

MEETING: Control Command and Signalling Standards Committee (**lead**)
Traffic Operation and Management Standards Committee
Energy Standards Committee
Plant Standards Committee
Infrastructure Standards Committee
Rolling Stock Standards Committee

DATE: 06/05/2021
27/04/2021
29/04/2021
05/05/2021
11/05/2021
14/05/2021

SUBJECT: Three-year review of Rail Industry Standard (RIS) RIS-0796-CCS Issue 1 - Train to Infrastructure RFID Compatibility

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1. Purpose of the paper

- 1.1 This paper sets out the assessment of the three-year review of RIS-0796-CCS (*Train to Infrastructure RFID Compatibility, issue 1*). It seeks Standards Committee approval / support on the recommendations and way forward.

2. Background

- 2.1 RIS-0796-CCS (*Train to Infrastructure RFID Compatibility*) sets out requirements and guidance to facilitate a common approach on the use of train to infrastructure Radio Frequency Identification (RFID) systems on the Great Britain mainline railway.
- 2.2 Research project T1010 on Remote Condition Monitoring, completed in 2016, first recommended the introduction of a RIS that would provide industry with a wider understanding of the requirements necessary to achieve a common approach for the use of train to infrastructure RFID systems.
- 2.3 This standard can be used by rolling stock owners, operators and Network Rail to assist in the specification and installation of RFID systems and services that provide identification of trains and equipment on trains. Specific requirements for Automatic Vehicle Identification (AVI) are included to standardise this system across the industry. The Cross-Industry Remote Condition Monitoring Strategy Group (XIRCM SG) and the Future Communication and Positioning Systems Advisory Group (FC&PS AG) have both previously stated that the existing RFID system for AVI could also be used for other purposes (e.g. remote condition monitoring, fleet and component tracking) - therefore the RIS includes generic requirements for RFID systems.
- 2.4 By adopting a common set of requirements, there is compatibility between RFID tag fitted trains or train components and infrastructure readers – this also helps minimise the potential for several incompatible and divergent systems being developed. As additional uses for the RFID system are identified, existing tags and readers could be used - projects need not derive their own requirements (they can use this standard), or fit new equipment. For example, as a result of this RIS, fewer RFID readers need to be fitted trackside than would otherwise have been without it.

- 2.5 Note this standard's scope is only for where the RFID reader is trackside and the RFID tag is on a vehicle. RIS-2795-RST covers the reverse, i.e. the reader is on a vehicle, the tag is trackside (*Track to Train RFID Compatibility*).
- 2.6 At the 12-month review in April 2019, CCS SC recommended that this standard be reviewed after three years, rather than the usual five years, due to the speed in which technology and innovation develops in this field.

3. Impacts of the document(s) following publication/entering into force

3.1 Consideration has been given to the following during the assessment:

- a **Business Case for Change** – this standard was developed before the RSSB Business Case for Change process was established. The common approach, as described in 2.4 however, appears to have been effectual from user feedback.
- b **Deviations** – no deviations have been applied for since the publication of issue one.
- c **Current projects or proposals being processed** – no related projects or proposals are currently ongoing surrounding this standard's subject matter.
- d **Limited change release** – no limited change releases have been published since the first issue of this standard.
- e **Amendments and clarifications** – no amendments or clarifications have been sought since publication of issue one.
- f **Enquiries** – there are currently no enquiries recorded against this standard.
- g **Research projects** – no relevant RSSB research projects are currently on-going which overlap this standard's subject matter.
- h **Changes in regulations** – there are no changes in regulations that impact on the content of this standard.
- i **Changes in technology** – no major changes in RFID technology have occurred since the previous review of this standard. There are, however, several changes to standards as detailed in j and l below.
- j **National Technical Specification Notices (NTSNs) and European standards** – references are made to the OPE TSI as well as several European and International standards which have been updated, or are in the process of being updated, since this standard's publication. This includes references to:
 - a) The 2015 OPE TSI and the use of European Vehicle Numbers (EVNs).
 - b) ETSI EN 302 208¹ v3.1.0 which has been withdrawn and replaced with v3.3.1.
 - c) BS ISO 8601:2004 (*Data elements and interchange formats. Information interchange. Representation of dates and times*) which has been withdrawn and replaced with BS ISO 8601-1:2019 and BS ISO 8601-2:2019.

A new standard, BS EN 17230:2020 (*Information technology. RFID in rail*), was published in December 2020 – a non-exhaustive inspection of the RIS against this new standard suggests that there are differences. For example, the allowed position of the RFID tag on a vehicle is different; the BS EN being more restrictive. Furthermore, some requirements in the RIS are now contained within the BS EN.

¹ ETSI EN 302 208 - Radio Frequency Identification Equipment operating in the band 865 MHz to 868 MHz with power levels up to 2 W and in the band 915 MHz to 921 MHz with power levels up to 4 W; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU.

- k **Published list of NTRs** – no NTRs have been identified within this standard’s subject matter.
- l **Any other observations**
 - i. Minor editorial corrections and changes would be beneficial e.g. updating hyperlinks, defining acronyms and increasing clarity of guidance.
 - ii. The RIS references GERC8517 (*Recommendations for Systems for the Supervision of Enhanced Permissible Speeds and Tilt Enable*) which has been withdrawn and replaced with RIS-8012-CCS (*Controlling the Speed of Tilting Trains through Curves*) and RIS-8019-CCS (*Tilting Trains: Controlling Tilt Systems to Maintain Clearances*).
 - iii. The RIS refers to information, which would have been forthcoming at the time, but may now have been published. There is Guidance related to possible future ‘communication links with R2’ and ongoing ‘research around interference’ – it is not known if these were completed. Furthermore, requirements in Section 5.4 (*Automatic Vehicle Identification (AVI) – Connected Train Identifiers (CTI)*) may no longer be applicable as the CTI database is not in place.
 - iv. GS1 Tag Data Standard:2014 (v1.9), which forms the basis of Part 4, has been updated to v1.13 (November 2019).
 - v. Appendix D could be refined; this includes editorial changes and genericising some information to either be less supplier specific or include other manufacturers’ systems (e.g. rather than just Alstom’s Trainscanner, it could also include Bombardier AVIS and Siemens VEMS, if appropriate).
 - vi. Five BS ISO/IEC standards referenced are known to be under review at the time of this paper ^{2 3 4 5 6}.

4. Discussion

4.1 Review assessment

4.1.1 The following list proposes how the impacts set out above could be addressed:

- Assess the alignment of new standard (BS EN 17230:2020) with the RIS, updating the RIS where appropriate – this may include withdrawing sections or clauses of the RIS as they are now contained in the BS EN (addresses 3.1 j).
- Assess the impact of changing requirements to address newer versions of standards.
 - Consider the implications of requiring version 3.3.1 of ETSI EN 302 208 rather than version 3.1.0 (addresses 3.1 j b))
 - Consider the implications of requiring version 1.13 (2019) of the GS1 Tag Data Standard rather than version 1.9 (2014) (addresses 3.1 l iv). Note that this GS1 standard requires ‘backwards compatibility’ between versions.

² BS ISO/IEC 18000-63:2015 - Information technology. Radio frequency identification for item management. Parameters for air interface communications at 860 MHz to 960 MHz Type C

³ BS ISO/IEC 17367:2013 - Supply chain applications of RFID. Product Tagging

⁴ BS ISO/IEC 15418:2016 - Information technology. Automatic identification and data capture techniques. GS1 Application identifiers and ASC MH10 Data identifiers and maintenance

⁵ BS ISO/IEC 15961-1:2013 - Information technology. Radio frequency identification for item management: Data protocol. Application interface

⁶ BS ISO/IEC 15962:2013 - Information technology. Radio frequency identification for item management. Data protocol: data encoding rules and logical memory functions

- References to withdrawn and updated standards should be changed.
 - Replace reference to the 2015 OPE TSI with the appropriate NTSN (addresses 3.1 j a)).
 - Replace references to BS ISO 8601:2004 with BS ISO 8601-1:2019 and BS ISO 8601-2:2019 (addresses 3.1 j c))
 - Replace references to GERC8517 with RIS-8012-CCS and RIS-8019-CCS; GERC8517 was published as RISs with no change to content (addresses 3.1 l ii).
 - Check the status of what was previously forthcoming information.
 - Determine the progress with ‘communication links with R2’ and ‘research around interference’ and update the RIS Guidance (addresses 3.1 l iii).
 - Re-define the requirements in Section 5.4 as the CTI database is not currently in place. Consider either withdrawing this section or incorporate a different system that may benefit from receiving AVI information. This system would need to be identified (addresses 3.1 l iii).
 - Undertake editorial changes throughout the document.
 - Make minor corrections to, for example, update hyperlinks, defining acronyms and increasing clarity of guidance (addresses 3.1 l i).
 - Refine Appendix D through editorial corrections and engagement with suppliers to understand their alignment with the RIS (addresses 3.1 l v).
- 4.1.2 As no planned publication date is available for the five BS ISO/IEC standards that are currently under review (3.1 l vi), it is proposed that the review of the RIS continue assuming that the current versions are applicable. Should the new versions become available during the project, they will be considered.
- 4.1.3 As highlighted in 2.6, CCS Standards Committee suggested a 3-year review due to the speed in which technology and innovation develops in this field. This assessment suggests that after 3 years, changes are already required to the RIS. The amount of change will mostly be dependent on the contents of the new and updated standards.
- 4.1.4 It is recommended that a Change Project be set up to undertake the activities proposed in 4.1.1, principally as the RIS has been impacted by a number of external standards changes and a ‘limited change release’ is unlikely to accommodate all the changes needed. The Change Project would include the creation of a Business Case for Change and identification of additional stakeholders / industry experts to consult with. Any changes that may be required to the related RIS-2795-RST (*Track to Train RFID Compatibility*) should also be considered.

5. Recommendations

- 5.1 The Standards Committee is asked to:
- a DISCUSS the assessment of the three-year review.
 - b APPROVE / SUPPORT the creation of a Change Project to undertake the proposals listed in this review. This would include the generation of a Business Case for Change and consultation with industry at applicable stages.

RSSB completion: [\[do not delete\]](#)

<i>Lead Standards Committee</i>	<i>Meeting date</i>	<i>Recommendation approved</i>	<i>Minute numbers</i>		<i>Next review date</i>
			<i>Pre-consultation review</i>	<i>Post-consultation review</i>	
Control Command and Signalling	15/04/2021				

Appendix A Associated information to support the review

The information in this appendix is provided by the industry groups information manager to assist with the review. This appendix should be deleted prior to submitting the review form to the SCs.

Deviations	Nil	Nil
Request for Help	Nil	
Proposals	List approved proposals Nil	List proposals not yet approved by the standards committee
7. RSSB Standards Programme	This document is currently not on the RSP.	
Amendments or clarifications	Nil.	
Limited change releases	Nil.	
Enquiries	There are currently no enquiries recorded against this document in the CRM. Please confirm with all Technical Specialists.	
Business case for change	18 IA 12	
Information from RMDB Note: update RMDB to reflect action/decision	<p>Security of the tag - Need to put in information about locking and unlocking of tags. This is expected to be in the EN standard and this should be updated once that is published. AVI Persistence of information topic has been removed but retained for use in future versions of the standard.</p> <p>Check terms for reader/antenna.Tag location - the EN may specify not forward of the front axle.</p> <p>Need to review this requirement in future versions of the RIS</p>	