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Issue:	1
Date:	06 March 2010
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NR/L2/CTM/012/005 Competence & Training in Signal Engineering

Sig 5: Undertake corrective and preventative maintenance of track circuits.

1 Purpose.

The purpose of this competence standard is to define the competence requirements for persons required to undertake corrective and preventative maintenance of track circuits.

2 Scope.

This competence standard applies in all circumstances where any person is required to maintain, fault or test track circuits on Network Rail managed infrastructure.

The level and extent of responsibility will include their own safety and that of others who might be affected by their work. The person will be expected to refer to others for authorisation when required, will be responsible for the implementation of the instructions and will work within set procedures and specifications. The person is responsible for the quality of their completed work.

This competence standard shall be used to assess the competence of people maintaining any of the following track circuits:

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| <ul style="list-style-type: none"> • AC type • Aster • DC type • EB / Track 200 digital • FS 2600 • High Voltage Impulse • Quick Release | <ul style="list-style-type: none"> • Quick Release • REED • TI21 • TCAIDS • VT (SP) • WESTRAC (Diode TC) |
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3 Competence Standard.

This Competence Standard comprises five elements.

- Element 1 Carry out planned maintenance of track circuits.
- Element 2 Adjust track circuits to meet operating requirements.
- Element 3 Diagnose faults in track circuits.
- Element 4 Restore track circuits to operational condition by repair.
- Element 5 Conduct specified testing of track circuits, analyse and interpret the results.

The first element is concerned with the safe completion of planned maintenance in accordance with instructions. The second element deals with adjusting the equipment to make sure that it meets its operating requirements. The third and fourth elements are concerned with the safe completion of locating, diagnosing and repairing faults. The final element deals with testing of the equipment and analysing and interpreting the results to make sure that the equipment meets its operating requirements.

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To prove competence in this unit, the person shall demonstrate their ability to complete maintenance in accordance with instructions, locate, diagnose and repair faults associated with occupied when clear and incorrect indication and complete the appropriate testing. The person will have to show they can follow recording, reporting and escalation procedures.

4 Assessment.

4.1 Initial Assessment

Where the equipment is new to the person's area of responsibility evidence should be used from satisfactory completion of training and mentoring and shall be gathered of the person working on track circuits of either DC type, AC (impedance bonded) or AC (no impedance bond).

Performance evidence may come from a variety of sources and will include evidence derived from surveillance (direct observation) by an approved assessor. Evidence will also include detailed questioning and may additionally be supported by performance reports from the person's line manager.

4.2 Re-Assessment

Re-assessment shall be completed in accordance with the applicable requirements set out in 7.2 of NR/L2/CTM/012.

4.3 Knowledge Evidence that is common to the whole unit.

You shall have knowledge and understanding of:

- a) Engineering specifications associated with track circuits.
- b) How the maintenance adjustment, faulting, repair and testing activity may affect the safe operation of the railway.
- c) What procedures need to be followed to demonstrate operational and personal safety is maintained during the work.
- d) How to avoid personal injury during the work.
- e) How the track circuits are designed to function under normal operating conditions.
- f) What the purpose of "TC Aids" is and how they are designed to function under normal operating conditions.
- g) What each of the component parts contributes to the overall operation of the system.
- h) What terminology and methods are used to identify track circuits and describe operational status of the track circuit.
- i) What tools are required to complete the work and what equipment calibration is required.
- j) What maintenance authorisation procedures are and limits of your responsibility and authority.
- k) What equipment operating and care and control procedures are applicable to track circuits.
- l) What procedures apply to taking the equipment out of operational service and what procedures apply to handing back the equipment to operational service.
- m) Maintenance reporting documentation and control procedures.
- n) Reporting lines and escalation procedures.
- o) Industry protocols relating to communication important safety information.

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Element 1: Carry out planned maintenance of track circuits.	
Performance statements. <i>You shall be able to:</i> - Work safely at all times, complying with health and safety and other relevant regulations and guidelines. - Follow the relevant maintenance schedules and instructions to carry out the required work. - Carry out the maintenance activities within the limits of your personal authority. - Carry out the maintenance activities in the specified sequence and in an agreed time scale. - Confirm that the maintained equipment is operating within appropriate tolerances. - Report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule. - Complete relevant maintenance records accurately and pass them on to the appropriate person. - Dispose of waste materials in accordance with safe working practices and approved procedures.	Knowledge statements. <i>You shall have knowledge and understanding of:</i> - What types of defect can occur in track circuits and how to check for these defects. - What maintenance schedules and related specifications apply to track circuits. - What maintenance methods and procedures apply to the track circuits. - What tests/checks shall be undertaken for a complete maintenance activity. - How to recognise when the work required to restore performance to specification exceeds the limits of the maintenance activity. - What the procedures are for dealing with an inability to complete maintenance activity within agreed timescales.
Scope of Competence. - Preventative maintenance procedures are to be completed on: - Feed-end equipment. - Relay-end equipment. - On track cabling. - Disconnection boxes. - Bonding. - Insulations. - Activities are to: - Correctly locate and access the site of work - Confirm that any stored energy or substances are released safely and correctly - Examine for corrosion, deterioration or damage. - Check security. - Examine for potential short circuits. - Check relay within servicing date. - Quality standards to be achieved are as defined in the maintenance specifications.	Performance Evidence Requirements. Performance evidence shall be collected by observation in the workplace or during training, of the person completing all relevant maintenance procedures in respect of performance statements: a, b, c, d, and e for all items in scope statement 1. Where evidence is used from training this will be supported by workplace evidence to confirm that all items in scope statement 1 have been completed during the mentoring period. The remaining performance statements may be assessed using performance reports or documented questioning.