



Australian Government

MSMTMVER403 Verify Inspectors' Class reference standards

Release: 2

MSMTMVER403 Verify Inspectors' Class reference standards

Modification History

Release 2. Minor adjustments/corrections to all sections, inc. performance and knowledge evidence. Equivalent.

Release 1. Supersedes and is equivalent to MSATMVER403A Verify inspector's class reference standards

Application

This unit of competency covers the ability to calibrate reference standards to the Inspectors' Class level using standard calibration procedures. These procedures specify all associated reference standards, equipment and methods to be used and the required parameters, quantities and ranges to be tested, including the criteria for validation or rejection. Standard calibration procedures are sometimes complex and lengthy and must be performed in a methodical and standard manner. Personnel are not permitted to deviate from explicit instructions in any manner, nor modify the procedure, nor substitute alternative equipment.

This unit of competency is applicable to laboratory and calibration technicians who carry out testing and/or calibrations using standard calibration methods in National Association of Testing Authorities (NATA) accredited laboratories. They work under limited supervision and their results are interpreted and checked by the laboratory supervisor, quality officer or designated signatory

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

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| 1 | Receive and | 1.1 | Identify the level of verification required by the client |
|---|-------------|-----|---|

	schedule Inspectors' Class reference standards for calibration	1.2	Evaluate and implement appropriate strategies where the standard's suitability for purpose does not meet client expectations
		1.3	Enter details for the Inspectors' Class reference standard into the organisation's information management system and apply appropriate tracking mechanisms
		1.4	Process 'urgent' calibration requests in accordance with organisational policy and procedures
		1.5	Maintain confidentiality of all client and organisation data and information
		1.6	Ensure that information provided to clients is accurate, relevant and authorised for release
		1.7	Deal with customers politely, efficiently and in accordance with organisational policy and procedures
		2	Prepare for calibration
2.2	Identify possible sources of measurement error during calibration and implement appropriate control strategies		
2.3	Condition Inspectors' Class reference standards and high order reference standards in accordance with calibration and organisational procedures, where applicable		
2.4	Identify hazards and use the specified personal protective equipment, safety equipment and procedures		
2.5	Evaluate the suitability of high order reference standards and measuring equipment selected for the calibration against the organisation's specification requirements and calibration procedure		
2.6	Document calibration status, report out-of-calibration test equipment/high order reference standards and quarantine where required		
3	Perform calibration		

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| | 3.2 | Perform calibration without variance according to the documented procedure to ensure repeatability of measurement |
| | 3.3 | Confirm readings are the result of a valid measurement and record data as required |
| | 3.4 | Adjust Inspectors' Class reference standard, if applicable |
| 4 | Analyse and report calibration results | |
| | 4.1 | Estimate and document uncertainty of measurement in accordance with organisational policy and procedures, if required |
| | 4.2 | Identify prescribed performance criteria for the Inspectors' Class reference standard and evaluate against calibration results |
| | 4.3 | Analyse calibration results to confirm they are within the maximum permissible variation and uncertainty for the scope of calibration |
| | 4.4 | Analyse any variances from the performance criteria to identify isolated or systemic problems with the Inspectors' Class reference standards or calibration procedure |
| | 4.5 | Record the results of each test/calibration accurately, unambiguously and objectively |
| 5 | Finalise calibration | |
| | 5.1 | Attach calibration labels, equipment stickers, quality control tags and tamper resistant seals as required by organisational procedures |
| | 5.2 | Prepare and submit to the laboratory supervisor a final report on the calibration detailing procedure, traceability, results and all other required information |
| | 5.3 | Store test equipment/high order reference standards and calibration records in accordance with organisational policy and procedures |
| | 5.4 | Identify and report unserviceable equipment or high order reference standards to the laboratory supervisor |
| | 5.5 | Clean equipment and high order reference standards in |

accordance with organisational policy and procedures

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.

Inspectors' Class reference standards include one or more of:

- Inspectors' Classes of reference standards defined in the *National Measurement Regulations 1999*:
 - mass – Inspectors' Class 1, 2 and 3
 - length – Inspector's Class 1
 - volume – Inspector's Class 1

Standard calibrations include one or more of:

- testing and/or calibrating reference standards using standard methods and procedures

Legislation and standards include:

- national measurement legislation
- relevant national/international standards including ISO/IEC 17025
- applicable Commonwealth, state and territory work/occupational health and safety (WHS/OHS) legislation

Policy and procedures include:

- NMI policies and procedures
- NMI monographs
- Verifying authority internal policies and procedures

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 any materials used

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>

Assessment Requirements for MSMTMVER403 Verify Inspectors' Class reference standards

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Performance Evidence

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- calibrating and verifying the following Inspectors' Class level reference standards using standard calibration procedures:
 - at least one (1) mass Inspectors' Class 1, 2 or 3 reference standard (single or double substitution)
 - at least one (1) Inspectors' Class 1 length reference standard (flexible or rigid)
 - at least one (1) Inspectors' Class 1 volume reference standard (gravimetric or volumetric)
- receiving and scheduling Inspectors' Class reference standards for calibration in accordance with organisation policy and procedures
- accessing and correctly interpreting documentation required for verifications and calibration of Inspectors' Class reference standards
- preparing for calibrations by considering possible hazards, sources of measurement error, control strategies, conditioning of standards and evaluating/documenting the suitability of high order reference standards and measuring equipment selected for use
- using the specified personal protective equipment, safety equipment and procedures to safely conduct calibrations
- assessing the design, suitability and appearance of Inspectors' Class reference standards
- performing calibrations, without variance, according to the standard methods, using prescribed high order reference standards, Certificates of Verification, National Measurement Institute (NMI) policy and procedures, NMI monographs, and organisational procedures
- if applicable, making adjustments to Inspectors' Class reference standards
- examining each calibration step critically to ensure repeatability and validity of data
- estimating uncertainties, comparing calibration results with prescribed performance criteria for the Inspectors' Class reference standard and confirming that results are within maximum permissible variation and uncertainty
- analysing any variances in results from the performance criteria to identify isolated or systemic problems with the Inspectors' Class reference standards or calibration procedure
- attaching all required calibration labels, equipment stickers, quality control tags and tamper resistant seals on the standard

- completing all calibration documentation and reporting in accordance with legislative requirements and organisational procedures
- cleaning and storing test equipment/high order reference standards and documenting their status in accordance with organisational policy and procedures
- using communication skills to:
 - deal with customers politely and efficiently
 - communicate with the laboratory manager
- performing specified calculations involving:
 - fractions, decimals, ratios, proportions and percentages
 - scientific notation, correct units and the correct number of significant figures
 - interpretation of statistical quantities, such as mean, median, mode, range, variance and standard deviation
 - uncertainties
 - use of calibration and correction charts, determination of regression line equations and correlation coefficients
- maintaining the security and confidentiality of data in accordance with organisational and regulatory requirements
- reporting results in the required formats and expected timeframe
- working safely.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- purpose of metrology and calibration, including common terminology, concepts, principles, procedures and applications
- detailed knowledge of specific metrology terms and principles, including uncertainty, maximum permissible variations, traceability and legal requirements for traceability
- NATA's and the NMI's role in Australia's measurement and testing system, and measurement standards laboratories
- requirements for the competence of testing and calibration laboratories (for example, AS ISO/IEC 17025) as they affect job role and responsibilities
- national measurement legislation applicable to verification of Inspectors' Class reference standards
- hierarchy and appropriate selection of reference standards
- NMI policy, procedures, monographs and operating procedures for equipment, and reference standards used in job role
- detailed knowledge of calibration procedures (equipment, measurement steps, test conditions, environmental impacts, calculations and uncertainty treatment) to give valid results with appropriate accuracy, precision and units
- non-conformance/non-compliance procedures and protocols associated with equipment, reference material and calibration procedures
- troubleshooting procedures for equipment and test methods
- handling, transport, storage and documentation of reference and working standards

- laboratory environmental control requirements
- lines of communication and reporting procedures.

Assessment Conditions

- Judgement of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event.
- This unit of competency should be assessed in the workplace, or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept in each case).
- This unit of competency may be assessed with:
 - *MSMTMREF301 Use and maintain reference standards*
- Holistic assessment methods include:
 - review of calibration results, calculations and verification reports prepared by the candidate
 - feedback from supervisors regarding the candidate's ability to verify Inspectors' Class reference standards in accordance with legislative and organisational procedures
 - questions to assess understanding of relevant metrology/calibration terms, principles and procedures, common calibration issues and problems
 - observation of the candidate calibrating Inspectors' Class reference standards.
- Access is required to high order and Inspectors' Class reference standards, test equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
 - latest versions of appropriate documentation, such as high order reference standards, Certificates of Verification and Approval, NMI policy, test procedures for verifying Inspectors' Class reference standards, validated/authorised methods for standard calibrations and relevant legislation
 - equipment manuals, safety data sheets (SDS), safety procedures and safety equipment
 - records, such as test reports, audit reports, reference standard history and test results
 - computer and relevant software and/or organisation information management system.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:

- relevant VET or other qualification/Statement of Attainment AND/OR
- relevant workplace experience in trade measurement at least to the level being assessed and broad industry knowledge (such as a relevant industry qualification).
- Currency can be demonstrated through:
 - performing the competency being assessed as part of current employment in trade measurement OR
 - having consulted with trade measurement inspectors and/or verifiers performing the competency being assessed within the last twelve months.

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