

Wheelset Supplier Qualification

Synopsis

This document mandates audits of wheelset suppliers to ensure their competence.

Submitted by

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Published by:
Railway Safety
Evergreen House
160 Euston Road
London NW1 2DX

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Part A

A1 Issue record

Issue	Date	Comments
One	August 2002	Original Document

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

A2 Implementation of this document

The publication date of this document is August 2002.

This document comes into force on 7 December 2002.

The dates by which compliance with the requirements of this document is to be achieved are set out in Part B2. Where those dates are later than the date on which this document comes into force, this is to give Railway Group members additional time to plan and commence implementation so as to achieve full compliance by the dates set out in Part B2.

This document supersedes the following Railway Group document.

Railway Group document	Issue No.	Title	Sections superseded by this document	Date(s) as of which sections are superseded
GM/RM2525 INF	2	Wheelsets Manual Information Section	All	7 Dec 2002

A3 Scope of Railway Group Standards

The overall scope of Railway Group Standards is set out in Appendix A of [GA/RT6001](#). The specific scope of this document is set out in Part B2.

A4 Responsibilities

Railway Group Standards are mandatory on all members of the Railway Group* and apply to all relevant activities that fall into the scope of each individual's Railway Safety Case. If any of those activities are performed by a contractor, the contractor's obligation in respect of Railway Group Standards is determined by the terms of the contract between the respective parties. Where a contractor is a duty holder of a Railway Safety Case then Railway Group Standards apply directly to the activities described in the Safety Case.

* The Railway Group comprises Railtrack PLC, Railway Safety, and the train and station operators who hold railway safety cases for operation on or related to infrastructure controlled by Railtrack PLC.

Railtrack PLC is known as Railtrack.

A5 Health and safety responsibilities

In issuing this document, Railway Safety makes no warranties, express or implied, that compliance with all or any documents published by Railway Safety is sufficient on its own to ensure safe systems of work or operation. Each user is reminded of its own responsibilities to ensure health and safety at work and its individual duties under health and safety legislation.

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A6 Technical content

The technical content of this document has been approved by:

Haydn Peers, Principal Vehicles Engineer, Railway Safety

Enquiries should be directed to Railway Safety – Tel: 020 7904 7518

A7 Supply

Controlled and uncontrolled copies of this document may be obtained from the Industry Safety Liaison Dept, Railway Safety, Evergreen House, 160 Euston Road, London NW1 2DX.

Railway Group Standard

GM/RT2470

Issue One

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Part B

B1 Purpose

Wheelsets and associated components are single-point failure safety-critical items, and control of their manufacture and assembly is essential to reduce the risks of defects. This document mandates more detailed controls on their supply over and above the general requirements that are given by GM/RT2450.

The purpose of this document is to mandate:

- a) that **wheelsets** and associated components will only be procured from wheelset suppliers who are entered on the current list of qualified suppliers
- b) the process for entry and continuous registration of a wheelset supplier on the list of qualified suppliers
- c) the maintenance and availability of the list of qualified wheelset suppliers.

B2 Application of this document

B2.1 To whom the requirements apply

This document contains requirements that are applicable to Railway Safety and duty holders of the train operator category of Railway Safety Case.

B2.2 Compliance requirements

Wheelset suppliers qualified under the existing GM/RM2525 INF shall retain their scope of qualification until 31 December 2004, provided they can demonstrate they have supplied **wheelsets** and/or their components within the two years preceding issue of this document.

The requirements of this document shall be complied with no later than 7 December 2002.

Action to bring existing railway **wheelsets** into compliance with the requirements of this document is not required.

B2.2.1 General compliance requirements

After the compliance dates, or after the date by which compliance is achieved (if earlier), Railway Group members shall not deviate from the requirements set out in this document.

Where it is considered not practicable, or not reasonably practicable, to comply with the requirements set out in this document, authorisation not to comply shall be sought in accordance with [GA/RT6001](#), [GA/RT6004](#) or [GA/RT6006](#).

B2.3 Exclusions from the application of this document

With the exception of rail-mounted maintenance machines (GM/RT2402), road/rail vehicles (GM/RT1300) and foreign-registered RIV vehicles (GM/RT2000 section B6.4d), the contents of this Standard specifically apply to all **wheelsets** used for operation on Railtrack controlled infrastructure.

B3 Definitions

Competent body (for the purpose of this document only)

An organisation that meets the requirements of section B6 of this Standard.

In-service wheelset failures

Defective wheelset assemblies under vehicles that are classified as having an urgent high-risk defect, as defined in GE/RT8250.

List of qualified wheelset suppliers (for the purpose of this document only)

List maintained by Railway Safety of wheelset supplier's name, contact details, scope of supply and validity date for approval.

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Wheelsets and associated components

For the purpose of this document, a wheelset shall be as defined in BS5892. Associated components are axles, monobloc wheels, wheel centres and tyres, resilient wheel units.

B4 Principles

This Standard supports HMRI principle 30.

'The running gear should guide the train safely along the track ... including h) the risk and effects of component failure, particularly of **wheelsets** and bearings'.

This document addresses:

- a) the requirements that **wheelsets** and associated components are only procured from wheelset suppliers who are entered on the current list of qualified suppliers
- b) the type and frequency of audit for the supplier to enter and maintain entry on the list of qualified suppliers
- c) the information required from the supplier to maintain entry on the list of qualified suppliers
- d) the requirements of the auditing body
- e) the requirements for Railway Safety to maintain and make available the list of qualified suppliers.

B5 Qualification of wheelset supplier

Entry onto the list shall be by successful completion of an entry audit.

Continuous registration on the list shall require successful completion of:

- a) bi-annual surveillance audits
- b) the repeat of the entry audit at a maximum of six years from the previous entry audit.

B5.1 Entry audit

B5.1.1 The entry audit shall be carried out against a scope of supply, which defines the product types included within the qualification. This shall define at least the following:

- a) type of wheelset – powered or trailer, monobloc or tyred or resilient
- b) level of manufacture:
 - i) assembly of new and overhauled **wheelsets**
 - ii) repair of **wheelsets**
 - iii) manufacture of new axles (solid or hollow), wheels (forged or cast), wheel centres and tyres, resilient wheel units
- c) the source, and appropriate supplier qualification, of those wheelset components not manufactured by the wheelset supplier seeking approval.

B5.1.2

The audit of the wheelset supplier shall be carried out by a competent body (see section B6). The general supplier requirements are covered by GM/RT2450. The safety-critical nature of wheelset components means that there needs to be a more thorough technical assessment of the wheelset supplier. It is therefore a means of achieving, in part, the requirements of GM/RT2450.

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B5.1.3

The audit shall seek to establish that the wheelset supplier has the necessary process and technical competence to supply **wheelsets** and associated components compliant with all relevant Railway Group Standards. These shall include:

- a) the system for receipt, review and implementation of Railway Group Standards
- b) contract review
- c) sub-contractor qualification and control
- d) material control
- e) product review
- f) production processes
- g) arrangements for advice to customers when process changes occur
- h) process inspections
- i) non-destructive testing process
- j) staff competence
- k) storage and handling
- l) conformity records
- m) demonstration of product against specification
- n) reporting mechanisms and statistics of in-service failures, and actions for improvement.

Where appropriate, the compliance of the supplier with an international quality system shall be sufficient evidence for the generic non-wheelset issues.

B5.1.4

Where the wheelset supplier also manufactures wheelset components, the audit shall also include a technical assessment of the manufacturing capability of the supplier. Evidence shall be sought to demonstrate that the wheelset supplier has addressed the following areas:

- a) Starting material assessment:

For each batch of steel, the material shall be free of surface and internal defects likely to have a detrimental effect on the component performance. The chemical homogeneity of the steel shall be assessed. The maximum hydrogen level encountered during the steel casting process shall be determined.

- b) Forging, rolling and heat treatment:

The suitability of the process and equipment to produce the wheelset components to the specified requirements. The procedures to achieve uniform heat treatment.

- c) Finished component assessment:

Batch testing of the component to demonstrate that it complies with the properties specified by the appropriate manufacturing standards. For

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example, assessing residual stresses, grain sizes and the non-destructive testing equipment.

- d) The use and effectiveness of the testing equipment and procedures.

Where the supplier has not previously manufactured components for use on a European mainline railway network, sample components shall be subjected to comprehensive metallurgical investigation to determine fitness for purpose, and the results included in the audit report.

B5.1.5

The audit shall be documented by the competent body in a report that states:

- a) confirmation of the scope of supply
- b) confirmation that all requirements of the audit have been met, or issues raised at the audit which require rectification have been resolved to the satisfaction of the competent body
- c) a description of the production process
- d) where the wheelset supplier does not manufacture the wheelset components, a list of the component suppliers and their scope of supply
- e) whether the competent body recommends entry of the wheelset supplier onto the list of approved suppliers.

The report may include a recommendation for a particular identification code for the wheelset supplier concerned.

The report shall be submitted by the wheelset supplier to Railway Safety for review and final approval assessment.

B5.2 Bi-annual surveillance audit

B5.2.1

The bi-annual surveillance audit shall be conducted by a competent body (see section B6). The audit shall establish that relative to the previous audit (entry or surveillance), there have been no changes that introduce a risk affecting the wheelset product such as:

- a) legal ownership of the company
- b) company organisation
- c) production location
- d) production process, for example using new machines
- e) source of manufactured wheelset components
- f) products produced
- g) quality system.

B5.2.2

The surveillance audit shall review and assess:

- a) the quantities of the supplier's products for the European market in the preceding two years
- b) causes of component rejection during the manufacturing and wheelset assembly processes and in-service warranty claims

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- c) causes of any in-service failures. A copy of each incident report to be provided.

This audit shall confirm the scope of supply, sample compliance of the product, and, based on the entry audit report, review any areas of concern raised in that report and recommend any actions necessary. A copy of the previous audit report shall be made available to the surveillance auditors in good time before the audit.

The competent body shall produce a surveillance audit report covering the above requirements. The wheelset supplier shall send this report to Railway Safety.

Where there have been changes that could affect the wheelset product, these shall be assessed by the competent body. The audit report should detail these changes and whether the competent body still recommends continued approval.

Where there has been no supply to the European market within the scope of the qualification during the previous two years, the audit report shall recommend Railway Safety removes the wheelset supplier from the list.

B5.3 Timescales

The frequency and reporting timescales shall be in accordance with Table 1.

Year	Activity	Completion of activity from first entry audit (months)
0	Entry Audit	0
2	Bi-Annual Surveillance Audit	22-24
4	Bi-Annual Surveillance Audit	46-48
6	Entry Audit	66-72
Etc		

Table 1

B5.4 Removal from the list

B5.4.1

Railway Safety shall consider removal of suppliers from the list for any one of the following:

- the appropriate report is not received in accordance with the timescales given in section B5.3
- the audit report is assessed as inadequate or unsatisfactory by Railway Safety
- the audit report includes recommendations to withdraw the suppliers accreditation
- in-service wheelset failures and subsequent investigations confirm that the product supplied was the cause of the incident. Due consideration will be given to the risk of repeat occurrences.

B5.4.2

Railway Safety will advise the wheelset supplier in writing that they and their codes have been removed from the approved list.

B5.4.3

When a wheelset supplier is removed from the list, Railway Safety will advise the Railway Group members, vehicle leasing companies, vehicle builders and vehicle

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acceptance bodies using the urgent safety-related defect form (GE/RT8250 Form 8250).

B6 Competent body requirements

B6.1 Competent body

The body, which undertakes the entry and surveillance audits, known as the competent body, shall:

- a) be impartial to the wheelset supplier and not have a commercial interest in the outcome of the audit
- b) be familiar with UK railway operations and Railway Group Standards
- c) use a team for the audit, which includes a qualified lead auditor and person(s) with recognised technical expertise in wheelset standards, design, manufacture and component inspection. When assessing wheelset component suppliers, the team shall include a metallurgist with knowledge of steel making, wheelset component manufacture and their performance.

B6.2 Audit report requirements

Each wheelset audit report submitted to Railway Safety shall be produced in English and shall include evidence that the competent body meet the requirements of this section.

B7 Railway Group member requirements

The Railway Group member shall:

- a) ensure that **wheelsets** shall only be procured from wheelset suppliers who are entered on the current list of qualified suppliers
- b) retain full responsibility for product acceptance and ensure the fitness-for-purpose of its **wheelsets** for all **wheelsets** supplied, including compliance of the **wheelsets** with the order specification
- c) demonstrate the wheelset and its components comply with all applicable Railway Group Standards
- d) on receipt of notice that a wheelset supplier has been removed from the approved list, assess that any existing **wheelsets** or components from that supplier are safe to remain in service. It is suggested that a risk assessment carried out by a competent body would close out this action.

B8 Railway Safety requirements

Railway Safety shall:

- a) review all entry and surveillance audits submitted by the wheelset suppliers
- b) determine whether an audit report complies with the requirements set out in sections B5 and B6 of this document
- c) review the recommendations of an audit report (approved in accordance with B8b) and, where full compliance with this document is demonstrated, approve the wheelset supplier for the use of their products on Railtrack controlled infrastructure
- d) maintain list of approved wheelset suppliers, their codes and scope of supply, making the list available without charge to anyone who requests them

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- e) add wheelset suppliers for whom a satisfactory entry audit report has been received. A letter shall be sent to the wheelset supplier informing them of their unique identification code that has been allocated
- f) remove suppliers from the list in accordance with section B5.4
- g) maintain list of obsolete and old assignees of identification codes for **wheelsets** that can operate over Railtrack controlled infrastructure.

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References

Railway Group Standards and other Railway Group Documents

- [GA/RT6001](#) Railway Group Standards Change Procedures
- [GA/RT6004](#) Temporary Non-Compliance with Railway Group Standards
- [GA/RT6006](#) Derogations from Railway Group Standards
- [GE/RT8250](#) Safety Performance Monitoring and Defect Reporting of Rail Vehicles, Plant and Machinery
- [GM/RT1300](#) Engineering Acceptance of Road Rail Plant
- [GM/RT2402](#) Engineering Acceptance of Rail Mounted Maintenance Machines
- [GM/RT2450](#) Qualification of Suppliers of Safety Critical Engineering Products and Services

The Catalogue of Railway Group Standards and the Railway Group Standards CD-ROM give the current issue number and status of documents published by Railway Safety.

Other References

- [BS5892](#) Railway Rolling Stock Materials