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Date:	03/09/2011
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Module 012

Reliability Centred Maintenance of Signalling Equipment (ROSE) – NR/ROSE/Test/254 SF15 / U Type Aster Track Circuit Test

Endorsement and Authorisation

For endorsement and authorisation, please refer
to NR/L3/SIG/10665

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Issue record

Issue	Date	Comments
1	03/09/2011	Transfer from NR/L3/SIG/10665 (6) into modular format

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 03/09/2011.

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 3 (Option Selection) to continue to comply with the issue of any relevant Network Rail standards current when GRIP Stage 3 was completed and not to comply with requirements contained herein, unless stipulated otherwise in the scope of this standard.

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NR/ROSE/Test/254 SF15 / U Type Aster Track Circuit Test

Caution: The TX and RX shall not be disconnected at the same time as this could result in an adjacent track circuit feeding through and causing a possible wrong side failure.

Centre Fed Track Circuits

Each half of a centre fed track circuit operates as an independent track circuit and shall be tested as such. record cards shall be kept for each part.

Cut Section Track Circuits

Each cut section shall be treated as an individual track circuit and record cards kept accordingly.

Disconnection of Units

The Tx and Rx shall not be disconnected at the same time as this could results in an adjacent track circuit feeding through and causing a possible wrong side failure.

Where the Receiver Is Adjacent to A Pair Of Insulated Rail Joints

Report situations where track circuit track tail cables are not terminated within 1m of an IRJ.

Drop shunt test at three positions approximately 15m apart, within 50m of transmitter and its terminations, as directed. For end fed TC, the test should be outside the tuned zone. Results are listed in Appendix B.

Test Equipment

A frequency selective meter (FSM), or TI21 Test Meter (TTM), set to the frequency of the track circuit under test.

Gain Settings

The gain setting shall not be increased without consulting your SM(S)

Tuned Zones

These shall be kept clear of all metallic objects including new or scrap lengths of rail for a distance of at least 1.25m (4ft). The tail cables from the TU/ACT to the rails form part of the tuned circuit, because of this they should wherever possible be bound together, **not** allowed to form loops and not be run in parallel with the running rails. Failure to observe these items can result in the **effectiveness** of the tuned area being altered.

Bonded Rail Joints

Bonds across rail joints shall be of a low resistance as this can influence the characteristics of the track circuit.

CARRY OUT THE FOLLOWING TESTS AND RECORD THE RESULTS ON THE RECORD CARD

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1 Maintenance Test

- 1.1 *Measure* at the power supply (T/J or Charger) the AC input voltage and the DC output voltage (between 22.5V and 29.5V)
- 1.2 *Measure* at the transmitter unit the AC output voltage between terminals 1&2 or 1&3 and *Measure* the AC feedback voltage between T1&T2.
- 1.3 *Measure* the rail-to-rail voltage at the TU rail connections using a FSM/TTM.
For consistency this measurement shall always be carried out at the rails.
- 1.4 Where a tuned zone is involved, *Measure* using a FSM/TTM the rail-to-rail voltage at the adjacent TU rail connection at the frequency of the track circuit under test. The ratio of this voltage to the voltage measured in 1.3 shall be as stated in Appendix C.

Relay (Receiver) End

- 1.5 *Measure* at the power supply (T/J or Charger) the AC input voltage and the DC output voltage (between 22.5V and 29.5V).
- 1.6 *Measure* at the receiver unit the AC input voltage between T1 and T2.
- 1.7 *Measure* the rail-to-rail voltage at the TU rail connections using a FSM/TTM.
For consistency this measurement shall always be carried out at the rails.
- 1.8 Where a tuned zone is involved, *Measure* using a FSM/TTM the rail-to-rail voltage at the adjacent TU rail connection at the frequency of the track circuit under test. The ratio of this voltage to the voltage measured in 1.3 shall be as stated in Appendix C.
- 1.9 Apply a train shunt across the rails at the tuning unit and obtain a drop shunt and a pick-up shunt.
Minimum Drop Shunt Value **0.5 W**
Preferred Drop Shunt Value 0.8 W

Note: Test Results Where the Receiver Is Adjacent to A Pair Of Insulated Rail Joints are contained in Appendix B

- 1.10 With the track circuit not shunted by trains or a train shunt, *Measure* the DC voltage across the track relay coil terminals R1(+) and R2(-).
- 1.11 *Record* the obtained results and other details along with the latest setting numbers on the record card.

2 Full Test

The full test shall be carried out whenever alterations are made including; relaying, lead/ jumper renewal, equipment replacement, adjustment etc). The full test shall also follow the clearing of a fault.

All measurements taken at track circuit frequency are to be taken using a frequency selective meter.

The minimum drop shunt value with the train shunt applied across the rails at the transmitter-tuning unit is 0.3Ω