



**Australian Government**

# **MEA714 Integrate avionic fundamentals into an engineering task**

**Release: 1**

# MEA714 Integrate avionic fundamentals into an engineering task

## Modification History

Release 1 - New unit of competency

## Application

The unit of competency applies to engineering or related projects requiring avionic engineering skills and includes the identification, application and integration of avionic fundamentals. It includes identifying task parameters, personal and team function, chain of responsibility and work health and safety (WHS) guidelines. It includes investigation of aircraft electrical, instrument, radio and data systems and components and avionic fundamentals, including electrical and electronic methods and processes, workshop techniques, materials, scientific and mathematical principles and computer software. It requires completion of the task in cooperation with the team and documentation of the process and outcomes.

It is suitable for people pursuing paraprofessional careers and qualifications in avionic engineering.

This unit is used in workplaces that operate under the airworthiness regulatory systems of the Australian Defence Force (ADF) and the Civil Aviation Safety Authority (CASA).

## Pre-requisite Unit

MEA706                      Apply basic scientific principles and techniques in avionic engineering

**and**

MEM23004A                Apply technical mathematics

**PLUS**

MEM23007A                Apply calculus to engineering tasks

**or**

MEA727                      Apply calculus in avionic engineering situations

## Competency Field

Avionic engineering

## Unit Sector

### Elements and Performance Criteria

Elements describe the essential outcomes.

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

- |    |   |     |   |
|----|---|-----|---|
| 1. | Investigate scope of engineering task               | 1.1 | Determine task parameters and context   |
|    |   | 1.2 | Confirm personal functions and responsibilities, team and support functional group interdependencies and communications   |
|    |   | 1.3 | Confirm that task and responsibility is appropriate to qualifications and delegations and that appropriate support including technical and professional assistance is available when required                     |
|    |   | 1.4 | Determine chain of responsibility for the activity  |
|    |   | 1.5 | Determine WHS, regulatory requirements, risk management and organisational procedures   |
| 2. | Evaluate task for avionic fundamentals requirements | 2.1 | Evaluate methods, processes and workshop techniques required by task  |
|    |   | 2.2 | Evaluate avionic fundamentals required by task  |
|    |   | 2.3 | Evaluate functions and features of avionic components and systems related to the task   |
|    |   | 2.4 | Evaluate software techniques required for basic programming, analysis and graphics  |
| 3. | Integrate avionic fundamentals                      | 3.1 | Plan the task   |
|    |   | 3.2 | Communicate, cooperate and negotiate with stakeholders, use systems thinking to address contingencies and constraints, problem solving and decision making and continuous improvement to achieve integration task |
|    |   | 3.4 | Integrate avionic fundamentals to achieve task objectives   |
| 4. | Report results                                      | 4.1 | Report results of investigation, evaluation and integration   |
|    |   | 4.2 | Provide documentation, such as diagrams and   |

calculations

- 4.3 Provide documentation, such as modification instructions and maintenance manual or manual amendment and other documentation required by configuration management (CM) or integrated logistic support (ILS) procedures, where applicable

## Foundation Skills

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.

**Appropriate technical and professional assistance includes:**

- Assistance from holders of specific licenses and authorisations required by the relevant airworthiness regulator, CASA or the ADF
- Technical support and advice relating to elements which have intrinsic dangers, for example:
  - high pressure
  - energised fluid vessels
  - high temperatures and heat energy capacity
  - wiring with high current control voltages above extra low voltage
- Professional support for technologies, such as:
  - specialist electric motor drives and controllers
  - specialist materials, plastics, metal alloys and nano materials
- Special processes, foundry, alloy welding, heat treatment, sealing and fastening

**WHS, regulatory requirements and enterprise procedures include:**

- WHS Acts and regulations
- Relevant standards
- Industry codes of practice
- Risk assessments
- Registration requirements
- Safe work practices
- State and territory regulatory requirements applying to

	<p>electrical work</p> <ul style="list-style-type: none"> <li>• Civil Aviation Safety Regulations (CASRs)</li> <li>• AAP7001.053 ADF Technical Airworthiness Management Manual</li> <li>• Overseas airworthiness authorities where applicable e.g. Federal Aviation Administration, Transport Canada, European Aviation Safety Agency</li> </ul>
<b>Systems thinking includes:</b>	<ul style="list-style-type: none"> <li>• The process of developing solutions within the context of an entire system</li> <li>• Recognising that an improvement in one subsystem can adversely affect another subsystem</li> </ul>
<b>Continuous improvement implementation</b>	<ul style="list-style-type: none"> <li>• Continuous improvement implementation relates to plant, products, processes, systems or services including design, development, implementation or manufacture, commissioning, operation or delivery and maintenance. Continuous improvement is part of CM and ILS</li> <li>• Improvement processes, including: <ul style="list-style-type: none"> <li>• balanced scorecard</li> <li>• current and future state mapping</li> <li>• measuring performance against benchmarks</li> <li>• process improvement, problem solving and decision making</li> <li>• data management, generation, recording, analysing, storing and using of software</li> <li>• training for improvement systems participation</li> <li>• technical training</li> </ul> </li> </ul>
<b>Constraints and contingencies include:</b>	<ul style="list-style-type: none"> <li>• Financial</li> <li>• Organisation procedural or culture</li> <li>• Physical constraints, such as limits to resources, limits to site access or logistical limitations</li> <li>• Airworthiness regulatory requirements</li> </ul>
<b>Configuration management (CM)</b>	<ul style="list-style-type: none"> <li>• CM is a process for control and documentation of the design and development process and for the management of system, component and software throughout the service life</li> </ul>
<b>Integrated logistic support (ILS)</b>	<ul style="list-style-type: none"> <li>• ILS is an integrated approach to the management of logistic disciplines originally developed for the management of military systems from design concept to final disposal at life-of-type. It covers: <ul style="list-style-type: none"> <li>• reliability engineering, maintainability engineering and maintenance planning</li> <li>• supply and support</li> </ul> </li> </ul>

	<ul style="list-style-type: none"><li>• support and test equipment</li><li>• manpower and personnel</li><li>• training and training support</li><li>• technical data and publications</li><li>• computer resources support</li><li>• facilities</li><li>• packaging, handling, storage and transportation</li><li>• design interface</li></ul>
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## Unit Mapping Information

Release 1 – new unit based on MEM14084A Apply avionic fundamentals to support design and development of engineering projects and MEM23074A Select and apply avionic engineering methods, processes and construction techniques – units not equivalent

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>