



Australian Government

MSMTMVER501 Verify complex measuring instruments

Release: 2

MSMTMVER501 Verify complex measuring instruments

Modification History

Release 2. Adjustments to Application, Performance Criteria and Range of Conditions. Adjustment to Assessment Conditions. Equivalent.

Release 1. Supersedes and is equivalent to MSATMVER501A Verify a complex measuring instrument

Application

This unit of competency covers the ability to apply National Instrument Test Procedures to determine whether complex measuring instruments of a particular class are suitable for trade use and to mark them accordingly. It involves the ability to perform significant calculations to assess instrument performance and conduct tests that may require coordination of a range of resources over extended durations in hazardous environments.

This unit of competency is applicable to verifiers operating under a servicing licence to test and mark a specific class of complex measuring instruments. Complex measuring instruments are used in a wide range of heavy industries. For example, automatic rail weighbridges, belt weighers, totalising hopper weighers, bulk fuel and liquid petroleum gas (LPG) flowmeters are used throughout the mining, road/rail freight and petroleum/gas industry sectors.

Verifications may be performed over extended durations up to five days in non-routine and hazardous environments. Verifiers must work safely which may include applying basic first aid, confined space entry, working with hazardous materials, working safely in hazardous environments, working with heavy machinery, use of appropriate workplace clearance forms, safety induction, working at heights and biosecurity issues.

Under the requirements of Regulation 2.43 of the *National Trade Measurement Regulations 2009*, a servicing licensee or an employee must not verify a measuring instrument relevant to this unit unless they hold a statement of attainment for this unit of competency.

Pre-requisite Unit

Nil

Competency Field

Trade measurement

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes

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

- 1 Prepare for verification
 - 1.1 Identify and evaluate the type of instrument to be verified
 - 1.2 Access and correctly interpret documentation required for the verification
 - 1.3 Identify and access test equipment, products and consumables required for the verification
 - 1.4 Ensure specified test equipment is fit for purpose in accordance with applicable legislation and organisational procedures
 - 1.5 Store and transport test equipment in accordance with organisational procedures and industry best practice
 - 1.6 Develop a verification strategy to maximise resources and minimise time to complete the instrument verification

- 2 Liaise with the trader to schedule complex tests
 - 2.1 Discuss testing arrangements with site controller where applicable
 - 2.2 Identify relevant local workplace, health and safety issues and implement appropriate control strategies
 - 2.3 Discuss the verification strategy with the trader to minimise its impact on the trader's normal operations
 - 2.4 Arrange site clearances and suitable scheduling for tests
 - 2.5 Negotiate access to trader's equipment, materials and support personnel required for testing to be available on site
 - 2.6 Arrange for any equipment to be provided by the trader, if required

- 3 Initiate verification
 - 3.1 Identify the site controller and explain/review the purpose of the verification
 - 3.2 Review verification strategy to ensure there is minimal disruption to the public and/or trader

- 3.3 Communicate verification strategy to personnel supporting the verification
 - 3.4 Identify locations for product return or disposal, if applicable
 - 3.5 Evaluate the impacts of the operating environment on the instrument performance or test results and implement corrective actions as necessary
 - 3.6 Identify operational factors impacting on instrument performance or test result and implement corrective actions as necessary
- 4 Evaluate complex measuring instrument performance
- 4.1 Identify the maximum permissible errors for the instrument from the legislative requirements
 - 4.2 Manage and review resources to maintain verification timelines
 - 4.3 Provide effective communication to ensure relevant personnel are informed of variations to the verification strategy and verification progress
 - 4.4 Check instrument for compliance with the appropriate Certificates of Approval
 - 4.5 Test the instrument in accordance with relevant National Instrument Test Procedures and appropriate National Measurement Institute (NMI) guidance
- 5 Analyse verification results
- 5.1 Perform specified calculations to determine a performance result for the instrument with appropriate accuracy, precision and significant figures
 - 5.2 Use graphical and statistical analysis to determine unknowns as necessary
 - 5.3 Ensure calculations are consistent with estimations and reasonable expectations
 - 5.4 Evaluate results against prescribed performance criteria and determine if the instrument is suitable for trade use in accordance with legislative requirements

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| 6 | Report verification results | 6.1 | Display the verification result on the instrument in accordance with legislative requirements |
| | | 6.2 | Use test reports to present verification results in the required format |
| | | 6.3 | Complete verification documentation in accordance with legislative requirements and organisational procedures |
| | | 6.4 | Communicate results within the specified time and in accordance with organisational guidelines |
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| 7 | Model and encourage compliance with statutory requirements | 7.1 | Apply organisation's quality procedures and practices to meet servicing licensee's legislative obligations |
| | | 7.2 | Clarify any issues about verifier obligations with their servicing licensee and/or licensing administering authority as they arise |
| | | 7.3 | Review work and seek feedback from others to confirm continuing compliance with legislative requirements |
| | | 7.4 | Identify implications of non-compliance with legislative requirements |
| | | 7.5 | Identify inadequacies in trader's use of instruments which may contribute to non-compliance with national measurement legislation |
| | | 7.6 | Explain inadequacies and possible remedial actions to trader |
| | | 7.7 | Respect the rights of the trader at all times |
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| 8 | Maintain statutory records | 8.1 | Keep accurate and complete records in accordance with servicing licensee's legislative requirements |
| | | 8.2 | Ensure authorisation, training and relevant licences are current in accordance with organisational and servicing licensee's legislative requirements |
| | | 8.3 | Inform the licensing administering authority of changes to personal information as required by statute |

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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.

National Instrument Test Procedures include one or more of:

- measuring instrument test procedures
- any other test procedure prescribed by the NMI

Classes of complex measuring instruments include one or more of:

- non-automatic weighing instruments >3 tonne
- LPG dispensers
- bulk LPG flowmetering systems
- bulk flowmetering systems for liquid hydrocarbons other than LPG
- bulk flowmetering systems for liquid products **other than** liquid hydrocarbons
- dispensers and flowmetering systems for gaseous products (excluding utility meters)
- automatic rail weighbridges
- continuous totalising automatic weighing instruments (belt weighers)
- discontinuous totalising hopper weighing instruments
- any other complex measuring instrument prescribed by the NMI

Test equipment includes:

- reference standards of measurement
- equipment, such as weighing instruments, substitution load, rail wagons, trains, control instruments, quantity of material normally weighed, two-way communication, pumping units, LPG cylinders, hydrometer pressure vessel, master meter, hoses, fittings and tankers

Certificates of Approval include:

- any Certificate issued by the Chief Metrologist under Regulation 60 of the *National Measurement Regulations 1999* approving the pattern of a complex weighing

instrument as being suitable for trade use

Prescribed performance criteria for complex measuring instruments include:

- that the instrument is of an approved pattern
- that the instrument operates within the appropriate limits of error permitted by legislation
- that the instrument is used in accordance with any legislative requirements

Verification

Has the same meaning as Section 18GG of the *National Measurement Act 1960*

Verification marks

Verification marks for different instruments are defined in Regulations 2.28 and 2.29 of the *National Trade Measurement Regulations 2009*

Trading practices include one or more of:

- methods used for the sale of goods
- using measuring instruments
- position of measuring instruments
- environmental factors
- suitability of instrument
- incorrect measurement

Legislation includes:

- national measurement legislation
- applicable Commonwealth, state and territory work/occupational health and safety (WHS/OHS) legislation

NMI guidance includes:

- NMI sanctioned variances to National Instrument Test Procedures for verification
- updates
- directives

WHS/OHS and environmental management requirements include:

- complying with WHS/OHS and environmental management requirements at all times, which may be imposed through state/territory or federal legislation. These requirements must not be compromised at any time
- applying standard precautions relating to the potentially hazardous nature of material/product measured
- applying any necessary hygiene controls

Unit Mapping Information

Release 2. Adjustments to Application, Performance Criteria and Range of Conditions.
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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>