

Information for users

The following document:

NR/L2/TRK/001/mod06 Issue 6

 has had changes made to it, most recently, with effect from **19 October 2015**.

Instructions for use

It is essential that you first read and understand each letter of instruction pertaining to the standard before proceeding to use the standard. You must then apply the requirements of each letter to the standard.

NR/BS/LI/363	Issue 1	19 October 2015	Proceed to letter ►
NR/L2/TRK/001/mod06	Issue 6	01 December 2012	Proceed to standard ►

For further information, please contact:

[IHS Customer Support](#)

Ref:	NR/L2/TRK/001/mod06
Issue:	6
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Visual inspection and ultrasonic testing of rails

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1 Scope

This module of NR/L2/TRK/001 covers:

- a) visual inspection of rail;
- b) ultrasonic testing of rails using manual pedestrian testing or the ultrasonic test unit (UTU);
- c) reporting of testing undertaken and defects found;
- d) verification of UTU suspects;
- e) classification and recording of rolling contact fatigue (RCF);
- f) visual inspection and classification of RCF;
- g) ultrasonic testing of RCF.

This module of NR/L2/TRK/001 does not cover:

- h) visual inspection and ultrasonic testing of adjustment switches (see NR/L2/TRK/001/mod16).

2 Definitions

See Glossary (NR/L2/TRK/001/mod01).

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3 Examination and testing of Rails

Examination of rails to detect and locate rail defects is by visual inspection and ultrasonic testing.

Visual inspection and ultrasonic testing is carried out at intervals related to the Track Category, which is derived from the speed of traffic and equivalent tonnage using the line. Figure 1 shows the track category matrix.

The Route Asset Manager [Track] (RAM[T]) shall specify the ruling track category for each line on each section of route (e.g. down line, junction to junction), taking account of any significant changes to the speed or tonnage of traffic that occur.

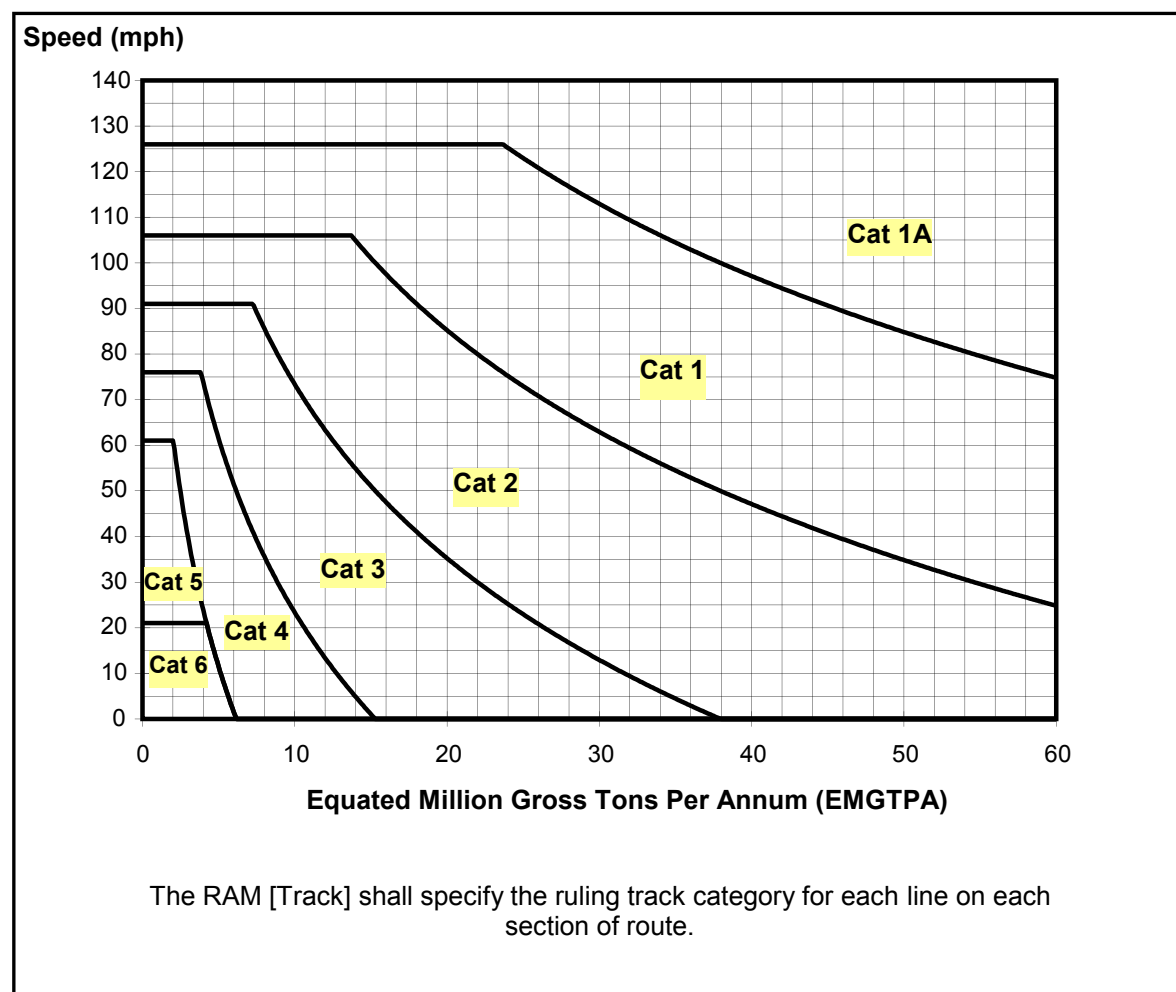


Figure 1 – The Track Category Matrix

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4 Visual inspection of rail

Visual inspections of rail are carried out to identify rail head damage, vertical longitudinal splitting (VLS), significant rail corrosion and lipping on adjustment switches. The inspection may also identify new areas of rolling contact fatigue (RCF).

Visually inspect rail condition at the following locations:

- a) all pre-1976 rail;
- b) all rail in S&C;
- c) all rail in tunnels;
- d) all adjustment switches.

The frequency of inspection is shown in Table 1.

Visual inspection of rail may be carried out at the same time as pedestrian ultrasonic testing, as a specific rail inspection or as part of a basic visual inspection.

Specific visual inspections are required for rail with RCF – see section 10.4.

5 Ultrasonic testing of rail

5.1 Requirement

All rails in running lines, through sidings and sidings separated from running lines by 10ft (3050mm) or less shall be ultrasonically tested as part of a cyclical programme of rail examination.

5.2 Ultrasonic test methods

Ultrasonic testing can be carried out by manual pedestrian testing or (in plain line only) by the use of the ultrasonic test unit (UTU).

Unless it is considered impracticable by the RAM[T], the UTU shall be the preferred method of ultrasonic testing of all plain line track.

Use TEF3025 to record RAM[T] approval for the use of the UTU.

NOTE It is important to agree the arrangements for undertaking the visual inspection of the rail in a UTU tested section.

5.3 Ultrasonic test plan

Prepare an ultrasonic test plan using the appropriate frequencies for the agreed method of testing to be used on each section of track.

Use diagrams to demonstrate full coverage of ultrasonic testing and the method of testing for each section of track.

5.4 Ultrasonic testing frequency

Undertake ultrasonic testing at the frequencies shown in Table 1.

The maximum permitted timescales between ultrasonic tests are shown in Table 2 for pedestrian ultrasonic testing and Table 3 for UTU testing.

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5.5 Use of UTU

The UTU *cannot* be used to ultrasonically test S&C and adjustment switches.

NOTE See NR/L2/TRK/001/mod16 for details of the inspection and testing of adjustment switches.

Following publication of the UTU test plan, identify any shortfall in the UTU provision.

Plan pedestrian testing to supplement the UTU test plan to cover any shortfall.

Plan this supplementary testing at the pedestrian testing frequency shown in Table 1.

Where UTU testing starts and finishes at S&C (excluding adjustment switches), overlap manual pedestrian testing into the UTU tested section (see section 5.6).

5.6 Manual pedestrian ultrasonic testing

Undertake pedestrian testing in accordance with NR/L3/TRK/1012 (Management of ultrasonic rail testing), using techniques described in NR/SP/TRK/055 (Rail Testing: Ultrasonic Procedures).

The following shall be tested manually by pedestrian ultrasonic testing:

- Routes not included for testing in the UTU test plan.
- S&C within UTU tested sections.

Undertake pedestrian testing for a distance of 22 yards beyond the location at which the UTU testing begins or ends (see Figure 2). Permanently mark the extent of the pedestrian testing on site using plates or other permanent feature.

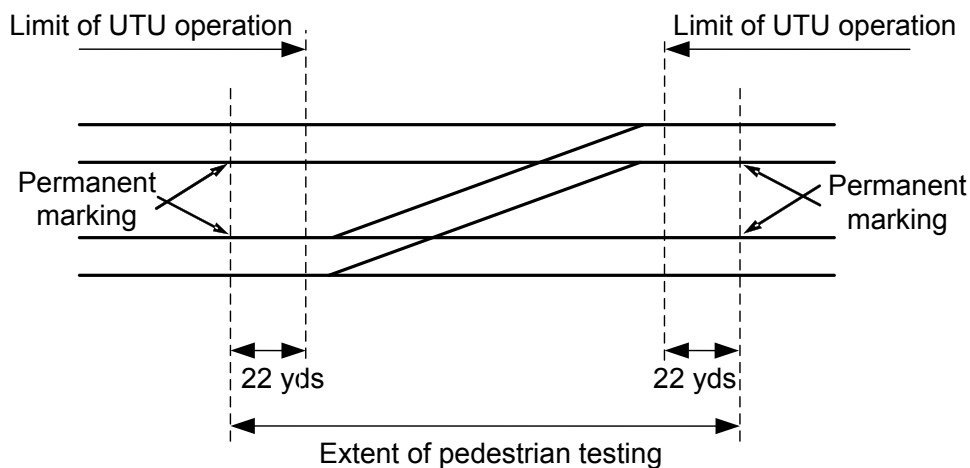


Figure 2 – Pedestrian/UTU testing overlap

5.7 Locations not subject to ultrasonic testing

Rails fitted with welded on stainless steel track circuit continuity strip cannot be ultrasonically tested.

Ultrasonic testing of rails is not required in sidings more than 3.05m (10ft) to the running line, with a line speed below 20 mph and carrying less than 1 EMGTPA.

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Table 1 – Frequency of visual inspection and ultrasonic testing of rail

Activity / Location	Track Category						
	1A	1	2	3	4	5	6
UTU inspection	8 weekly	8 weekly	16 weekly	26 weekly (6 monthly)	26 weekly (6 monthly)	26 weekly (6 monthly)	52 weekly
Visual inspection of: all pre-1976 rail in plain line; all rail in S&C	13 weekly	26 weekly (6 monthly)	52 weekly (Yearly)	104 weekly (2 Yearly)	104 weekly (2 Yearly)	104 weekly (2 Yearly)	104 weekly (2 Yearly)
Visual inspection of: plain line in tunnels	13 weekly	26 weekly (6 monthly)	52 weekly (Yearly)	52 weekly (Yearly)	52 weekly (Yearly)	52 weekly (Yearly)	104 weekly (2 Yearly)
Visual inspection of: adjustment switches (for the presence of lipping [see note 1])	8 weekly	13 weekly	26 weekly (6 monthly)	52 weekly (Yearly)	52 weekly (Yearly)	52 weekly (Yearly)	104 weekly (2 Yearly)
U15 Pedestrian Ultrasonic testing of: • plain line CWR and jointed, • full section rail in S&C [see note 2] and • crossings in S&C.	13 weekly	26 weekly (6 monthly)	52 weekly (Yearly)	104 weekly (2 Yearly)	104 weekly (2 Yearly)	104 weekly (2 Yearly)	104 weekly (2 Yearly)
U15 Pedestrian Ultrasonic testing of all rail in tunnels	8 weekly	13 weekly	26 weekly (6 monthly)	52 weekly (Yearly)	52 weekly (Yearly)	52 weekly (Yearly)	104 weekly (2 Yearly)
U16 or U1 / U2 Pedestrian Ultrasonic testing of: • fishbolt holes in jointed track [see note 3] • any bolt holes or bond hole >15mm diameter • rail joints in CWR (including insulated rail joints)	8 weekly	13 weekly	26 weekly (6 monthly)	52 weekly (Yearly)	52 weekly (Yearly)	52 weekly (Yearly)	104 weekly (2 Yearly)
Notes: 1 see NR/L2/TRK/001/mod16 for details of the requirements following visual inspection if lipping is present. 2 to include sections of machined rail which is tested using U15. 3 If the hole is no longer used for fastening purposes (no bolt), testing to this reduced frequency is not necessary.							