

RAILTRACK

*Safety & Standards***SAFETY JUSTIFICATION****ISSUE: I****DOCUMENT INFORMATION**

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PART 1 – SCOPE OF SAFETY JUSTIFICATION

This Safety Justification describes the rationale behind the controls for electrical compatibility as specified in Railway Group Standard GE/RT8023 “Compatibility Between Electric Trains and Electrification Systems” Issue 1. The primary object of the standard – GM/RT1000 re-issued and with a new number - is to give greater direction to the management process for change to ensure the compatibility between electric trains and electrification systems.

The scope of the safety justification covers the controls as a whole and highlights the specific work involved in the development of the RGS, including the withdrawal of the previous standard GM/RT1000, which is superseded, and the withdrawal of the previous Code of Practice GM/RC1502.

PART 2 – RISKS BEING CONTROLLED

This standard defines the electrical compatibility requirements for electric trains and electrification systems. Electrical incompatibility can cause physical injury and / or electric shock from events such as, but not limited to, fire, failure of signalling & telecommunications systems, failure of electrification system protection arrangements. Standards for electrical compatibility are necessary to ensuring that the following risks are controlled:

- Physical injury resulting from incidents caused by electrical incompatibility
- Electric shock resulting from incidents caused by electrical incompatibility

Risks of the above deriving from incidents caused by the lack of evaluation of the consequences of a proposed change or by the evaluation of the consequences of a proposed change not being followed

through into identifying and implementing any remedial or mitigating measures are explicitly addressed by the controls.

Part 3 SUMMARY OF CONTROLS

Railway Group Standard GE/RT8023 Issue 1 defines the controls for ensuring electrical compatibility between electric trains and electrification systems.

The development of the current standard brought clarity to:

- technical compatibility issues that require to be addressed, but are not limited to, (in an Appendix to GE/RT8023);
- the necessity to evaluate the consequences of a proposed change and, where necessary, implement remedial measures prior to the change being introduced;
- procedures by inclusion of a documented record called an 'electrification statement' where compatibility evaluations are recorded;
- the 'type of change' to be considered - it is now a mandated requirement, rather than a definition, and broadened in scope.

The key elements of the standard may be summarised as:

- all changes to electric trains and electrification systems to be considered, but significant ones evaluated in the prescribed manner;
- change not implemented until mitigating measures are also implemented;
- all relevant compatibility issues to be evaluated;
- methodology and results of evaluation agreed by all parties;
- any mitigating or remedial measures identified;
- after the introduction of change the verification of effects of the change and supplied data.

The technical requirements for many of the technical compatibility issues, listed in the appendix to GE/RT8023, are contained in other Railway Group Standards and GO/RT3270, Route Acceptance of Rail Vehicles, sets out the requirements and responsibilities for route acceptance of rail vehicles for operation on Railtrack controlled infrastructure.

Part 4 – COSTS AND BENEFITS

The controls are designed to ensure that electrical compatibility is established and maintained between electric trains and electrification systems. The controls provide coverage for the evaluation process, the implementation of change and verification of the effects of change, but avoid unnecessary detailed prescription. The control measures comprise the essential mandatory requirements for ensuring that these are comprehensively addressed.

The established control measures, which are already practised by the industry, have been accepted as a necessary expenditure. The costs of implementation of the additional control measures are judged reasonable and will not impose a big cost on the following basis:

- Implementation of remedial measures prior to a change being introduced and documentation are considered to be part of good engineering practice
 - The technical compatibility issues and broadened scope of type of change should have been addressed as part of good engineering practice and already considered by a competent engineering authority.
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Part 5- CONCLUSIONS

The Standard is concerned with ensuring that electrical compatibility is established and maintained, thereby controlling the risk of the physical injury and electric shock resulting from incidents of incompatibility. The development of the Standard removes unnecessary prescription, and by the clarification adds new control measures to those which are already established and accepted by the industry in order to substantiate control of the risks from electrical incompatibility. The clarified controls are good engineering practice and part of the role of a competent engineering authority. On this basis it is concluded that the controls specified in the Standard are justified.