

Deviation Certificate

(In accordance with the Railway Group Standards Code and Standards Manual)

Deviation number: 17-047-DEV

Revised: 17/11/2017

1. Problem statement

The Driver Machine Interface (DMI) on Class 345 trains is non-compliant to Clause 4.2.3.8 of GERT8075 Issue 2. It is possible to interrupt the first cycle of the Overspeed and Signal Passed at Danger (SPAD) speech messages by acknowledgment of the brake application on the DMI.

2. Title of deviation certificate

Class 345 Interruption of Overspeed and SPAD Speech Messages on First Cycle.

3. What is the requirement you can't comply with?

Requirement Number:	Document Number:	Issue Number:	Issue Date:	Title of document:
4.2.3.8	GERT8075	Two	01/03/2015	AWS and TPWS Interface Requirements

4.2.3.8 Except in the circumstances set out in 4.2.3.7, at least one complete cycle of the speech message shall be played.

4. Why can't you comply with the existing requirement?

The train design intent is to be compliant with the clause. Testing has identified that the clause isn't met due to an implementation issue within the DMI software on the train. It is not feasible to release and re-validate a new software version in time for the entry to Passenger Service for the Class 345 train, and therefore a time limited deviation needs to be sought until the new software version is available.

5. Where can't you comply with the requirement?

This deviation applies to all Class 345 Restricted Length Unit's for the time limitation in Section 7 below ('How long would you like the deviation to last...').

The Unit Numbers are 345001 to 345017 inclusive.

The deviation only covers operation under AWS - TPWS and does not include operation under ETCS level NTC.

6. What are you proposing to do instead of the existing requirement?

When the Class 345 train enters service, the driver will be able to interrupt the first cycle of an overspeed or SPAD speech message by acknowledgment of the brake application on the DMI. The driver is still informed to contact the signaller by either of the two following text messages that are shown on the DMI for the duration of the brake application:

- SPAD Brake Application - Contact the Signaller;
- Overspeed Brake Application - Contact the Signaller.

7. How long would you like the deviation to last and is there anything that would affect the length of the deviation?

Start date	End date
15/05/2017	31/12/2017

Bombardier Transportation has already implemented a fix and successfully tested it in an engineering software release of the DMI software. This fix will be included within the next scheduled release of software. This is expected to be fully tested, and rolled out to the fleet by 24/11/2017.

This section of the certificate was revised on 17/11/2017 to extend the validity date to 31/12/2017.

8. Demonstrate that what you are proposing to do instead is reasonable.

It is understood that the operational purpose of Clause 4.2.3.8 is to ensure that the driver gets the full audible message, including the instruction to 'Contact the Signaller'. The rationale for this clause within GEGN8675 Issue 2 is "G 5.2.3.10 Rationale: Even if the driver acknowledges the brake demand before a complete message has been played, it is preferable to give the complete message to the driver. "

In terms of safety, the non-compliance does not directly impact the safe operation of the train. Once a SPAD or Overspeed brake application is triggered, the Train Protection and Warning System (TPWS) brake is maintained for at least 59 seconds to ensure that the train is stopped. Operationally, drivers are trained to contact the signaller following a SPAD or Overspeed Event and the speech message is intended to reinforce this procedure. On the Class 345 train, the driver is also provided with an additional text message on the DMI to reinforce the procedure. In the event that the driver releases the brake and continues without having gained permission from the signaller, a hazard has been realised because the driver is moving the train without authority (if a SPAD occurred).

Although it is unlikely that a drivers first instinct would be to acknowledge a SPAD or Overspeed brake application within the first 4-5 seconds, the briefing note for Class 345 drivers will be amended to state that the brake application should not be acknowledged in the first message cycle, and this will be briefed to drivers by the train operator. Along with the additional text message provided to drivers, this is considered to be adequate mitigation for hazards that can arise from the non-compliance.

The class 345 trains will replace class 315 trains fitted with TPWS Mk1. The TPWS functionality on class 345s is significantly better than TPWS Mk1, and with the exception of this deviation is compliant with the group standard.

9. Demonstrate consultation with all affected parties has been carried out and their agreed support.



The necessary stakeholders in respect of this deviation are Rail for London (RfL) (as the Class 345 Rolling Stock Client) and MTR Crossrail (as the Class 345 Train Operator).

The following have been consulted and agree their support to this time-limited deviation: RfL Rolling Stock and Depot Lead Engineer and MTR Crossrail.

Consultation with other train operators and Infrastructure Manager (Network) will be undertaken as part of the route compatibility assessment and safe integration processes before the trains are put into use.

10. What alternative options have been rejected and the rationale?

The alternative option would be to implement the new release of DMI software immediately. However, due to the reasons stated in Section 4 ('Why can't you comply with this requirement?'), this would impact upon the programme for entry to passenger service for the Class 345 train.

The non-compliance is not considered to be of a significant nature and, on a time-limited basis, is considered reasonable, given that the Class 345 units have text message functionality which is over and above the Standards requirements, meaning that the overall goal of the Standard is still met.

11. What supporting documents/information are you providing?

This section of the certificate was revised on 17/11/2017 to include further information supporting the case for an extension to 31/12/2017.

Attachments:

- 1) Crossrail / RfL's support email dated 09/05/2017;
- 2) Support from Crossrail TfL's Principal Rolling Stock Engineer;
- 3) Paper detailing the reasons for the requested extension;
- 4) MTR Crossrail's email dated 16/11/2017 supporting the extension;
- 5) Rail for London's email dated 16/11/2017 supporting the extension.

12. Is the certificate for a project requiring authorisation for placing in service under the Railways (Interoperability) Regulations 2011?

Yes

13. Applicant details and status

Applicant job title	Applicant company/organisation	Applicant company/organisation address
Design Assurance and Authorisation Manager	Bombardier Transportation	Litchurch Lane, Derby DE24 8AD

Applying as:



- The party who must currently comply, or may reasonably be expected to have to comply in the future, with the requirement.

Your reference number

N/A

Applicant's signature	Design Assurance and Authorisation Manager	Date	09/05/2017
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Name of Committee	Date of meeting	Minute reference
Control Command and Signalling	N/A	Agreed by the Professional Head of Control, Command and Signalling outside of Standards Committee, to be noted at the next Standards Committee meeting.

Authorised by Director of Standards:	Date of Authorisation:
Approval No. 1593	21/11/2017