



Australian Government

Assessment Requirements for UEEEC0034 Fault find and repair radar apparatus and systems

Release: 1

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Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology 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, performance criteria and range of conditions on at least one occasion and include:

- applying logical diagnostic methods
- using fault scenarios to test the source of system faults
- identifying faults and competency needed to rectify them
- rectifying faults in system electronics
- verifying that the system operates correctly
- documenting fault rectification
- dealing with unplanned events
- applying relevant risk identification, assessment, reporting and control requirements
- 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
- coordinating work with relevant person/s
- determining live testing/measurement requirements
- determining scope of work
- identifying and accessing materials, tools, apparatus and testing devices
- isolating circuits/machines/system.

Knowledge Evidence

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

- radar apparatus and system fault finding and repair, safe working practices and relevant standards, codes and regulations, including:
 - electronic communications, secondary radar and related systems:
 - secondary radar principles encompassing:
 - role of secondary radar
 - transponder operation

- operating principles
- signal processing
- pulse generation, transmission and detection
- mode generation, detection and response
- display symbol generation
- synchronisation with primary radar
- advantages over primary radar with respect to clutter
- signal/noise ratio; transmit power required for operation
- interfaces to other systems providing information for transmission of mode data encompassing:
 - slaving/synchronisation to primary radar
 - clutter reduction/elimination
 - defruiting
 - degarbling
 - interfaces to other systems
 - range/ducting effects
 - advantages over primary radar
 - power supplies and uninterrupted power supplies (UPS)
 - international standards
 - national curriculum
 - hot standby, cold standby
- application of secondary radar systems - traffic collision avoidance system (TCAS), selective identification system (SIF), air traffic control radar beacon system (ATCRBS), instrument landing system (ILS), tactical air navigation (TACAN), navigation systems (VOR, GPS and DME), radar altimeter, jamming, electronic warfare, second time round returns (STRR), and identification–friend or foe radar (IFF)
- electronic communications, radar and sonar displays devices:
 - types and their applications – cathode-ray tube (CRT), plasma, liquid-crystal display (LCD), monochrome, colour and touch screen
 - sub-system components (i.e. functional blocks) and their operating parameters encompassing:
 - extra high tension (EHT) transformers
 - detectors
 - video distribution
 - time base generators
 - phase locked loops
 - microprocessors
 - memory devices
 - demodulators
 - focusing/deflection devices

- delay lines
 - bleed resistors
 - high voltage (HV) generation
- calibration testing and maintenance procedures:
- typical fault finding, their symptoms and cause
- electronic communications, radar fundamentals:
 - hazards and risk control measures
 - purpose and uses of radar
 - environmental conditions affecting radar
 - design factors which affect performance
 - propagation of electromagnetic waves
 - pulse forming circuits
 - typical radar transmitter encompassing:
 - limitations and applications of each type
 - typical radar receivers encompassing:
 - sub-system components (i.e. functional blocks) and their operating parameters
 - limitations and applications
 - radar antennae encompassing:
 - types, application and radiation patterns - parabolic, phased array, log periodic, and cos q
 - antenna gain
 - efficiency
 - length and height factors
 - microwave techniques, devices and applications encompassing:
 - oscillators
 - amplifiers
 - modulators and demodulators
 - mixers and detectors
 - types and characteristics of various radar systems
- relevant industry standards, codes and regulations
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

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 suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate 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 simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to diagnosing and rectifying faults in radar apparatus and systems
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>