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Level 2

Competence & Training in Overhead Line Engineering

Endorsement and Authorisation

Endorsed by:



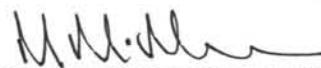
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Issue record

Issue	Date	Comments
1	Dec 2006	1 st Issue
2	Mar 2010	2 nd Issue

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 05 June 2010.

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 4 to continue to comply with the Issue of any relevant Network Rail Standards current when GRIP Stage 4 was reached and not to comply with requirements contained herein, unless the designated Standard Owner has stipulated otherwise in the accompanying Briefing Note.

Reference documentation

NR/CS/CTM/001	Competence Management.
NR/SP/CTM/005	Quality Assurance in Training Delivery.
NR/SP/OHS/018	Safety requirements for track medical & alcohol & drugs screening & certification.

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1 Purpose

This specification sets out the minimum requirements for the assessment of personnel who undertake OLE engineering, isolation and/or switching and object removal activities on Network Rail managed infrastructure. It defines processes that shall be implemented and the standards that shall be achieved to confirm that personnel who undertake OLE engineering, isolation and/or switching and object removal activities are competent to perform the work.

2 Scope

The specification applies to all employers and people who undertake OLE engineering, isolation and/or switching and object removal activities on Network Rail managed infrastructure. This standard covers the following types of OLE Systems:

- | | |
|--|---|
| <ul style="list-style-type: none"> – Mk Ex DC – Mk 1 – Mk 2 – Mk 3 – Mk 5 – UK 1 | <ul style="list-style-type: none"> – WCML 25kV Autotransformer Feeder (ATF) – Siemens – SNCF (CTRL) – Sunderland Extension – 1500V DC |
|--|---|

3 Definitions

Access to

Relates to those persons who have access to Electrical Power Supply Equipment which is normally secured in buildings, rooms, equipment cases and enclosures, etc., to prevent danger to persons not trained in the avoidance of danger from such equipment.

Assessor

Assessor is a person approved to undertake assessments of people against the requirements of specific Competence Units.

Assessment

Assessment is gathering and judgement of evidence to 'prove' or 'determine' a person's Competence as required by a Competence Unit.

Authority to work

Authority to Work is a document that details the work activities that a person is authorised to complete. It includes the details of a person's competence and details of any restrictions that may apply to the way the person works e.g. requirement for supervision.

Competence

The ability to undertake responsibilities and to perform activities to a recognised standard on a regular basis. A combination of practical thinking skills, experience and knowledge, and may include a willingness to undertake work activities in

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accordance with agreed standards, rules and procedures.

In the context of this specification it also includes the consistent achievement of an identified standard of performance under defined normal, abnormal, and emergency situations; the ability to undertake work to assure the safety of any person who might be affected by the work; and an appropriate level fitness.

Certificate

Certificate confirms that specific competence has been demonstrated by an individual against the requirements of a Competence Unit. The certificate forms the basis for the competence to be added to the Authority to work.

Competence Management System (CMS)

Competence Management System is a suitably resourced, logical and integrated cycle of activities within an organisation used to assure competence of those who may, through lack of competence, have a impact on the:

- Safe operation and maintenance of Network Rail managed infrastructure.
- Occupational health and safety of workers on or about the Network Rail or.
- Safety of other persons affected by their activities.
- Performance of Network Rail's business.

Competence Profile

Competence Profile is a description of the competences that apply to a specific job role or post. The Competence Profile is used to determine the training and assessment requirements for the person occupying the post.

Competence Unit

Competence Unit is a statement of:

- What a person shall be able to do and how well, in order to achieve the intended outcome of work.
- The range of circumstances in which the ability would have to be demonstrated.
- The knowledge required to complete the work.
- The types of evidence needed to confirm that performance is consistent and can be sustained.
- How this would be assessed.

Electrical Control Operator (ECO)

The person working in an Electrical Control Room, having control of the power supply to the electric traction system and all operations of related electrical equipment thereon.

Electrical Power Supply Equipment

Equipment, over 1,000V A.C. and over 600V D.C., forming part of the traction and power supply systems owned or leased by Network Rail.

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Isolate

The process of disconnection and separation.

Isolated

Electrical equipment is isolated when it is disconnected and separated from all sources of electricity supply in a secure way.

Isolation

The action of causing an electrical section of specified equipment to be isolated.

Mentoring period

Mentoring period is a period of time between the satisfactory completion of training where the person will undertake the work under supervision of a mentor. This period is used to enable the employee to practice the competence and gather evidence ready for assessment.

Overhead Line Equipment (OLE)

The arrangement of wires suspended over the railway line for supplying electricity to electric trains, together with the associated fittings, insulators and other attachments by means of which the wires are suspended or registered in position plus the feeders, isolators, jumpers, return conductors and bonding.

Overhead Line Electrification Equipment

Overhead line equipment (OLE), associated structures, APC magnets, screening / protection and signage (excluding booster transformers) required to enable safe transfer of electricity to electric trains.

Person in Scope

Anyone whose current or future role will involve completing tasks associated with OLE maintenance, inspection, renewal isolation or testing.

Persons New to OLE engineering

Those persons who have not previously undertaken work involving OLE construction, maintenance, inspection, renewal or testing tasks. It includes persons that may already be working in, or have worked in, the rail industry before, but in another role, not related to OLE engineering. New to OLE engineering is not related to grade but to previous experience as described above.

Trainer

A person approved by Network Rail to deliver specific training courses.

Safety Critical Work

Work activities carried out in the railway industry that may affect the health and safety of persons on the transport system and that may have a real time impact on the operational railway.

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Verification

Verification is a process by which the quality of assessment decisions and the supporting process are independently assured.

Verifier

Verifier is a person who and assures the completed assessment decisions.

4 Requirements

4.1 Deployment

Employers shall not deploy any Person New to OLE engineering on any tasks associated with OLE engineering that may have a direct impact on the integrity of the OLE, until that person has attended and successfully completed the Network Rail OLE Induction Course.

Additionally people who are not new to OLE engineering shall only be deployed on tasks associated with OLE engineering and/or isolation work provided the person has attended and successfully completed appropriate training or has been assessed as competent to complete the work. Where a person has been trained they may undertake the work but shall be subjected to an appropriate level of supervision.

4.2 Work on or near the line

Where a person is required to work on or near the line they shall hold the relevant track safety competence(s).

In addition, persons shall be able to demonstrate medical fitness and be screened for alcohol and drugs in accordance with Network Rail Specification NR/SP/OHS/018: Safety requirements for track safety medical & alcohol screening and certification.

4.3 Training

Subject to the minimum requirements in **4.1** and **4.2** employers shall have systems in place to identify specific training needs for each Person in Scope. A training framework and specific training modules have been developed to address the common training needs of Persons in Scope. Details of this framework together with normal training progression are contained in Appendix A of this specification. Employers shall use this information to determine what training is appropriate for each Person in Scope.

The following steps shall be used and documented to identify and satisfy specific training needs:

- Identify deployment requirements for the person concerned.
- Take account of specific types of equipment that the person will be required to work on and the type of activities the person will be required to undertake.
- Establish the current competence of the person with relation to deployment requirements.

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- d) Establish what development is required and therefore which training modules are appropriate to match the deployment needs.
- e) Agree development plan with the person and order in which the training should take place.
- f) Arrange training.
- g) Person completes relevant training.

4.4 Mentoring

Following the successful completion of training, each person shall undertake a period of workplace experience. The detailed mentoring requirements shall be provided in the requirements for each training course. The person's employer shall appoint a mentor who shall be responsible for supporting the workplace experience. Employers shall assure that appropriate supervision is maintained during the period of mentoring.

Each employer shall provide a log book to record what work the person has completed during the workplace experience.

4.5 Assessment

Following successful completion of the relevant training and mentoring the person shall be assessed against the requirements of the relevant competence Units contained in Appendix B of this specification.

4.6 Delivery of training

Persons delivering the training courses listed in Appendix A shall be approved by Network Rail in accordance with the requirements of NR/SP/CTM/005 – Quality Assurance in Training Delivery.

Trainers shall only use the Network Rail approved training plans and assessments to deliver the training event.

4.7 Completion of assessment

Where competences are recorded on the NCCA database Assessors shall be approved by Network Rail or its agents. For all other competences Assessors shall be approved in accordance with the employing organisation's competence management system. In both cases Assessors shall be approved prior to undertaking assessments against the Competence Units detailed in this specification. Assessors shall plan and complete assessments.

Employers shall have in place verification procedures to confirm that at least 10% of completed assessments are verified.

4.8 Maintaining competence

Employers shall have systems in place to assure the continued Competence of persons undertaking OLE engineering or Isolation work. These systems shall consist as a minimum of:

- a) The use of a log book to record work experience. All Competences detailed in this Specification should be practised at least 4 times in a 12 month period and associated Logbook entries shall be made to confirm the completion of the work.

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- b) The implementation of a review or re-assessment regime as defined in section 7.3

5 Application

5.1 Competence Units

Based on a functional analysis Competence Units have been developed that are suitable to control the risks associated with competent performance of personnel who are undertaking OLE engineering and/or isolation work on Network Rail managed infrastructure. These competence units are contained in the Appendix B of this specification.

5.2 Competence profiles

The competence units are applicable to the job roles associated with teams undertaking maintenance or installation.

Specific competence profiles shall be developed for each role and shall take account of equipment specific and isolation needs in a particular geographic location as well as other non OLE engineering competence requirements.

Competence units should be selected on the basis of the person's job role and responsibility. A set of profiles (See Appendix B) for OLE engineering competence requirements have been developed to aid this process.

5.3 Training needs

A training framework and specific training modules applicable to the work activities associated with OLE engineering and isolation has been developed and brief details of each module are contained in Appendix A of this specification. The training framework and specific training modules are directly linked to the Competence Units in Appendix B.

Persons in Scope who are New to OLE engineering shall as a minimum complete OLE Induction training regardless of what job role the person is undertaking.

5.4 Equipment Specific Endorsements

Where a person has been assessed as competent for one equipment type in a group of similar types and is required to demonstrate competence on other types certificate endorsements shall be added in the following way:

- a) Assessed as competent against "OLE 1: Undertake Preventive Maintenance of OLE Assets" on Structure and Foundation. The certificate issued will show competence to:
 - Undertake Preventive Maintenance of OLE Assets inc:
 - o Structures and Foundations
- b) The person attends an OLE Maintenance course for a different type of OLE Asset and successfully completes end of training assessments. A new certificate shall be issued showing competence to:
 - Undertake Preventive Maintenance of OLE Assets on:
 - o Structure and Foundations

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6 Assessment Strategy

6.1 General

The strategy to be applied to assessment takes account of a number of factors:

- Whether or not the person is new to the job role.
- What training and experience a person has had.
- What different types of equipment the person is required to work on.
- The practicality of gathering observed evidence.
- The risks from incompetent performance.

6.2 Initial Assessment

The following approach shall be used:

Case 1

Where the work is new to the person's area of responsibility they shall:

- Attend the relevant training and complete end of training assessments.
 - Complete a period of work experience, under supervision, against objectives set at the end of the training and record the details in their Logbook. During the mentoring period, the Mentor shall assure that both his/her own safety and the safety of the person is maintained at all times in accordance with the relevant instructions or rules.
 - Be assessed against the requirements laid down in the relevant Competence Unit.
- If the employee is competent the person completing the assessment shall issue a certificate of competence (See equipment specific endorsements).
 - If the employee is not yet competent.
 - The line manager shall agree and implement a development action plan.
 - The employee may continue workplace experience under supervision.
 - On completion of development action plan the person shall be re-assessed for the specific competence.

Case 2

Where the employee has been previously trained and been completing the work for more than 1 year they shall be assessed for the specific competence using the following as the primary source of evidence:

- Detailed questioning/standard knowledge tests.
- Performance report from the line manager to confirm satisfactory and safe performance across the range of work detailed in the Competence Unit.
- If the employee is competent the person completing the assessment shall issue certificate of competence.
- If the employee is not yet competent they shall be dealt with as described in Case 1.

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6.3 Maintaining Competence

Employers shall have systems in place to assure the continued Competence of persons undertaking OLE engineering and/or isolation work. These systems shall consist as a minimum of:

- a) The use of a log book to record work experience which shall be reviewed by a responsible manager to confirm the person has practised the competence at least four times a year.
- b) The implementation of a re-assessment regime that confirms, at least every 3 years, that:
 - The work completed by the person meets the performance statements detailed in the relevant Competence Unit.
 - The person has the knowledge defined in the relevant Competence Unit.
 - There have been no incidents accidents or near misses as a result of the person completing the work.

Specific arrangements for Isolation competence are contained in Appendix C.

Where continued Competence cannot be confirmed through the review/re-assessment, arrangements shall be made for the competence to be withdrawn. The responsible manager shall develop a plan to restore the person's competence which may include retraining and / or further mentoring and re-assessment.

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Appendix A – Overhead Line Engineering Training Framework Summary

Where a person requires training to develop their competence they shall attend and successfully complete the Network Rail approved OLE training courses. This appendix contains a brief overview of the modules that form the OLE Training Framework.

A.1 Technical Training

OLE Induction

This module is designed to train persons who are new to the OLE and whose work may involve the basic maintenance of the OLE, it's equipment or other duties that may affect the operation of the OLE Infrastructure. The aim of the module is to provide the basic underpinning knowledge of the OLE System, it's Components and working methods associated with maintenance of OLE Assets.

OLE Maintenance 1

This module is designed to train people whose work involves non intrusive inspection of the OLE and whose duties require them to undertake basic Inspections. The person is most likely to be in a team assistant role. The aim of the module is to develop the delegate's understanding of basic OLE Inspection techniques as described in Competence Unit OLE 3 together with an appreciation of OLE Earthing & Bonding inspection / maintenance, working at height and safe use of a variety of hand tools.

OLE Maintenance 2

This module is designed to train persons whose work involves preventative maintenance of the OLE and it's associated components. The person is most likely to be in a team member role. The aim of the module is to develop the delegate's understanding of preventive maintenance of the OLE including Earthing & Bonding as described in Competence Units OLE 1 and OLE 5 together with an appreciation of High Level Intrusive Inspection of the OLE.

OLE Maintenance 3

This module is designed to train persons whose work involves intrusive inspection of the OLE infrastructure and corrective maintenance of defective components. The person is most likely to be in a Senior Lineman role. The aim of the module is to develop the delegate's understanding of OLE intrusive inspection techniques, corrective maintenance requirements and recording & reporting procedures as described in Competence Units OLE 2 and OLE4.

Supervision of Work, Assets, Tools and Infrastructure

This module is designed to train persons whose work involves the Supervision of work, people and assets on the OLE Infrastructure. It is also designed to confirm the recognition of the 'fit for Operational Use' status and when the OLE is not suitable to be used operationally. The person is most likely to be in a Supervisory type role. The aim of the module is to develop the delegate's understanding of how to confirm effective progression of OLE maintenance or renewal activities and how to confirm the OLE is fit for operational purposes as described in Competence Units OLE 6 and OLE 7.

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OLE Construction 1

This module is designed to train persons whose work involves the construction and the effective progression of construction of the OLE Infrastructure in accordance with design drawings and specifications, its systems and equipment. The person is most likely to be in a Supervisory type role. The aim of the module is to develop the delegate's understanding of construction of the OLE in line with design drawings and specifications and how to confirm effective progression of OLE construction works as described in Competence Units OLE 8 and OLE 10.

OLE Construction 2

This module is designed to train persons whose work involves the re-construction the OLE Infrastructure after a de-wirement and the safety aspects of operation between construction activities. The person is most likely to be in a Supervisory type role. The aim of the module is to develop the delegate's understanding of the re-construction of OLE after a de-wirement and how to confirm operational safety between construction activities as described in Competence Units OLE 9 and OLE 11.

OLE Technical Assessment

This module is designed to train persons whose work involves technical assessment of the OLE Infrastructure and associated components. The person is most likely to be in a Technician role. The aim of the module is to develop the delegate's understanding of undertaking technical assessment of the OLE as described in Competence Unit OLE 12.

A.2 Isolation Training

Level B: 25kV AC Lines (Authorised Person)

This module is designed to train persons, whose work involves receiving authorisation to complete OLE AC isolation, switching, testing, and earthing on the OLE Infrastructure. The person is most likely to be an experienced team member with adequate knowledge of the OLE infrastructure or in a team leader type role who needs to develop their competence in electrical safety.

Level B: Sunderland Direct 1500V DC Lines (Authorised Person)

This module is designed to train persons, whose work involves receiving authorisation to complete OLE DC isolation, switching, testing, and earthing on the OLE Infrastructure. The person is most likely to be an experienced team member with adequate knowledge of the OLE infrastructure or in a team leader type role who needs to develop their competence in electrical safety.

Level B: Switching & Object Removal from OLE (Authorised Person)

This module is designed to train persons who are responsible for OLE Object Removal and Switching under the direction of the electrical control operator. It is designed to develop a persons knowledge, understanding and skills in switching and removal of objects as defined in the Competence Unit.

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Level A: 25kV AC Lines (Nominated Person)

This module is designed to train persons whose work involves setting up safe systems of work within the realms of electrical power supplies, completion of documentation for and giving authorisation to persons with Level B competence (Authorised Person) to complete OLE AC isolation, switching, testing and earthing on the OLE Infrastructure. The person is most likely to be in a team leader type role with adequate knowledge of the OLE infrastructure, who needs to develop their competence in electrical safety, and who currently holds level B (Authorised Person) certification.

Level A: Auto Transformer AC Lines (Nominated Person)

This is an additional element to Level A: 25KV AC Lines (Nominated Person) and is designed to train persons already competent in NP OLE/AC-i whose work involves setting up safe systems of work within the realms of electrical power supplies, completion of documentation for and giving authorisation to persons with Level B competence (Authorised Person) to complete OLE AT isolation, switching, testing and earthing on the OLE Infrastructure. The person is most likely to be in a team leader type role with adequate knowledge of the auto transformer specific OLE infrastructure, who needs to develop their competence in electrical safety, and who currently holds level B (Authorised Person) certification.

Level A: Sunderland Direct 1500V DC Lines (Nominated Person)

This module is designed to train persons whose work involves setting up safe systems of work within the realms of electrical power supplies, completion of documentation for and giving authorisation to persons with Level B competence (Authorised Person) to complete OLE DC isolation, switching, testing and earthing on the OLE Infrastructure. The person is most likely to be in a team leader type role with adequate knowledge of the OLE infrastructure, who needs to develop their competence in electrical safety, and who currently holds level B (Authorised Person) certification.

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Appendix B Competence Units

This appendix contains the detailed Competence Units that shall be used to assess the competence of personnel who are responsible for OLE engineering and/or isolation work.

B.1 Competence Profiles.

The following profiles have been included to guide employers as to the likely application of the competence framework to various generic job roles.

Ref Number	Competence Unit	Team Assistant	Team Member	Team Leader	Supervisor	Technician / Senior Technician
OLE 1	Undertake Preventive Maintenance of OLE assets		Core	Core	Core	Optional
OLE 2	Undertake Corrective Maintenance of OLE Assets			Core	Core	Optional
OLE 3	Establish the operational condition of OLE assets by Non Intrusive Inspection	Core	Core	Core	Core	Optional
OLE 4	Establish the operational condition of OLE assets by High Level Intrusive Inspection			Core	Core	Optional
OLE 5	Undertake preventive and corrective maintenance of Earthing / Bonding		Core	Core	Core	Optional
OLE 6	Ensure the effective progression of OLE maintenance or renewal activities			Optional	Core	Optional
OLE 7	Ensure the OLE is fit for Operational Purposes Following Work			Optional	Core	Core
OLE 8	Construct OLE Assets in Accordance with Design Drawings and Specifications			Optional	Optional	Optional
OLE 9	Ensure the OLE is safe for operational purposes between construction activities				Optional	Core
OLE 10	Ensure the effective progression of OLE construction Activities				Optional	
OLE 11	Reconstruct (Restore) the OLE to operational condition after a de-wirement			Optional	Core	Core
OLE 12	Undertake Technical Assessment of OLE assets					Core

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In addition to the above those persons required to work on or have access to live OLE shall have sufficient competence to carry out their work without risk of danger to themselves or other persons. The competence units below have been identified as meeting the requirements for persons who undertake the duties for this work.

Level B

Authorised Person are required to hold the units as follows:

OLE. 13: Manually Switch Electrical Supply to OLE to Meet Defined Requirements

OLE. 14: Test and Earth OLE to Meet Defined Isolation Requirements

OLE. 15: Contribute to Minimising Risks When Working On or Near to Live OLE.

Applicable Sentinel codes are:

- Authorised Person - OLE AC Isolation AP OLE/AC-i
- Authorised Person – OLE DC Isolation AP OLE/DC-i

Level B: Switching & Object Removal from the OLE

Authorised Person who require the Switching & Object Removal from the OLE are required to complete the units as follows:

OLE. 17: Object Removal from the OLE

Applicable Sentinel codes are:

- Authorised Person – Switching & Object Removal AP OLE/S&R-i

Level A

Nominated Person are required to hold the all units in Level B and in addition shall complete the units as follows:

OLE. 16: Manage the Isolation and Earthing of OLE.

Applicable Sentinel codes are:

- Nominated Person – Autotransformer NP OLE/AT-i
- Nominated Person - OLE AC Isolation NP OLE/AC-i
- Nominated Person – OLE DC Isolation NP OLE/DC-i

B.2 Evidence Requirements.

Sufficient evidence shall be collected to enable competence to be assessed against all the performance statements and knowledge and understanding requirements for each element. Evidence shall be sufficient to demonstrate that the employee is capable of consistent competent performance.

B.2.0.1 Performance Evidence.

The standards of competence in the appendices specify what forms and the quantity of performance evidence which shall be presented for each element.

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There are two types of performance evidence:

- Evidence of the way the employee carried out activities – evidence of the process involved in demonstrating competence. This takes the form of observation, authenticated log book entries, or performance reports.
- Products of the employee's work – items that the employee produces or works on or documents produced as part of the activity. The evidence may be in the form of the product itself, or may be a records or photographs generated as part of the work.

B.2.0.2 Knowledge Evidence.

The knowledge evidence section of the element specifies the knowledge and understanding necessary for competent performance.

B.3 Knowledge requirements that is common to all Competence Units.

Candidates shall have knowledge and understanding of:

Health and safety legislation, regulations and safe working practices and procedures that shall include:

- Relevant sections of the Health and Safety at Work Act.
- Safety Critical Work Regulations.
- Electricity at Work Regulations.
- COSHH.
- Transport and Works Act (Alcohol and drugs).
- Track access restrictions.
- Current rule book.
- Working at Height.
- Confined Spaces.

B.4 Assessment decisions.

Initial assessment decisions shall only be made following the generation of evidence from the person's normal workplace.

Assessment decisions of "competent" shall only be made when:

- All the required performance and knowledge evidence, as defined in the Competence Unit, has been provided.
- The evidence has been confirmed as accurate, current and attributable to the person concerned.
- Equipment endorsements may be added to a competence certificates following successful completion of training.

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B.5 Monitoring Process.

The table below provides **guidance** on how often a competence should be practiced to demonstrate the competence is maintained.

Competence Unit (Technical)		Minimum Logbook entries in 12 months
OLE 1:	Undertake Preventive Maintenance of OLE assets	4
OLE 2:	Undertake Corrective Maintenance of OLE assets	4
OLE 3:	Establish the operational condition of OLE assets by Non Intrusive Inspection	4
OLE 4:	Establish the operational condition of OLE assets by High Level Intrusive Inspection	4
OLE 5:	Undertake preventive and corrective maintenance of Earthing / Bonding	4
OLE 6:	Ensure the effective progression of OLE maintenance or renewal activities	4
OLE 7:	Ensure the OLE is fit for Operational Purposes Following Work	4
OLE 8:	Construct OLE Assets in Accordance with Design Drawings and Specifications	2
OLE 9:	Ensure the OLE is safe for operational purposes between construction activities	2
OLE 10:	Ensure the effective progression of OLE construction Activities	2
OLE 11:	Reconstruct (Restore) the OLE to operational condition after a de-wirement	1
OLE 12:	Undertake Technical Assessment of OLE assets	2
OLE 13:	Manually Switch the Electrical Supply to OLE to Meet Defined Requirements	4
OLE 14:	Test and Earth OLE to Meet Defined Isolation Requirements	4
OLE 15:	Contribute to Minimising Risks when Working on or Near to Live OLE	4
OLE 16:	Manage the Isolation and Earthing of OLE	4
OLE 17:	Object Removal from the OLE	2

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B.6 OLE 1: Undertake Preventive Maintenance of OLE Assets

B.6.1 Purpose

The purpose of this Competence Unit is to define the technical competence requirements for persons required to undertake preventive maintenance of Overhead Line Electrification equipment.

B.6.2 Scope

This Competence Unit applies in all circumstances where any person is required to maintain Overhead Line Electrification equipment 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 employee 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 employee is responsible for the quality of their completed work.

This Competence Unit shall be used to assess the competence of people maintaining any of the following:

- | | |
|--|--|
| <ul style="list-style-type: none"> – Mk Ex DC – Mk 1 – Mk 2 – Mk 3 – Mk 5 – UK 1 | <ul style="list-style-type: none"> – WCML 25kV Autotransformer (ATF) – Siemens – SNCF (CTRL) – Sunderland Extension – 1500V DC |
|--|--|

B.6.3 Competence Unit

This Competence Unit comprises four elements

Element 1 Undertake routine preventive maintenance of the OLE and associated tools & equipment

Element 2 Adjust OLE assets to meet operating requirements

Element 3 Replace OLE assets and components

Element 4 Dismantle and remove OLE assets and components

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 element deals with the replacement work undertaken during maintenance activities. The final element deals with dismantling and removal work undertaken during maintenance activities.

To prove competence in this unit, the employee shall demonstrate their ability to complete maintenance in accordance with current working instructions. The employee will have to show they can follow recording, reporting and escalation procedures.

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

B.6.4 Assessment

B.6.4.1 Initial Assessment

Where the activity is new to the employee's area of responsibility evidence shall be used from satisfactory completion of training and mentoring and shall be gathered of the employee working on OLE.

Where the employee has been previously trained and has been completing the work for more than one year, performance evidence requirements defined in the element do not apply. The primary source of the evidence will be from detailed questioning supported by performance reports from the employee's Supervisor.

B.6.4.2 Re-Assessment

Re-assessment shall be completed at least every 3 years in accordance with the requirements set out in 7.2.

B.7 Knowledge Evidence this is common to the whole unit

You shall have knowledge and understanding of:

- a) How the maintenance and testing activity may affect the safe operation of the railway.
- b) What procedures need to be followed, to confirm operational and personal safety, is maintained during the work.
- c) How to avoid personal injury during the work.
- d) How the OLE is designed to function under normal operating conditions.
- e) What each of the component parts contributes to the overall operation of the system.
- f) What terminology and methods are used to identify OLE and describe operational status of the equipment.
- g) What tools are required to complete the work and what equipment calibration is required.
- h) What the limits of your responsibility and authority are.
- i) Who is responsible for taking the equipment out of operational service and handing the equipment back to operational service.
- j) Maintenance reporting documentation
- k) Reporting lines and escalation procedures
- l) Industry protocols relating to communication of important safety information

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

Unit OLE 1: Undertake Preventive Maintenance of OLE Assets

Element 1: Undertake Routine Preventive Maintenance of the OLE and Associated Tools & Equipment.

Performance Statements

You shall be able to:

- 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.

Scope of Competence

- The type of maintenance activity includes:
 - High level intrusive inspection of individual components
 - Maintain Discrete sectioning devices (by type)
 - Maintain APC permanent track magnets
 - Maintain isolators / switches (by type)
 - Maintain tensioning equipment (by type)
 - Clean & maintain equipment including:
 - Insulation
 - Signage
 - Covers
 - Lubrication of components
- The equipment to be maintained includes:
 - Foundations & Structures
 - Tensioning Equipment
 - Insulators
 - Isolators / Switches
 - Support & Registration
 - Conductors / Wires
 - In Span Assemblies
 - Small Part Steelwork / Fixtures & Fittings
 - Discrete Sectioning Devices
 - APC Magnets
 - Screening / Protective Covers
 - Signage
 - Ladders
 - Lifting equipment & slings
 - Live line tools & equipment
- Quality standards to be achieved are as defined in the maintenance specifications.

Knowledge statements

You shall have knowledge and understanding of:

- What types of defect can occur, how to check for and how to deal with each defect.
- What maintenance schedules and related specifications apply to Overhead Line Electrification equipment.
- What maintenance methods and procedures apply to Overhead Line Electrification equipment.
- What tests/checks shall be undertaken for a complete maintenance activity.
- How to recognise when the work required, restoring performance to specification, exceeds your own limits of competence.

Performance Evidence Requirements

Performance evidence shall be collected through differing types of work place evidence, of the employee completing all relevant maintenance procedures in respect of performance statements: a, b, c, d, e and g for all items applicable in scope statement 1, and shall include:

- Examination and checking of equipment including high level visual examination
- Cleaning of equipment
- Overhaul of equipment
- Lubrication of equipment
- Testing the equipment
- Measuring
- Recording

The remaining performance statements may be assessed using witness testimony, documented questioning or evidence from training.

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

Unit OLE 1: Undertake Preventive Maintenance of OLE Assets	
Element 2: Adjust OLE Assets to meet Operating Requirements.	
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 appropriate operating specifications for the equipment being maintained. - Carry out adjustments within the limits of your personal authority. - Make the required adjustments in the specified sequence and in an agreed time scale. - Confirm that the adjusted equipment meets the required operating specification. - Report any instances where the equipment fails to meet the required performance after adjustments or where there are identified defects outside the required adjustments. - Maintain documentation in accordance with organisational requirements.	Knowledge statements <i>You shall have knowledge and understanding of:</i> - How to carry out adjustments related to the functions detailed in scope statement 1. - Maintenance schedules and related specifications relating to Overhead Line Electrification equipment and ancillary equipment. - Maintenance methods and procedures relating to Overhead Line Electrification equipment.
Scope of Competence - Type of adjustments to be made include: - Profile of contact wire - Security and position of component parts - Alignment and location of structural steelwork and foundations - Mechanical clearances - Conductor and ancillary wire tensions - Electrical clearances - Allowance for free movement over ambient temperature range - Quality standards to be achieved are as defined in the maintenance specifications	Performance Evidence Requirements Performance evidence shall be collected through differing types of workplace evidence, of the employee adjusting: - OLE equipment in respect of performance statements: a, b, c, d, e, and g. and shall include - Overhaul of equipment - Rectification to operating specification - Repair of equipment - Recording of actions performed The remaining performance statements may be assessed using witness testimony, documented questioning or evidence from training.

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

Unit OLE 1: Undertake Preventive Maintenance of OLE Assets	
Element 3: Replace OLE Assets and Components.	
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. - Obtain all the required components and confirm that they are in a suitable condition for replacement and fit for purpose. - Confirm that any replacement components used meet the required specification. - Take adequate precautions to prevent damage to components, tools and equipment during replacement. - Replace the components in the correct sequence using appropriate tools and techniques. - Make any necessary settings or adjustments to the components to confirm they will function correctly. - Deal promptly and effectively with problems within your control and report those that cannot be solved - Maintain documentation in accordance with organisational requirements	Knowledge statements <i>You shall have knowledge and understanding of:</i> - How to replace equipment related to the functions detailed in scope statement 1. - Maintenance schedules and related specifications relating to Overhead Line Electrification equipment and ancillary equipment. - Maintenance methods and procedures relating to Overhead Line Electrification equipment.
Scope of Competence - Replacement of equipment will be as a result of: - Loss of mechanical integrity of items resulting from corrosion, erosion and wear - Contact wire wear - Degraded insulation - Loss of electrical continuity of DEPs, conductors, feeders, and isolators. - Loss of electrical conductivity of all conductors, feeders, and isolators - Insufficient movement of component parts - Quality standards to be achieved are as defined in the maintenance specifications	Performance Evidence Requirements Performance evidence shall be collected through differing types of workplace evidence, of the employee replacing: - OLE equipment in respect of performance statements: a, b, d, e, f g, h. and shall include: - Reassembly of equipment - Refitting of equipment - Recording of actions performed The remaining performance statements may be assessed using witness testimony, documented questioning or evidence from training.

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

Unit OLE 1: Undertake Preventive Maintenance of OLE Assets	
Element 4: Dismantle and Remove OLE Assets and Components.	
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. - Establish, and where appropriate, mark component orientation for re-assembly. - Confirm that any stored mechanical energy or substances are released safely and correctly. - Remove the required components using approved tools and techniques. - Take suitable precautions to prevent damage to components, tools and equipment during removal. - Check the condition of the removed components and record those that will require replacing. - Label and store the removed components in an appropriate location - Store or discard the removed components in accordance with approved procedures - Maintain documentation in accordance with organisational requirements	Knowledge statements <i>You shall have knowledge and understanding of:</i> - Maintenance schedules and related specifications relating to Overhead Line Electrification equipment and ancillary equipment. - Methods and procedures relating to the dismantling and removal of Overhead Line Electrification equipment related to the functions detailed in scope statement 1
Scope of Competence - The dismantling and removal of equipment will be as a result of: - Loss of mechanical integrity of all items resulting from corrosion, erosion and wear - Contact wire wear - Degraded equipment - Loss of electrical continuity of DEPs, conductors, feeders, and isolators. - Loss of electrical conductivity of all conductors, feeders, and isolators. - Seizure and / or insufficient movement of component parts - The removal techniques or procedures to be followed will be those for both temporary and permanent situations and will include: - Unfastening - Untying - Releasing Removal can be by manual and mechanical means. - The complexity of the removal operations will be influenced by: - OLE configuration - Using variable/diverse sources of information - Environmental procedures - Quality standards to be achieved are as defined in the maintenance specifications	Performance Evidence Requirements Performance evidence shall be collected through differing types of workplace evidence, of the employee dismantling and removing: - OLE equipment in respect of performance statements: a, b, c, d, e, f and i and shall include: - Dismantling and removing consumable components - Recording of actions performed The remaining performance statements may be assessed using witness testimony, documented questioning or evidence from training.

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

B.8 OLE 2: Undertake Corrective Maintenance of OLE Assets

B.8.1 Purpose

The purpose of this Competence Unit is to define the competence requirements for persons required to undertake corrective maintenance of OLE.

B.8.2 Scope

This competence unit applies in all circumstances where any person is required to maintain, fault or test OLE 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 employee 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 employee is responsible for the quality of their completed work.

B.8.3 Competence Unit

This competence unit comprises three elements

Element 1 Locate and diagnose defects in OLE Equipment.

Element 2 Restore OLE Equipment assets to operational condition by repair

Element 3 Conduct specified measurement and testing of OLE equipment assets and analyse and interpret the results

The first element is concerned with the safe completion of locating, diagnosing defects. The second element is concerned with the restoration of OLE equipment to operational condition. 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.

To prove competence in this unit, the employee shall demonstrate their ability to complete maintenance in accordance with instructions, locate, diagnose and repair defects associated with the equipment and complete the appropriate testing. The employee will have to show they can follow recording, reporting and escalation procedures.

B.8.4 Assessment

B.8.4.1 Initial Assessment

Where the activity is new to the employee's area of responsibility evidence shall be used from satisfactory completion of training and mentoring and shall be gathered of the employee working on OLE.

Where the employee has been previously trained and has been completing the work for more than one year, performance evidence requirements defined in the element do not apply. The primary source of the evidence will be from detailed questioning supported by performance reports from the employee's Supervisor.

B.8.4.2 Re-Assessment

Re-assessment shall be completed at least every 3 years in accordance with the requirements set out in 7.2.

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

B.8.5 Knowledge Evidence this is common to the whole unit

You shall have knowledge and understanding of:

- a) Engineering specifications associated with OLE equipment.
- 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 confirm operational and personal safety is maintained during the work.
- d) How to avoid personal injury during the work.
- e) How the OLE equipment is designed to function under normal operating conditions.
- f) What each of the component parts contributes to the overall operation of the system.
- g) What terminology and methods are used to identify OLE equipment and describe operational status of the OLE equipment.
- h) What tools are required to complete the work and what equipment calibration is required.
- i) What maintenance authorisation procedures are and limits of your responsibility and authority.
- j) What equipment operating and care and control procedures are applicable to OLE equipment.
- k) What procedures apply to taking the equipment out of operational service and what procedures apply to handing back the equipment to operational service
- l) Maintenance reporting documentation and control procedures
- m) Reporting lines and escalation procedures
- n) Industry protocols relating to communicating important safety information

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

Unit: OLE 2: Undertake Corrective Maintenance of OLE Assets.

Element 1: Locate and Diagnose Defects in OLE Equipment.

Performance statements

You shall be able to:

- Work safely at all times, complying with health and safety and other relevant regulations and guidelines
- Review and use all relevant information on the symptoms and problems associated with the assets
- Investigate and establish the most likely causes of the faults
- Select, use and apply diagnostic techniques, tools and aids to locate faults
- Complete the fault diagnosis within the agreed time and inform the appropriate people when this cannot be achieved
- Determine the implications of the fault for other work and for safety considerations
- Use the evidence gained to draw valid conclusions about the nature and probable cause of the fault
- Record details on the extent and location of the faults in an appropriate format

Scope of Competence

- Type of fault finding techniques or procedures, including:
 - Testing
 - Observation
 - Taking measurements and readings using approved equipment
- Type and range of problems and faults affecting:

- Foundations & Structures - Tensioning - Insulators - Isolators / Switches - Support & Registration - Conductors / Wires - In Span Assemblies	- Discrete Sectioning Devices - APC Magnets - Screening / Protective Covers - Signage - Small Part Steelwork / Fixtures & Fittings
--	--
- Level and complexity of diagnosis including:

- Missing / Loose components - Excessive / inadequate movement of components - Corrosion / erosion of / defective components - Misalignment of components - Inadequate mechanical / electrical clearances - Incorrect wire tensions - Loss of Magnetism - Influence of track defects	- Accumulation of dirt / pollution on insulation - Mechanical damage to components - High electrical resistivity or broken continuity of current carrying components - Illegible signage / colouring - Excessive mechanical wear - Foreign object encroachment
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Knowledge statements

You shall have knowledge and understanding of:

- Fault diagnostic aids including:
 - Use of Micrometer or Venier Gauge
 - Gauges including:
 - Positional
 - Stagger
 - Tension
 - Track
 - Structural
 - Height
- Fault finding methods and techniques including
 - Intrusive
 - Non-intrusive
 - Observation
 - Taking measurements and readings
- Analysis methods and techniques including:
 - Comparison with specification
 - Comparison with operational requirements
 - Comparison with previous data
- Test equipment operating and care and control procedures including:
 - Calibration
 - Authorisation
 - Controlled issue and return
 - Assessing likely risks arising from faults

Performance Evidence Requirements

Performance evidence shall be collected of the employee locating failures associated with the equipment caused by:

- Electrical failure (open circuit)
- Electrical failure (short circuit)
- Corrosion/Erosion and other general damage
- Foreign bodies
- Track Alignment

in respect of all performance statements.

This evidence shall normally be supplied by witness testimony with copies of relevant fault reports supplied to confirm that the work has been completed.

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

Unit OLE 2: Undertake Corrective Maintenance of OLE Assets.	
Element 2: Restore OLE Equipment Assets to Operational Condition by Repair.	
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 specifications for the component to be repaired - Prepare the component for repair - Carry out the repairs within agreed timescale using approved materials and components and methods and procedures - Confirm that the repaired component meets the specified operating conditions - Produce accurate and complete records of all repair work carried out	Knowledge statements <i>You shall have knowledge and understanding of:</i> - Component repair methods, techniques and procedures associated with OLE equipment. - What testing procedures need to be completed prior to effecting a repair
Scope of Competence - Type of repairs or repair techniques to be used including: - Adjust - Replace - Renew - Complexity or nature of repairs to be carried out including repairs to the following: - Foundations & Structures - Tensioning Equipment - Insulators - Isolators / Switches - Support & Registration - Conductors / Wires - In Span Assemblies - Small Part Steelwork / Fixtures & Fittings - Discrete Sectioning Devices - APC Magnets - Screening / Protective Covers - Signage - Correct use of tools and equipment to include: - Mechanical presses / crimping machines. - Removal of foreign objects with 'live line' tools	<i>Performance Evidence Requirements</i> Performance evidence shall be collected of the employee repairing failures caused by - Electrical failure - Component failure - Corrosion/erosion and other general damage in respect of all performance statements. This evidence shall normally be supplied by witness testimony with copies of relevant fault reports supplied to confirm that the work has been completed.

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

Unit OLE 2: Undertake Corrective Maintenance of OLE Assets.

Element 3: Conduct Specified Measurement & Testing of OLE Equipment Assets & Analyse & Interpret the Results

Performance statements

You shall be able to:

- Work safely in accordance with the regulations for your work environment.
- Follow the appropriate procedures for use of tools and equipment to carry out the required tests.
- Set up and carry out the tests using the correct procedures and within agreed timescales.
- Confirm that you have the necessary test data on which to conduct the analysis.
- Review the results and carry out further tests if necessary.
- Analyse the data using approved methods and procedures.
- Resolve promptly any inconsistencies in the data.
- Check that the data analysis is accurate and thorough and takes account of the test conditions.
- Compare the analysis against the product or asset specification and identify any faults or variations from specification.
- Record the results of the tests and analysis in the appropriate format.

Scope of Competence

- Tests to be carried out include:
 - Wire Tensions
 - Mechanical clearances
 - Electrical clearances
 - Alignment / available movement with respect to temperature
 - Size and along track positioning of in span components
 - Contact wire positional gauging
 - Contact wire wear
 - Discrete sectioning device set up
 - Strength & Polarity check / positioning of APC magnets
 - Electrical continuity
- Data to be used includes:
 - Measurements
 - Meter Readings
 - Strength & polarity values
- Analytical techniques or procedures to be used including:
 - Comparison with specification
 - Comparison with previous data

Knowledge statements

You shall have knowledge and understanding of:

- What engineering test specifications are associated with OLE and ancillary equipment.
- What types of test equipment is used on OLE and ancillary equipment and how to use the test equipment.
- What OLE testing procedures and methods apply to the equipment.
- How to select and conduct the appropriate OLE tests.
- What analysis methods and techniques are associated with OLE and ancillary equipment.
- What the test reporting documentation and procedures are.
- How to determine whether the equipment is operating within specification and what to do if adjustment or alteration is required.

Performance Evidence Requirements

Performance evidence shall be collected of the employee repairing failures caused by

- Electrical failure
- Component failure
- Corrosion/erosion and other general damage

in respect of all performance statements: except statement 'g'.

The remaining performance statement may be assessed using witness testimony, documented questioning or evidence from training.

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

B.9 OLE 3: Non Intrusive Inspection of the OLE Infrastructure

B.9.1 Purpose

The purpose of this competence unit is to define the competence requirements for persons required to undertake visual inspection of Overhead Line equipment.

B.9.2 Scope

This competence unit applies in all circumstances where any person is required to inspect Overhead Line equipment 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 employee 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 employee is responsible for the quality of their completed work.

B.9.3 Competence Unit

This competence unit comprises one element

Element 1 Visually inspect the OLE Infrastructure

This element is concerned with the routine inspection work undertaken to confirm the immediate safety of the OLE equipment and the identification of medium and long-term deterioration.

To prove competence in this unit, the employee shall demonstrate their ability to complete the inspection in accordance with instructions. The employee will have to show they can follow recording, reporting and escalation procedures.

B.9.4 Assessment

B.9.4.1 Initial Assessment

Where the activity is new to the employee's area of responsibility evidence shall be used from satisfactory completion of training and mentoring and shall be gathered of the employee working on OLE.

Where the employee has been previously trained and has been completing the work for more than one year, performance evidence requirements defined in the element do not apply. The primary source of the evidence will be from detailed questioning supported by performance reports from the employee's Supervisor.

B.9.4.2 Re-Assessment

Re-assessment shall be completed at least every 3 years in accordance with the requirements set out in 7.2.

Ref:	NR/L2/CTM/014
Issue:	2
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Compliance date:	05 June 2010

B.9.5 Knowledge Evidence this is common to the whole unit

You shall have knowledge and understanding of:

- a) Engineering specifications associated with OLE equipment.
- 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 confirm operational and personal safety is maintained during the work.
- d) How to avoid personal injury during the work.
- e) How the OLE equipment is designed to function under normal operating conditions.
- f) What each of the component parts contributes to the overall operation of the system.
- g) What terminology and methods are used to identify OLE equipment and describe operational status of the OLE equipment.
- h) What equipment operating and care and control procedures are applicable to OLE equipment.
- i) Maintenance reporting documentation and control procedures
- j) Reporting lines and escalation procedures
- k) Industry protocols relating to communicating important safety information

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

Unit: OLE 3: Non Intrusive Inspection of the OLE Infrastructure.

Element 1: Visually Inspect the OLE Infrastructure

Performance statements

You shall be able to:

- a. Work safely in accordance with the regulations for your work environment.
- b. Follow the correct specification for the product or equipment being inspected.
- c. Identify and confirm the inspection checks to be made and acceptance criteria to be used.
- d. Carry out all required inspections as specified.
- e. Identify any defects or variations from the specification.
- f. Record the results of the inspection in the appropriate format.
- g. Deal promptly and effectively with problems within your control and report those that cannot be solved

Knowledge statements

You shall have knowledge and understanding of:

1. Engineering specifications for the components concerned.
2. Inspection methods and techniques for the inspections to be carried out.
3. Identification of defects in products, equipment or systems by visual means.
4. Quality Control systems and documentation procedures
5. Reporting lines and procedures including those required for:
 - Line management reporting
 - Submission of forms and reports
6. Dealing with problems.

Performance Evidence Requirements

Performance evidence shall be collected of the employee inspecting the infrastructure in respect of all performance statements:

Scope of Competence

1. The type of inspection includes:
 - Non intrusive ground level visual inspection
 - Inspection of OLE following short circuit
 - Cab patrol inspection
 - Visual inspection of structures
 - Inspection of APC magnets
2. The type of asset to be inspected includes:
 - Foundations & Structures
 - Tensioning Equipment
 - Insulators
 - Isolators / Switches
 - Support & Registration
 - Conductors / Wires
 - In Span Assemblies
 - Small Part Steelwork / Fixtures & Fittings
 - Discrete Sectioning Devices
 - APC Magnets
 - Screening / Protective Covers
 - Signage
3. External influences that could affect the safe operation of the OLE e.g. bird's nests, vegetation, vandalism and materials lying in the cess.

Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

B.10 OLE 4: Establish the Operational Condition of the OLE by High Level Intrusive Inspection

B.10.1 Purpose

The purpose of this competence unit is to define the competence requirements for persons required to undertake detailed inspection of the OLE.

B.10.2 Scope

This competence unit applies in all circumstances where any person is required to establish the operational condition of the OLE by detailed inspection 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 employee 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 employee is responsible for the quality of their completed work.

B.10.3 Competence Unit

This competence unit comprises three elements

Element 1 Undertake detailed inspection of the OLE infrastructure

Element 2 Monitor the performance and condition of OLE assets

Element 3 Assess the performance and condition of OLE assets

The first element is concerned with the comprehensive inspection of the infrastructure, verifying reported defects, identifying new defects, prioritising and checking work. The second element is concerned with the ongoing periodic checking of the OLE infrastructure to monitor its condition using gauges and other equipment, and comparing this to previous inspection data. The final element deals with the assessment of the condition of the OLE infrastructure using data obtained from measuring equipment and by visual or equipment inspection assessing the performance of the equipment.

To prove competence in this unit, the employee shall demonstrate their ability to complete the inspection in accordance with instructions. The employee will have to show they can follow recording, reporting and escalation procedures.

B.10.4 Assessment

B.10.4.1 Initial Assessment

Where the activity is new to the employee's area of responsibility evidence shall be used from satisfactory completion of training and mentoring and shall be gathered of the employee working on OLE.

Where the employee has been previously trained and has been completing the work for more than one year, performance evidence requirements defined in the element do not apply. The primary source of the evidence will be from detailed questioning supported by performance reports from the employee's Supervisor.

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B.10.4.2 Re-Assessment

Re-assessment shall be completed at least every 3 years in accordance with the requirements set out in 7.2.

B.10.5 Knowledge Evidence this is common to the whole unit

You shall have knowledge and understanding of:

- a) Engineering specifications associated with OLE equipment.
- 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 confirm operational and personal safety is maintained during the work.
- d) How to avoid personal injury during the work.
- e) How the OLE equipment is designed to function under normal operating conditions.
- f) What each of the component parts contributes to the overall operation of the system.
- g) What terminology and methods are used to identify OLE equipment and describe operational status of the OLE equipment.
- h) What tools are required to complete the work and what equipment calibration is required.
- i) What maintenance authorisation procedures are and limits of your responsibility and authority.
- j) What equipment operating and care and control procedures are applicable to OLE equipment.
- k) What procedures apply to taking the equipment out of operational service and what procedures apply to handing back the equipment to operational service
- l) Maintenance reporting documentation and control procedures
- m) Reporting lines and escalation procedures
- n) Industry protocols relating to communicating important safety information

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Unit: OLE 4: Establish the Operational Condition of the OLE by High Level Intrusive Inspection.

Element 1: Undertake Detailed Inspection of the OLE Infrastructure

Performance statements

You shall be able to:

- Work safely in accordance with the regulations for your work environment.
- Follow the correct specification for the product or equipment being inspected.
- Use the correct equipment to carry out the inspection.
- Identify and confirm the inspection checks to be made and acceptance criteria to be used.
- Carry out all required inspections as specified.
- Identify any defects or variations from the specification.
- Record the results of the inspection in the appropriate format.
- Deal promptly and effectively with problems within your control and report those that cannot be solved

Knowledge statements

You shall have knowledge and understanding of:

- Engineering specifications for the components concerned.
- Inspection methods and techniques for the inspections to be carried out.
- Calibration of equipment and authorisation procedures including knowing what requires calibration and how to check if it is in calibration.
- Inspection equipment care and control procedures
- Identification of defects in products, equipment or systems by both visual and measured means.
- Control systems and documentation procedures
- Reporting lines and procedures including those required for:
 - Line management reporting
 - Submission of forms and reports
- Dealing with problems

Scope of Competence

- The type of inspection includes:
 - High Level Intrusive Inspection
 - Intrusive Inspection following severe damage
 - Examination to determine Infant Mortality
- The type of asset to be inspected includes:
 - Foundations & Structures
 - Tensioning
 - Insulators
 - Isolators / Switches
 - Support & Registration
 - Conductors / Wires
 - In Span Assemblies
 - Small Part Steelwork / Fixtures & Fittings
 - Discrete Sectioning Devices
 - APC Magnets
 - Screening / Protective Covers
 - Signage
- The action resulting from the inspection is:
 - Reporting findings
 - Protecting the line
 - Imposing an Emergency Speed Restriction
 - Prioritise and recommend repair options

Performance Evidence Requirements

Performance evidence shall be collected of the employee inspecting the infrastructure in respect of all performance statements.

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Ref:	NR/L2/CTM/014
Issue:	2
Date:	06 March 2010
Compliance date:	05 June 2010

Unit: OLE 4: Establish the Operational Condition of the OLE by High Level Intrusive Inspection.

Element 2: Monitor the Performance & Condition of OLE Assets

Performance statements

You shall be able to:

- a. Work safely in accordance with the regulations for your work environment.
- b. Correctly set up and check-calibrate the equipment required for the monitoring being carried out.
- c. Carry out the monitoring activities effectively with minimum disruption to normal activities.
- d. Record and review the outcomes and take appropriate actions.
- e. Identify any defects or variations from the specification.
- f. Deal promptly and effectively with problems within your control and report those that cannot be solved

Knowledge statements

You shall have knowledge and understanding of:

1. Performance requirements of engineering assets.
2. Monitoring methods and procedures for engineering assets
3. Importance of the need for equipment calibration and authorisation procedures for the use of the equipment.
4. Monitoring equipment setting, operating and care and control procedures
5. Reporting lines and procedures including those required for:
 - Line management reporting
 - Submission of forms and reports
6. Dealing with problems.

Scope of Competence

1. The type of asset to be monitored includes:
 - Foundations & Structures
 - Tensioning
 - Insulators
 - Isolators / Switches
 - Support & Registration
 - Conductors / Wires
 - In Span Assemblies
 - Small Part Steelwork / Fixtures & Fittings
 - Discrete Sectioning Devices
 - APC Magnets
 - Screening / Protective Covers
 - Signage
2. The monitoring methods include:
 - Measurement
 - Static and dynamic tests
 - Use of gauges and dummy pantographs

Performance Evidence Requirements

Performance evidence shall be collected of the employee inspecting and monitoring the infrastructure in respect of all performance statements

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Compliance date:	05 June 2010

Unit: OLE 4: Establish the Operational Condition of the OLE by High Level Intrusive Inspection.

Element 3: Assess the Performance & Condition of OLE Assets

Performance statements

You shall be able to:

- Work safely in accordance with the regulations for your work environment.
- Confirm that you have the necessary test data on which to conduct the assessment.
- Carry out the assessment using all relevant data and valid methods.
- Check that the assessment provides clear and accurate information.
- Compare current performances and condition data with that from previous assessments.
- Identify and report the implications arising from the assessments
- Record the results of the assessments in the appropriate format

Scope of Competence

- The type of asset to be assessed includes:
 - Foundations & Structures
 - Tensioning
 - Insulators
 - Isolators / Switches
 - Support & Registration
 - Conductors / Wires
 - In Span Assemblies
 - Small Part Steelwork / Fixtures & Fittings
 - Discrete Sectioning Devices
 - APC Magnets
 - Screening / Protective Covers
 - Signage
- The type of data to be analysed may relate to:
 - OLE inspection records
 - OLE equipment testing reports
 - Survey information
 - Dynamic/static readings
 - Off track information
 - Environmental information
- The analysis methods to be used will include:
 - calculation
 - comparison

Knowledge statements

You shall have knowledge and understanding of:

- Equipment operating and test specifications.
- Equipment monitoring methods and procedures
- Assessment methods and techniques. This shall include:
 - Reading data
 - Calculation
 - Comparison
- Reporting documentation and control procedures
- Reporting lines and procedures including those required for:
 - Line management reporting
 - Submission of forms and reports
 - Dealing with problems

Performance Evidence Requirements

Performance evidence shall be collected of the employee inspecting and monitoring the infrastructure in respect of all performance statements:.

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B.11 OLE 5: Undertake Preventive & Corrective Maintenance of OLE Earthing / Bonding.

B.11.1 Purpose

The purpose of this competence unit is to define the competence requirements for persons required to undertake corrective and preventive maintenance of elect OLE earthing / bonding equipment.

B.11.2 Scope

This competence unit applies in all circumstances where any person is required to maintain, fault or test OLE earthing and bonding equipment 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 employee 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 employee is responsible for the quality of their completed work.

B.11.3 Competence Unit

This competence unit comprises five elements

- Element 1 Undertake routine preventive maintenance of the OLE earthing / bonding Equipment.
- Element 2 Replace OLE earthing bonding components
- Element 3 Locate and diagnose defects in the OLE earthing / bonding system
- Element 4 Restore OLE earthing / bonding Equipment to operational condition by repair
- Element 5 Conduct specified testing of OLE earthing / bonding equipment, 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 it's 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 it's operating requirements.

To prove competence in this unit, the employee shall demonstrate their ability to complete maintenance in accordance with instructions, locate, diagnose and repair faults associated with OLE Equipment earthing / bonding and complete the appropriate testing. The employee will have to show they can follow recording, reporting and escalation procedures.

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B.11.4 Assessment

B.11.4.1 Initial Assessment

Where the activity is new to the employee's area of responsibility evidence shall be used from satisfactory completion of training and mentoring and shall be gathered of the employee working on OLE.

Where the employee has been previously trained and has been completing the work for more than one year, performance evidence requirements defined in the element do not apply. The primary source of the evidence will be from detailed questioning supported by performance reports from the employee's Supervisor.

B.11.4.2 Re-Assessment

Re-assessment shall be completed at least every 3 years in accordance with the requirements set out in 7.2.

B.11.5 Knowledge Evidence this is common to the whole unit

You shall have knowledge and understanding of:

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