

# Rapid Response

**Railway Group Standard  
GM/RT2470  
Issue Two  
Date November 2004**

## Wheelset Supplier Qualification

### Synopsis

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

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### Issue record

Issue	Date	Comments
One	August 2002	Original Document
Two	November 2004	Replaces issue one and revises arrangements relating to the <b>audit</b> process and approval of audits.

Significant amendments or additional parts of revised pages have been marked by a vertical black line in the adjacent margin.

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### Part 1 General information

#### 1.1 Scope of Railway Group Standards

##### 1.1.1 General

1.1.1.1 The overall scope of Railway Group Standards, and specifically of the controlled infrastructure (as used in this Railway Group Standard), is set out in the Railway Group Standards Code. The specific scope of this Railway Group Standard is set out in Part 2.

##### 1.1.2 General responsibilities

1.1.2.1 The Railway Group comprises Network Rail Infrastructure Limited, Rail Safety and Standards Board Limited and the train and station operators who hold railway safety cases for operation on or related to infrastructure controlled by Network Rail Infrastructure Limited.

1.1.2.2 Network Rail Infrastructure Limited is also known as Network Rail.

1.1.2.3 Rail Safety and Standards Board Limited is also known as RSSB.

#### 1.2 Compliance date

##### 1.2.1 General

1.2.1.1 This Railway Group Standard comes into force and shall be complied with from 31 December 2004, except as specified in Part 2. Where the date specified in Part 2 is later than the above date, this is to allow Railway Group members sufficient time to achieve compliance with the specified exceptions.

1.2.1.2 After the compliance date or the date by which compliance is achieved if earlier, Railway Group members shall maintain compliance with the requirements set out in this Railway Group Standard. Where it is considered not reasonably practicable to comply with the requirements, authorisation not to comply shall be sought in accordance with section 8 of the Railway Group Standards Code.

#### 1.3 Health and safety responsibilities

##### 1.3.1 Legislation

1.3.1.1 Each Railway Group member is reminded of the need to consider its own responsibilities to ensure health and safety at work and its 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 Supply

##### 1.4.1 Obtaining copies of this document

1.4.1.1 Controlled and uncontrolled copies of this Railway Group Standard may be obtained from the Corporate Communications Department, Rail Safety and Standards Board, Evergreen House, 160 Euston Road, London NW1 2DX, telephone 020 7904 7518 or e-mail [enquiries@rssb.co.uk](mailto:enquiries@rssb.co.uk). Railway Group Standards can also be viewed at [www.rssb.co.uk](http://www.rssb.co.uk).

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**Part 2 Application of this standard****2.1 Purpose****2.1.1 Mandatory requirements**

2.1.1.1 **Wheelsets** and associated components are single-point failure safety-critical items, and control of their manufacture and assembly is essential to reduce the risk of defects. This standard mandates more detailed controls on their supply, over and above the general requirements that are set out in [GM/RT2450](#).

2.1.1.2 This standard mandates:

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

**2.1.2 To whom these requirements apply**

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

**2.2 Application – infrastructure controller****2.2.1 General**

2.2.1.1 There are no requirements applicable to the infrastructure controller.

**2.3 Application – station operator****2.3.1 General**

2.3.1.1 There are no requirements applicable to the station operator.

**2.4 Application – train operator****2.4.1 Scope**

2.4.1.1 The requirements of this standard apply to all railway **wheelsets** used for operation on Network Rail controlled infrastructure.

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

**2.4.2 Exclusions from scope**

2.4.2.1 The requirements in the standard are not applicable to the following:

- a) Rail-mounted maintenance machines (RMMMs) – [GM/RT2402](#)
- b) Road-rail vehicles (RRVs) – [GM/RT1300](#)
- c) Regolamento Internazionale Veicoli (RIVs) – GM/RT2000 section B6.4 d)
- d) Wheelskates used in the recovery of railway vehicles with defective **wheelsets** – GM/RT2260 section D2.2.

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### 2.4.3 Exceptions to general compliance date

2.4.3.1 Clause 3.2.1.1 a), which sets out requirements for the competence of the lead auditor, shall be complied with from 04 June 2005.

## 2.5 Application – RSSB

### 2.5.1 Scope

2.5.1.1 The requirements of this standard apply to the maintenance and publication of the list of approved wheelset **suppliers**.

### 2.5.2 Exclusions from scope

2.5.2.1 There are no exclusions from the scope specified in clause 2.5.1.1 for RSSB.

### 2.5.3 Exceptions to general compliance date

2.5.3.1 There are no exceptions to the general compliance date specified in clause 1.2.1.1 for RSSB.

## 2.6 Document management

### 2.6.1 Superseded documents

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

Superseded documents	Sections superseded	Date when sections are superseded
GM/RT2470 issue 1	All	31 December 2004

GM/RT2470 issue one ceases to be in force and is withdrawn with effect from 31 December 2004.

### 2.6.2 Related requirements in other documents

2.6.2.1 This standard defines the specific requirements for the approval of wheelset and wheelset components as part of the process for approving **suppliers** of safety related products and services in accordance with [GM/RT2450](#).

2.6.2.2 The requirements for Railway **Wheelsets** as set out in [GM/RT2466](#).

### 2.6.3 Supporting documents

2.6.3.1 There are no Railway Group documents supporting this Railway Group Standard.

## 2.7 Definitions

### **Audit team**

The persons undertaking the **audit**.

### **Duty holder**

The Railway Group member having responsibilities under its Railway Safety Case.

### **In-service wheelset failures**

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

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### List of approved wheelset **suppliers** (for the purpose of this standard only)

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

### Main **audit**

The initial **audit** of a wheelset supplier to gain entry onto the list of approved **suppliers**, or subsequent 6 yearly audits.

### Railway Group member

Railway Group members (RGM) are infrastructure controller(s), train and station operators who hold railway safety cases for operation on, or related to, the controlled infrastructure, and RSSB, as set out in the Railway Group Standards Code.

### Surveillance **Audit**

An **audit** undertaken at two yearly intervals, between Main Audits, to ascertain that any change to the supplier's processes are compliant with the requirements of this standard.

### **Wheelsets** and associated components

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

## 2.8 Principles

2.8.1.1 This Standard supports HMRI principle 30.

2.8.1.2 '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'.

2.8.1.3 This standard addresses:

- a) The requirement that **wheelsets** and associated components are only procured from wheelset **suppliers** who are entered on the current list of approved **suppliers**
- b) The type and frequency of **audit** for the supplier to enter and maintain entry on the list of approved **suppliers**
- c) The information required from the supplier to maintain entry on the list of approved **suppliers**
- d) The requirements of the **audit** team
- e) The requirement for RSSB to maintain and publish the list of approved **suppliers**.

### Part 3 Requirements

#### 3.1 Approval of wheelset supplier

##### 3.1.1 The list of approved wheelset suppliers

3.1.1.1 Entry onto the list of approved wheelset suppliers shall be by successful completion of a main audit.

3.1.1.2 Continuous registration on the list shall require successful completion of:

- a) Two yearly surveillance audits
- b) The repeat of the main audit at a maximum of six years from the previous main audit.

##### 3.1.2 Main audit

3.1.2.1 The main audit shall be carried out against a scope of supply, which defines the product types included within the approval. This shall define at least the following:

- a) Type of wheelset – powered or trailer, monobloc or tyred or resilient, outside or inside axle journal bearings
- 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 approval, of those wheelset components not manufactured by the wheelset supplier seeking approval.

3.1.2.2 The audit shall include the wheelset (component) variants currently provided by the supplier. Specific GB wheelsets not covered by the audit (for example, subject to special processes, materials, etc) shall be identified in the audit report. Product type shall be restricted to generic descriptions, for example, solid or hollow axles, monobloc wheels, wheel centres, tyred wheels, resilient wheels.

3.1.2.3 The audit of the wheelset supplier shall be carried out by an audit team (see section 3.2). The general supplier requirements are set out in 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.

3.1.2.4 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. The audit team is permitted to determine the depth of the audit by assessment of documentation provided by the wheelset supplier in each of the audit subjects. The audit shall include the following:

- a) Legal ownership of the company
- b) Company organisation
- c) Production location
- d) The system for receipt, review and implementation of Railway Group Standards

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- e) Contract review
  - f) Sub-contractor **qualification** and control
  - g) Material control
  - h) Product review
  - i) Production processes
  - j) Arrangements for advice to customers when process changes occur including safety validation of the changes
  - k) Process inspections
  - l) Non-destructive testing processes
  - m) Staff competence
  - n) Storage and handling
  - o) Conformity records
  - p) Compliance with UK national standards
  - q) Demonstration of product against specification
  - r) Reporting mechanisms and statistics for in-service wheelset failures, and actions for improvement.
- 3.1.2.5 The **audit** team is permitted to use **qualification** to a recognised international quality standard as evidence of compliance for non-wheelset specific issues.
- 3.1.2.6 Where the wheelset supplier also manufactures wheelset components, the **audit** shall include a technical assessment of the manufacturing capability of the supplier. Evidence shall be sought to demonstrate that the wheelset supplier complies with the requirements of [GM/RT2466](#) and BS5892 with particular attention to; starting material, forging, rolling, heat treatment processes, non-destructive testing certification and finished components. The **audit** shall also ensure the appropriate use and effectiveness of the testing equipment and procedures.
- 3.1.2.7 Where the supplier has not previously manufactured **wheelsets** or wheelset components for use on GB mainline railway network evidence shall be provided to demonstrate compliance with the requirements of [GM/RT2466](#) and BS5892.
- 3.1.2.8 Where the wheelset supplier subcontracts parts of the process (for example, steel making, finish machining) the **audit** team shall satisfy itself of the adequacy of the quality control processes that are in place.
- 3.1.2.9 The **audit** shall be documented in a report encompassing the requirements of this standard and include the following:
- 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
  - c) A description of the production process
  - d) A list of the component **suppliers** and their scope of supply

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- e) Recommendation by the **audit** team for the **suppliers** inclusion on the list of approved **suppliers**.
- 3.1.2.10 Where there is no existing identification code, the report shall include a recommendation for a particular code for the wheelset supplier concerned.
- 3.1.3 Two yearly surveillance audit**
- 3.1.3.1 A two yearly surveillance **audit** shall be undertaken to establish that, relative to the previous **audit** (main or surveillance), there has been no risk introduced by changes, including:
- a) Legal ownership of the company
  - b) Company organisation
  - c) Production location
  - d) Production process, for example using new machines, forging dies, rollers, etc
  - e) Source of manufactured wheelset components and materials
  - f) Products produced
  - g) Quality system
  - h) Rejection statistics
  - i) **Audit** reports findings, conclusions and recommendations (with corrective action plans)
  - j) Quantity of GB supplied **wheelsets** in at least the last two years
  - k) Major personnel changes
  - l) Service problems and failures.
- 3.1.3.2 As part of the two yearly surveillance **audit**, the **audit** team shall carry out a documentary assessment of the supplier's facilities addressing the above points, as a minimum, and supported by evidence provided by the supplier.
- 3.1.3.3 The **audit** team is permitted to use the documentary assessment to define the scope and depth of the on-site surveillance **audit** and the **audit** team skills profile.
- 3.1.3.4 The **audit** team shall consider in its assessment of the supplier's capabilities those items identified below, as a minimum:
- a) The quantities of the supplier's products for the European market in at least the preceding two years
  - b) Causes of component rejection during the manufacturing and wheelset assembly processes and in-service warranty claims
  - c) Causes of any in-service wheelset failures; a copy of each incident report to be provided
  - d) Any new production runs involving start-up of moth-balled equipment
  - e) Sample compliance of the product
  - f) Previous **audit** reports and any areas identified including, in particular corrective action reports (CARs) or observations and subsequent actions

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- g) Changes that could affect the product, including changes of material supplier, process, locations, etc.

3.1.3.5 The foregoing list is not comprehensive.

**3.1.4 Timescales**

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

Year	Activity	Completion of activity from first main <b>audit</b> (months)
0	Main <b>Audit</b>	0
2	2 yearly Surveillance <b>Audit</b>	22-24
4	2 yearly Surveillance <b>Audit</b>	46-48
6	Main <b>Audit</b>	66-72
Etc		

**Table 1 Audit frequency and reporting timescales**

**3.1.5 Removal from the list**

3.1.5.1 **Suppliers** shall be removed from the list of approved **suppliers** for any one of the following:

- The appropriate recommendation is not received from the **audit** report in accordance with the timescales given in section 3.1.4
- The **audit** report recommends withdrawing the supplier's accreditation.

**3.2 Audit team**

3.2.1.1 The main **audit** team shall consist of at least two team members that, between them, possess the following skills:

- A registered IRCA (International Register of Certificated Auditors) lead auditor who has a working knowledge of the quality systems used in the railway industry and supplier accreditation systems.
- A person with demonstrable technical expertise in GB wheelset standards, manufacture and inspection.
- A qualified metallurgist with demonstrable expertise in cast and forged steel making processes, machining and inspection techniques relevant to railway applications and, preferably, experienced in the investigation of railway wheelset defects and failures. A metallurgist is not essential for wheelset assembly only audits.

3.2.1.2 The surveillance **audit** team shall have the skills determined by a documented assessment of the supplier's capabilities. It is permissible for the **audit** to be undertaken by one person provided that person has the required skills. The assessment shall include previous GM/RT2470 **audit** reports and information provided by the supplier demonstrating compliance with the requirements of the standard, as set out in section 3.1.3. Where the supplier has not provided documentary evidence for assessment, the **audit** team shall be as required for the main **audit**.

3.2.1.3 The **audit** team shall be impartial to the wheelset supplier and/or funding body and not have a commercial interest in the outcome of the **audit**.

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### 3.3 Railway Group member requirements

3.3.1.1 The Railway Group member shall:

- a) Ensure that **wheelsets** are only procured from wheelset **suppliers** who are entered on the current list of approved **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) Ensure that 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 list of approved **suppliers**, assess that any existing **wheelsets** or components from that supplier are safe to remain in service.

### 3.4 RSSB requirements

3.4.1.1 RSSB shall:

- a) Construct and maintain a list of approved wheelset **suppliers** which shall include the supplier name, supplier identification code, scope of supply, **audit** dates etc.
- b) Add new **suppliers** to the list of approved **suppliers** when recommended to do so by an **audit** report.
- c) Publish up-to-date (live and obsolete) lists of approved **suppliers** on the RSSB web site, including key findings and recommendations from **audit** reports.
- d) Implement out-of-course audits where justified by wheelset incident/rejection trends with support from a train operator or justified by an urgent safety related defect report issued in accordance with [GE/RT8250](#).
- e) Remove a wheelset supplier from the list of approved **suppliers** when a recommendation has been received in accordance with clause 3.1.5 of this standard.
- f) Advise the wheelset supplier in writing that they and their identification codes have been removed from the list of approved **suppliers**, including justification for their removal.
- g) Advise train operators and the railway industry using an urgent safety related defect report issued in accordance with [GE/RT8250](#) when a wheelset supplier is removed from the list.
- h) Inform wheelset **suppliers** when **audit** reports become due.

### 3.5 Audit report

3.5.1.1 The **audit** team shall produce an **audit** report, in English, for every **audit**. The **audit** team lead auditor shall endorse the **audit** report. The report shall then be approved by a chartered engineer, independent of the **audit** team, confirming that the **audit** and report satisfies the requirements of this standard.

3.5.1.2 The **audit** report shall include, but not be limited to, the items identified in Appendix A.

3.5.1.3 The report shall be forwarded to the body funding the **audit** who shall copy the report to RSSB for action in accordance with section 3.4 of this standard. The report shall clearly state its scope, the **audit** results, key finding and recommendations.

**Wheelset Supplier Qualification****Appendix A Audit report content**

The content of this appendix is mandatory.

A.1.1.1 To ensure consistency in the production of the **audit** reports the following shall be included.

- a) Executive summary.
- b) Introduction, including the type of **audit**; main or surveillance.
- c) **Audit** team skills profile and qualifications (Curriculum Vitae).
- d) Organisational profile, including an organisation chart.
- e) Scope of the **suppliers** supply, define the scope of supply declared by the supplier, limitations on the scope and processes being applied during manufacture.
- f) Quality management system; document control system and review processes, competence of staff and training arrangements, supplier **qualification** and approvals, product review, internal audits of the management and production processes, activity and core skills matrix.
- g) Types of wheelset supplied, including the applications and range of **wheelsets** being used.
- h) Description of production process:
  - i) A main **audit** shall include the items identified in clause 3.1.2.4 of this standard. The **audit** of manufacturing facilities shall, in addition, include the process requirements identified in clause 3.1.2.6 of this standard. The report shall include a description of the processes and demonstration of how the requirements have been satisfied, including inspection, NDT, storage handling and transportation.
  - ii) A surveillance **audit** shall confirm there has been no risk introduced by changes including the items identified in clause 3.1.3.1 of this standard, identifying any changes that have occurred and the safety management to mitigate risk that could have been introduced.
- i) Evidence demonstrating the supplier's compliance with this standard shall be included in the report, as follows; certificates of conformance, quality procedures and work instruction, process flow chart, example calculations undertaken during production, inspection and testing processes, NDT certificates and approvals, evidence of quality management system approvals, identification of the infrastructure and the maintenance regime, etc.
- j) List of component and material **suppliers** used by the wheelset supplier in the manufacture and repair of **wheelsets**.
- k) Demonstrate conformity of the materials, components and assemblies in accordance with the manufacture and overhaul specifications, monitoring, measurement and analysis of processes applied during manufacture and overhaul. Calibration of testing equipment and the systems used for monitoring.
- l) Corrective Action Requests and Observations made during the **audit**. Programme for addressing the corrective action request.
- m) Limitations in the processes being applied by the supplier.
- n) Recommendations of the **audit** report, including the scope of supply, the **suppliers** branding code, limitations of the **suppliers** processes, etc.

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### References

The Catalogue of Railway Group Standards and the RSSB website ([www.rssb.co.uk](http://www.rssb.co.uk)) give the current issue number and status of documents published by RSSB. This information is also available from the Railway Group Standards CD-ROM

### Documents referenced in the text

The Railway Group Standards Code.

#### 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
- GM/RT2466** Railway **Wheelsets**

#### Other References

- BS5892** Railway Rolling Stock Materials
- HMRI** Railway Safety Principles and Guidance  
The Railways (Interoperability) (High Speed) Regulations 2002
- 96/48/EC** Council directive on the interoperability of the trans-European high speed rail system
- 2001/16/EC** Council directive on the interoperability of the trans-European conventional rail system