

G 2.7.3 There is no guidance associated with this requirement.

2.8 Responsibilities of the IM - implementation

2.8.1 The IM shall introduce special working arrangements at any location where there is reason to believe that a track circuit can no longer be relied upon to detect the presence of a train unless additional controls have been implemented in the signalling system that will control the risk.

2.8.2 Where more than two occurrences of the non-operation of track circuits by a train have occurred in the same geographical area within seven days, and the cause is suspected to be leaf-fall contamination, the IM shall:

a) Implement special working arrangements at all high-risk locations within that geographical area.
b) Inform the RUs concerned of the implementation of the special working arrangements.
c) Arrange for a site examination to be carried out to establish the existence of contamination which could result in further occurrences of the non-operation of track circuits by a train.
d) Consider the need to apply further restrictions in relation to route diversions, including withdrawal of, or limitations upon, the use of specific fleets of vehicles on specified routes.

Rationale

G 2.8.3 Special working arrangements are applied to enable trains to continue to run safely within the geographical area in which leaf fall contamination has contributed to the non-operation of a track circuit.

G 2.8.4 It is assumed that leaf fall conditions across a geographical area will be broadly the same. When one high-risk track circuit has been the subject of a wrong-side failure, another is likely.

G 2.8.5 When more than two occurrences of the non-operation of track circuits by a train occur in a single geographical area within seven days, special working arrangements are implemented at all of the locations previously identified as being high-risk locations within that geographical area, to mitigate the risk from further failures.

Guidance

G 2.8.6 Following the non-operation of a track circuit by a train due to leaf-fall contamination, but prior to the resumption of normal working, further occasions when trains fail to operate the same track circuit may be treated together with the first occasion as one occurrence. If the track circuit concerned again fails to operate in the presence of a train after normal working has been resumed, then this may need to be treated as an additional, separate occurrence.

G 2.8.7 Where multiple, consecutive track circuits have failed to operate in the presence of a train, and the cause is shown to be a single area of leaf-fall contamination, these may be treated together as a single occurrence.

G 2.8.8 It may be appropriate to implement special working arrangements at additional high-risk locations in other geographical areas in light of the national situation and instruct relevant parties accordingly.

2.9 Responsibilities of the IM - resumption of normal working

2.9.1 The IM shall only restore normal working at any location where special working arrangements have been implemented when satisfied that the track circuits involved are operating normally and either:

a) The contamination that caused the incident involving the non-operation of track circuits by a train has been found and treated or
b) No contamination is present, provided specific site examinations at high-risk sites are arranged daily to monitor the condition of the rail surfaces.

Rationale

G 2.9.2 Before normal working is resumed after special working arrangements have been implemented, the IM needs to establish that there is no imminent danger of track circuits failing to operate during the passage of a train.

Guidance

G 2.9.3 There is no guidance associated with this requirement.

2.10 Responsibilities of RU planning - central point of contact

2.10.1 Each RU shall inform the IM of its central point of contact for receiving information concerning the non-operation of track circuits by a train.

Rationale

G 2.10.2 A single point of contact for issues affecting the non-operation of track circuits reduces the risk of communication errors and provides a single focal point for discussing special working arrangements.

Guidance

G 2.10.3 The responsible RU's Control is the point of contact for the non-operation of track circuits by trains.

Definitions

Disc-braked DMUs	Any class of diesel multiple unit fitted with disc brakes and not fitted with auxiliary tread brakes.
End of Authority (EoA)	An End of Authority is a location to which the train is permitted to proceed and where target speed = zero.
ERTMS	European Rail Traffic Management System.
High-risk locations (in relation to leaf fall)	These are either: a) locations specified and listed by the infrastructure manager; or b) Sites considered by the infrastructure manager to be 'high risk' on the basis of occurrences recorded during the leaf fall contamination period.
IM	Infrastructure Manager.
Leaf Fall Contamination Period	The period between 01 October and 13 December inclusive, but this may be extended by the infrastructure manager.
Movement authority (MA)	The authority given by a signaller (or ground frame operator), issued via the signalling system to the driver, which is the authority to move the train within defined limits.
RU	Railway Undertaking.
Special working arrangements	Procedures to be adopted when the cause of an incident is due to 'leaf fall contamination' or 'not known but likely to be leaf fall contamination'.
Track circuit	A type of train detection system that detects the presence or absence of a rail vehicle within a defined section of track, by means of the electrical circuit created between the running rails by one or more wheelsets.
Train	A train is defined as (a) traction unit(s) with or without coupled railway vehicles, including light locomotive and self-propelled rail vehicle operating in rail mode, with train data available operating between two or more defined points.
Train operated warning system (TOWS)	An audible warning system at locations listed in the Sectional Appendix. When switched on, it is used to warn personnel on or near the line about an approaching train.
Treatment	The method by which rail surfaces are treated in order to restore the signalling system to its normal operating mode.

References

The Catalogue of Railway Group Standards gives the current issue number and status of documents published by RSSB. This information is also available from http://www.rssb.co.uk/railway-group-standards.

RGSC 01	Railway Group Standards Code
RGSC 02	Standards Manual