



**Australian Government**

# **MEA233 Inspect, test and troubleshoot aircraft inertial navigation and reference systems and components**

**Release: 2**

# MEA233 Inspect, test and troubleshoot aircraft inertial navigation and reference systems and components

## Modification History

Release 2. Equivalent to MEA233 Inspect, test and troubleshoot aircraft inertial navigation and reference systems and components with amended prerequisite codes.

## Application

This unit of competency requires application of hand skills and the use of system/component knowledge and applicable maintenance publications and test equipment to inspect, test and troubleshoot inertial navigation and reference systems and components of fixed and rotary wing aircraft during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

The unit is part of the Avionic Certificate IV (Aircraft Maintenance Stream) training pathway.

The 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).

Where a CASA licensing outcome is sought this unit forms part of the CASA requirement for the granting of the chosen maintenance certification licence under Civil Aviation Safety Regulation (CASR) Part 66, in accordance with the licensing provisions in the Companion Volume Implementation Guide.

## Pre-requisite Unit

|        |                                                               |
|--------|---------------------------------------------------------------|
| MEA246 | Fabricate and/or repair aircraft electrical hardware or parts |
| MEA293 | Remove and install aircraft electronic system components      |

## Competency Field

Aviation maintenance

## Unit Sector

## Elements and Performance Criteria

| Elements describe the essential outcomes. | Performance criteria describe the performance needed to demonstrate achievement of the element.               |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 1. Inspect inertial navigation and        | 1.1 Isolation tags are checked and aircraft configured for safe system inspection and operation in accordance |

|                                                                         |     |                                                                                                                                                                                                                                              |  |
|-------------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| reference systems and components                                        |     | with the applicable maintenance manual                                                                                                                                                                                                       |  |
| 2. Test/adjust inertial navigation and reference systems and components | 1.2 | Inertial navigation and reference system components are visually or physically checked for external signs of defects in accordance with applicable maintenance manual while observing all relevant work health and safety (WHS) requirements |  |
|                                                                         | 1.3 | Defects are correctly identified and reported                                                                                                                                                                                                |  |
|                                                                         | 2.1 | Aircraft and system are prepared in accordance with applicable maintenance manual for the application of power/system operation                                                                                                              |  |
|                                                                         | 2.2 | Inertial navigation and reference system is functionally tested in accordance with maintenance manual for evidence of serviceability or malfunction                                                                                          |  |
|                                                                         | 2.3 | System calibration or adjustments are performed in accordance with maintenance manual, as appropriate                                                                                                                                        |  |
| 3. Prepare for troubleshooting                                          | 3.1 | Relevant maintenance documentation and modification status, including system defect reports, where relevant, are used to identify an unserviceability                                                                                        |  |
| 4. Troubleshoot inertial navigation and reference systems               | 4.1 | Available information from maintenance documentation, inspection and test results is used, where necessary, to assist in fault determination                                                                                                 |  |
|                                                                         | 4.2 | Maintenance manual fault diagnosis guides and logic processes are used to ensure efficient and accurate troubleshooting to line replaceable level                                                                                            |  |
|                                                                         | 4.3 | Specialist advice is obtained, where required, to assist with the troubleshooting process                                                                                                                                                    |  |
|                                                                         | 4.4 | Inertial navigation and reference system faults are located and the causes of the faults are clearly identified and correctly recorded in maintenance documentation, where required                                                          |  |
|                                                                         | 4.5 | Rectification requirements are determined                                                                                                                                                                                                    |  |

## 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.

### Procedures and requirements include:

- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

## Unit Mapping Information

Release 2. Equivalent to MEA233 Inspect, test and troubleshoot aircraft inertial navigation and reference systems and components

## Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>

# **Assessment Requirements for MEA233 Inspect, test and troubleshoot aircraft inertial navigation and reference systems and components**

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## **Performance Evidence**

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria under the specified conditions of assessment, and must include:

- applying relevant WHS practices
- using approved maintenance documentation and aircraft publications relating to inertial navigation and reference systems being maintained
- recognition of system and component defects/external damage, correct installation, connection of plugs, terminations, attaching hardware (including cabling/harnesses) and security in inertial navigation and reference system components
- applying logic processes, take and interpret system measurements, use test equipment and appropriate wiring diagrams and manuals to isolate system malfunctions
- performing system functional tests and checks to isolate system faults and assess post-maintenance serviceability.

It is essential that system testing procedures, cleanliness requirements and safety precautions applicable to the pulse system being maintained are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice across a range of inspection, testing and troubleshooting applications (including the timely involvement of supervisors or other trades) is critical

Evidence of transferability of skills and knowledge related to inspection, testing and troubleshooting is essential. This is to be demonstrated through application across an inertial navigation and reference system and its components.

## **Knowledge Evidence**

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

- component attachment methods
- connection of hardware
- the basic layout (block diagram level), function and operation of inertial navigation and reference systems
- the operating principles of inertial navigation and reference systems:
  - terminology

- fundamental principles of inertial navigation
- two degree of freedom systems
- semi-analytical systems
- strapdown systems
- ring laser gyroscopes
- the various methods of navigation and how they are used by both aircraft conventional and electronic navigational instruments and systems
- maintenance requirements and troubleshooting procedures
- relevant WHS practices
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures.

## Assessment Conditions

- Competency should be assessed in the workplace or simulated workplace using tools and equipment specified in the maintenance manuals. It is also expected that applicable general and special purpose tools, and test and ground support equipment would be used where appropriate.
- The application of testing procedures should clearly indicate knowledge of system operation, the relationship of individual components and the links with other systems (if applicable) within the limits of the aircraft/system fault-finding guide before undertaking any action. The work plan should take account of applicable safety and quality requirements in accordance with the industry and regulatory standards.
- The following conditions of assessment represent the requirements of the Regulators (ADF and CASA) and maintenance stakeholders and must be rigorously observed.
- A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements and performance criteria of the unit of competency are being achieved under routine supervision on an inertial navigation system and at least one (1) major system component/line replacement unit (LRU). This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide (for details refer to the Companion Volume Assessment Guidelines).
- Assessors must satisfy the requirements of the National Vocational Education and Training Regulator (Australian Skills Quality Authority, or its successors).
- Where the unit is to be used for CASA licensing purposes the Assessor must also meet the criteria specified in the CASR Part 147 Manual of Standards.
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## Links

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