



Australian Government

MSMTMINS501 Inspect a range of complex measuring instruments

Release: 2

MSMTMINS501 Inspect a range of complex measuring instruments

Modification History

Release 2. Adjustments to the Application, Performance Criteria, Range of Conditions, Adjustments to Performance Evidence, Assessment Conditions and minor corrections. Equivalent.

Release 1. Supersedes and is equivalent to MSATMINS501A Inspect a range of complex measuring instruments

Application

This unit of competency covers the ability to apply National Instrument Test Procedures to determine whether complex measuring instruments are suitable for trade use. 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 also involves auditing the performance of verifiers who have previously tested and verified instruments for trade use.

This unit of competency is applicable to trade measurement inspectors appointed under national measurement legislation who may inspect a range of complex measuring instruments as part of their duties. Complex measuring instruments are used in a wide range of industrial environments. For example, automatic rail weighbridges, belt weighers, totalising hoppers, bulk fuel and liquid petroleum gas (LPG) flowmeters are used throughout the mining, road/rail freight and petroleum/gas industry sectors.

Inspections may be performed over extended durations up to five days in non-routine and hazardous environments. Inspectors must work safely which may include using correct manual handling techniques, applying basic first aid, identifying confined spaces, working with hazardous materials, working safely in hazardous environments, working with heavy machinery, use of appropriate workplace clearance forms, safety induction, risk assessment, working at heights and biosecurity issues.

While no specific licensing or certification requirements apply to this unit at the time of publication, all inspection activity is legislated under the *National Measurement Act 1960*.

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 inspection	1.1	Identify and evaluate the type of instrument to be inspected
		1.2	Access and review any history of previous inspection outcomes for the trader and instrument
		1.3	Access and correctly interpret documentation required for the inspection
		1.4	Identify and access test equipment, products and consumables required for the inspection
		1.5	Ensure test equipment is fit for purpose in accordance with applicable legislation and organisational procedures
		1.6	Store and transport equipment in accordance with organisational procedures and industry best practice
		1.7	Identify workplace health and safety issues relevant to the inspection
		1.8	Develop an inspection strategy to maximise resources and minimise time required to complete the inspection
2	Liaise with the trader to schedule complex tests	2.1	Discuss inspection 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 inspection 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 inspection
- 3.1 Identify the site controller, explain/review the purpose of the inspection and, if required, produce formal identification
- 3.2 Review inspection strategy to ensure there is minimal disruption to the public and/or trader
- 3.3 Communicate inspection strategy to all personnel involved
- 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, where applicable, implement corrective actions
- 3.6 Identify operational factors impacting on instrument performance or test result and, where applicable, implement corrective actions
- 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 inspection timelines
- 4.3 Provide effective communication to ensure relevant personnel are informed of variations to the inspection strategy and inspection progress
- 4.4 Check instrument for compliance with the appropriate Certificates of Approval
- 4.5 Inspect the instrument in accordance with relevant National Instrument Test Procedures and appropriate National Measurement Institute (NMI) policy
- 5 Analyse inspection
- 5.1 Perform specified calculations to determine a performance result for the instrument with appropriate

results		accuracy, precision and significant figures
	5.2	Use graphical and statistical analysis to analyse results as necessary
	5.3	Analyse inspection data for unacceptable performance trends
	5.4	Ensure results are consistent with reasonable expectations and estimations
	5.5	Evaluate results against prescribed performance criteria and determine if the instrument is suitable for trade use in accordance with legislative requirements
6	Evaluate verifier performance	6.1 Analyse verifiers' complex instrument test reports to identify potential verifier performance deficiencies
		6.2 Identify the scope of the verifier performance audit
		6.3 Identify the expected outcomes of the verifier performance audit
		6.4 Communicate the scope and process of the performance audit to the verifier
		6.5 Assess the verifier's performance against the expected outcome
		6.6 Analyse any variances from the expected outcomes to identify any isolated or systemic problems
		6.7 Clearly communicate the results of the performance audit to the verifier, including any rectification requirements, in accordance with legislative requirements and organisational policies and procedures
7	Report inspection results	7.1 If required, display the inspection result on the instrument in accordance with legislative requirements
		7.2 Use test reports to present inspection results in the required format
		7.3 Complete inspection documentation in accordance with legislative requirements and organisational procedures

		7.4	Communicate inspection results within the specified time and in accordance with organisational guidelines
		7.5	Recommend corrective actions as appropriate
8	Act on non-compliance	8.1	Select applicable enforcement action for the non-compliance in accordance with legislative requirements and organisational policy and procedures
		8.2	Inform traders of non-compliances and consequences of failing to have them corrected
		8.3	Implement enforcement action in accordance with legislative requirements and organisational policy and procedures
		8.4	Respect the rights of the trader at all times

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:

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

Classes of complex measuring instruments include one or more of:

- non-automatic weighing machines >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, pumping units, two-way communication, LPG cylinders, hoses, fittings, rail wagons, trains 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
- 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

- Enforcement actions include one or more of:**
- formal warnings, infringement notices, undertakings, injunction and prosecutions
- Legislation includes:**
- national measurement legislation
 - applicable Commonwealth, state and territory work/occupational health and safety (WHS/OHS) legislation
- NMI policy includes:**
- test procedure variations between a verification, in-service or audit inspection
 - bulletins
 - instructions
 - determinations
- 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

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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>