



Australian Government

UETTD RIS47 Sample, test, filter and reinstate insulating oil

Release: 1

UETTDNIS47 Sample, test, filter and reinstate insulating oil

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package.

Application

This unit involves the skills and knowledge required to sample, test, filter and reinstate insulating oil in the electricity supply industry (ESI).

It includes despatching oil samples to a laboratory for higher level testing, as required and post operational servicing of equipment and/or plant. It also includes identifying related environmental issues concerning disposing oil safely.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under State and Territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Common Unit Group

UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace

UEENEEE102A Fabricate, assemble and dismantle utilities industry components

UEENEEE104A Solve problems in d.c. circuits

UEENEEE105A Fix and secure electrotechnology equipment

UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications

UEENEEE137A Document and apply measures to control OHS risks associated with electrotechnology work

UEENEEG006A Solve problems in single and three phase low voltage machines

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage a.c. circuits

UEENEEG106A Terminate cables, cords and accessories for low voltage circuits

UEENEK142A Apply environmentally and sustainable procedures in the energy sector

UETTDREL16 Working safely near live electrical apparatus

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to sample, test, filter and reinstate insulating oil

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Works schedules, plans, drawings, workplace procedures and material lists are received and confirmed
- 1.2** Job requirements and workplace procedures are identified and communicated with relevant personnel
- 1.3** Work health and safety (WHS)/occupational health and safety (OHS) workplace procedures for sampling, testing, filtering and reinstating insulating oil are obtained and confirmed for the purposes of the work to be performed
- 1.4** Work is prioritised and sequenced for completion within acceptable timeframes following consultation with relevant personnel and in accordance with workplace procedures
- 1.5** Hazards are identified, WHS/OHS risks assessed and control measures prioritised, implemented and monitored in accordance with workplace procedures
- 1.6** Relevant work permits are obtained and signed in accordance with workplace procedures
- 1.7** Equipment, tools and personal protective equipment (PPE) required for work are identified, obtained and confirmed in working order
- 1.8** Liaison and communication issues with authorised personnel, authorities, clients and land owners are resolved to perform work, as required

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| | 1.9 | Worksite is prepared to minimise risk, damage to property, commerce and individuals in accordance with workplace procedures |
| | 1.10 | Personnel participating in work are fully briefed and responsibilities confirmed in accordance with workplace procedures |
| | 1.11 | Traffic management is planned and implemented in accordance with workplace procedures |
| 2 | Carry out sampling, testing, filtering and reinstating of insulating oil | |
| | 2.1 | WHS/OHS, sustainable energy and environmental principles and practices are monitored and actioned to reduce incidents of accidents in accordance with workplace procedures |
| | 2.2 | Hazard warnings and safety signs are recognised and hazards and assessed WHS/OHS risks are reported to immediate authorised personnel for directions in accordance with workplace procedures |
| | 2.3 | Requirements for lifting and/or climbing and/or working at heights and the use of power tools/equipment are followed in accordance with workplace procedures |
| | 2.4 | Sampling, testing, filtering and reinstating of insulating oil are applied to ensure completion in agreed timeframes, to quality standards and minimum waste in accordance with workplace procedures |
| | 2.5 | Sampling, testing, filtering and reinstating of the insulating oil is performed in accordance with work schedules, job requirements and workplace procedures |
| | 2.6 | Unplanned events in the filtering, sampling and testing of insulating oil are responded to in accordance with workplace procedures |
| | 2.7 | Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills |
| | 2.8 | Quality checks of work are undertaken in accordance with industry standards and workplace procedures |
| 3 | Complete the sampling, testing, filtering and reinstating of insulating oil | |
| | 3.10 | Completed work is checked against work schedule, construction plans and drawings for compliance and anomalies are reported in accordance with workplace procedures |

- 3.2 WHS/OHS and environmental incidents are reported in accordance with workplace procedures, as required
- 3.3 Worksite is cleaned and confirmed safe in accordance with workplace procedures
- 3.4 Tools, equipment, surplus resources and materials are cleaned, checked and returned to storage or disposed of in accordance with workplace procedures
- 3.5 Relevant work permits are signed off and equipment is returned to service in accordance with workplace procedures
- 3.6 Work records, reports and/or documentation are completed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDNIS47A Sample, test, filter and reinstate insulating oil.

Links

UET Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETTDRIS47 Sample, test, filter and reinstate insulating oil

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including the use of risk control measures
- applying sustainable energy principles and practices
- sampling, testing, filtering and reinstating insulating oil on at least two (2) of the following pieces of equipment:
 - transformer (tx) main tank
 - tx tap changer
 - switchgear
 - cable
 - reactor
- dealing with unplanned events on at least one (1) occasion.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- filtering and sampling of insulating oil, including:
 - standards, codes, legislation, supply authority regulations and/or enterprise requirements associated with filtering and sampling - safe handling procedures; personal hygiene, storage and disposal procedures; WHS/OHS hazards and precautions, including use of appropriate personal protective equipment (PPE); environmental procedures and effects of contaminants
 - properties of insulating oil - dielectric strength, moisture content, acidity and sludge
 - locations where insulating oil is used - transformer, switchgear and oil filled cable
 - filtering equipment – types, cleaning procedures and method of use
 - techniques in filtering and sampling insulating oil - methods of sampling, methods of filtering, testing procedures on site and analysing oil effectiveness
 - frequency of testing

- testing of insulating oil, including:
 - standards, codes, legislation, supply authority regulations and/or enterprise requirements associated with testing, such as precautions during testing and types of testing equipment
 - techniques in testing insulating oil - electric strength, water content, dielectric dissipation, resistivity and acidity
 - dissolved gas analysis (DGA)
- powerline safety practices, including:
 - protective apparatus and apparel for linework - responsibilities for the selection, use, maintenance and storage of protective apparatus and apparel and the types of protective apparatus and apparel used for the line worker
 - requirements for the use of ladders - carrying, erecting, collapsing and lowering different types of extension ladder against a standing pole; maintenance checks on different types of ladders; renewal of extension ropes; and the safety issues relating to clearances from overhead conductors
 - requirements for climbing and working aloft - methods used to identify a pole is safe to climb; methods used to inspect a line worker's body belt; application of knots and hitches appropriate to the requirements of a line worker; height safety principles, including personal fall protection, prevention and related requirements; and the practical procedure of climbing an overhead structure and fitting a pole chair
 - traffic management - purpose of traffic management and a line worker's responsibilities in accordance with relevant statutory requirements and electricity supply industry (ESI) requirements, demonstration of the procedures used to provide an effective traffic management scheme and the use of a two-way radio
 - control of small fires - identification, selection and operation of the appropriate extinguishing mediums for various types of fires; general fire prevention methods and the precautions for personal protection when fighting small fires
 - rescue victims from heights and confined spaces - planning and identifying procedures; establishing responses; developing techniques; involvement of external emergency services; and emergency procedures for the rescue of an electric shock victim, including cardio pulmonary resuscitation (CPR)
 - requirements for aerial linework - planning, establishing and implementing relevant aviation authority clearances; determining system requirements; aircrew familiarisation with network operations and equipment; and requirements for effective communications operations for aerial work
- material handling and the environment, including:
 - methods of obtaining updated environmental information and data sheets on the proper use and handling of equipment and materials
 - environmental standards, codes, environmental legislation, WHS/OHS legislation, hazardous substances/dangerous goods regulations, supply authority regulations and/or enterprise requirements applicable environmental care when handling materials, including provision of manufacturer and supplier information such as material safety data sheets (MSDS)
 - types and application of PPE used for hazards substances and dangerous goods
 - techniques in handling equipment to eliminate/reduce risks to the environment from spillages of oils, herbicides, pesticides and chemicals from equipment, such as vehicle

- loading crane, chainsaw, enterprise vehicles and explosive power tools
- procedures for handling and control of spillages of herbicides
- methods of disposing and storage of herbicides, pesticides and chemicals
- methods of cleaning mobile plant, equipment and tools
- recording of data
- environmental issues when undertaking sampling and filtering of oil, including:
 - environmental standards, codes, environmental legislation, supply authority regulations and/or enterprise requirements applicable to the work to be undertaken
 - methods of obtaining updated environmental information and data sheets on the proper use and handling of oil used on transformers and switchgear, including provision of MSDS
 - techniques in filtering and sampling oil to eliminate/reduce risks to the environment from spillages
 - safety procedures and equipment for handling and control of the oil
 - methods of disposing and storage of the oil
 - methods of cleaning equipment, tools and equipment
 - emergency procedures for spillages of oil to reduce risks to the environment - methods of cleaning up excessive spillages, methods of protection to surrounding environment, procedures for notification of relevant personnel and authorities, and recording procedures
 - polychlorinated biphenyl (PCB) contamination, handling and disposal procedures
- safe handling and/or disposing of insulation materials used in power distribution devices, which are potential environmental pollutants, including:
 - standards, codes, Commonwealth/state/territory and local government legislation, supply authority regulations and/or enterprise requirements applicable to the handling and disposing of insulation or heat dissipation materials used in power distribution devices
 - identification of environmental issues associated with the handling and disposing of insulation materials
 - safety precautions when handling and disposing of heat dissipation materials
 - safe working practices
 - WHS/OHS hazards and precautions
 - identification of hazards, assessing and controlling risks
 - types, selection, maintenance and uses of PPE
 - permit to work systems and isolation procedures
 - types and function of specialised equipment
 - safe working practices when using specialised equipment
 - emergency response and rescue, including first aid
 - techniques in the handling and disposing of insulation materials - PCB, asbestos, insulating oil and SF6 gas
- enterprise-specific policies and procedure instructions, including:
 - responsibilities and duty of care of employer and employee relationship
 - methods of obtaining the up-to-date information on enterprise policies and procedures

- rules and regulations
- induction into workplace - location of work area and storage area, timetable, uniform, personal wellbeing, housekeeping rules, emergency procedures and evacuation procedures
- techniques when dealing with others - working in teams, customer relation, complaint and issues procedures
- overview of enterprise professional development - fire-fighting procedures, fatigue management, and training and competency development - understanding and promotion
- enterprise-specific WHS/OHS instructions, including:
 - standards, codes, legislation, supply authority regulations and specific enterprise regulations pertaining to WHS/OHS policies and procedures
 - methods of obtaining the up-to-date information on enterprise WHS/OHS policies and procedures
 - specific enterprise PPE - type and application; where and when to be used; method of replacement; responsibility of maintenance, including cleaning, inspection and testing; emergency response, rescue, evacuation and first aid procedures
 - personal wellbeing – hygiene, fatigue/stress management and drugs/alcohol
 - WHS/OHS training - induction training, specific hazard training, specific task or equipment training, emergency and evacuation training, and training as part of broader programs such as equipment operation
 - WHS/OHS records, including audits; inspection reports; workplace health and environmental monitoring records; training and instruction records; manufacturer and supplier information, such as material safety data sheets (MSDS); registers; maintenance reports; workers compensation and rehabilitation records; and first aid/medical records
- enterprise-specific technical drawing and documents, including:
 - types and application of enterprise-specific drawings and documents - electrical and electronic drawings, mechanical drawings, project charts, schedules, graphs, technical manuals and catalogues
 - instructions/worksheets - types and application of enterprise-specific symbols and diagrams
 - title box - description of parts and version control
- enterprise-specific specialised tools, including:
 - legislation, standards, codes, supply authority regulations and/specific enterprise regulations pertaining to the use and care of specialised tools - voltage detectors; polarity testers and phase rotation
 - characteristics, capabilities and application of specialised tools for a particular job
 - safety policies, procedures and precautions with regards to using, transporting and storage of specialised tools
 - selection methods for obtaining the correct specialised tool for the particular job, including during procurement, purchasing and/or hiring arrangements
 - techniques in pre-use inspection on the serviceability of specialised tools
 - techniques in the selection, use, maintenance and care and storage of specialised tools
 - identifying WHS/OHS hazards, assessing and controlling risks associated with their use

- techniques for the safe use of specialised power tools
- substation safety practices, including:
 - standards, codes, Commonwealth/state/territory/local government legislation, supply authority regulations and/or enterprise requirements pertaining to substation safety practices
 - techniques in the use of protective apparatus and apparel for substation work, including responsibilities about the use and maintenance of protective apparatus and apparel and the types of protective apparatus and apparel used for work in substations
 - requirements for the use of ladders and appropriate ladder types for work in substations - safe work methods when carrying, erecting, collapsing and lowering different types of extension ladder against substation structures, plant and equipment; maintenance checks on different types of ladders; renewal of extension ropes and the safety issues relating to clearances from energised conductors
 - requirements for climbing and working at heights in substations - attached climbing principles; selection, use and operation of elevated work platforms (EWP) and any WHS/OHS requirements associated with the use of EWP
 - control of small fires - identification, selection and operation of the appropriate extinguishing mediums for various types of fires and the precautions for personal protection when fighting small fires
 - control of oil spills - identification, use and maintenance of spill oil control equipment and materials; and oil containment facilities and systems
 - rescue and release procedures - rescue of personnel from energised conductors, emergency descent from an EWP and/or rescue from confined spaces
 - enterprise requirements - safe access and authorisation to work procedures; use of mobile extendable equipment on or near energised HV conductors; emergency response procedures; hazards associated with work in substations, including earthing systems, transfer potentials, step and touch effects, electrostatic and electromagnetic induction; and dangers of near approach to energised conductors.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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