



Australian Government

MEM27018 Test, diagnose and rectify mobile and stationary plant external monitoring and control systems

Release: 1

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Modification History

Release 1: New unit

Application

This unit of competency defines the skills and knowledge required to test, diagnose and rectify the systems used on stationary and mobile plant for functions that require communication to and from an external source. It covers installation, service and maintenance, diagnostics and troubleshooting of the on-board components of the communication, reporting and control systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM16008	Interact with computing technology
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18055	Dismantle, replace and assemble engineering components
MEM27006	Diagnose and rectify batteries, low voltage sensors and circuits
MEM27016	Diagnose and maintain electronic controlling systems on mobile and stationary plant
MEM27023	Diagnose and rectify fieldbus circuits in mobile and stationary plant

and equipment

Competency Field

Fixed and Mobile Plant

Elements and Performance Criteria

Elements describe the essential outcomes.

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

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|---|---|--|
| 1 | Determine job requirements | 1.1 Follow standard operating procedures (SOPs) |
| | | 1.2 Comply with work health and safety (WHS) requirements at all times |
| | | 1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs |
| | | 1.4 Identify job requirements from specifications, drawings, job sheets or work instructions |
| | | |
| 2 | Locate and identify features and purpose of external communication systems | 2.1 Determine on-board methods of communication and data exchange with external source |
| | | 2.2 Locate on-board electronic control module (ECMs) associated with external monitoring and control systems |
| | | 2.3 Identify other external monitoring and control system hardware and components |
| | | |
| 3 | Test external monitoring and control system | 3.1 Ensure equipment is parked with engine off or in specified safe mode for testing |
| | | 3.2 Check for damage to externally located antennae, sensors and other system components |
| | | 3.3 Review previous records |
| | | 3.4 Identify location of service ports and other test locations and connect laptop or test equipment |

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	3.5 Run specified test procedure or program to access data on system and plant performance 3.6 Identify faults and determine if related to on-board component or ECM fault 3.7 Analyse information from tests and test equipment and identify faults 3.8 Trace on-board faults to root cause 3.9 Report off-board faults in system according to SOP's
4 Rectify on-board faults	4.1 Repair or rectify faulty system components 4.2 Adjust program settings to workplace and manufacturer specifications for program related faults 4.3 Report continued program faults according to workplace procedures 4.4 Adjust, recalibrate or replace faulty sensors, aerials and antennae
5 Re-test system and document work	5.1 Re-test equipment external monitoring and control system to ensure compliance with specifications and workplace needs 5.2 Undertake any required final adjustments 5.3 Document work undertaken in accordance with procedures

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

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

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

The systems and equipment covered by this unit are found in stationary and mobile plant used in one or more of the following:

- mining
- agriculture
- forestry
- construction
- transport industries

External monitoring and control systems include one (1) or more of the following:

- integrated original equipment manufacturer (OEM) management and monitoring systems
- bolt on systems
- remote control and guidance systems, including on and off site remote control systems
- single equipment system telemetry and monitoring systems
- multi-mode systems allowing choice of operator control, semi-autonomous and fully autonomous control
- load and yield management and monitoring
- equipment condition monitoring and reporting systems
- safety related systems, including proximity awareness and collision avoidance systems

Communication and data exchange method includes one or more of the following:

- satellite
- Wi-Fi
- cellular
- radio
- global positioning system (GPS)
- laser

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Hardware and components include one (1) or more of the following

- on-board electronic control modules (ECMs)
- connectors
- memory and communication interfaces
- ethernet connectors
- broadband transmitter/receiver (could be built into other hardware e.g. a PC)
- radio frequency (RF) transmitter/receiver
- laser transmitter/receiver
- GPS receiver
- satellite dish/aerial
- displays, buzzers and signal lamps
- operator switches and controls
- antennae
- fieldbus cables and connectors to other on-board systems and ECMs
- sensors
- radar
- cameras
- service ports
- power input
- service ports to allow for laptops and other test instrumentation to be connected (e.g. USB, serial and connecting cables)

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

External communication systems can be related to single equipment system which include one (1) or more of the following:

- engine
- tyres
- load monitoring and reporting

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>