



Australian Government

MSL905006 Create or modify automated calibration procedures

Release: 1

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Modification History

Release	Comments
Release 1	This version was released in <i>MSL Laboratory Operations Training Package Release 2.0</i>. Supersedes and equivalent to MSL905003 Create or modify automated calibration procedures. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit of competency describes the skills and knowledge to create, edit, test and document computer controlled calibration procedures for test and measurement instruments. This may be in response to the introduction of alternative or new equipment, changing test circumstances, activities involved in research and development trials or to meet client needs. The unit covers performance of automated, including computer-aided, calibrations as well as the programming and control of automated calibration systems.

This unit applies to calibration technicians/specialists who carry out tests and/or calibrations in first, second and third-party laboratories, and laboratories where testing and/or calibration forms part of inspection or product certification. They require a substantial, in-depth technical knowledge across a broad spectrum of advanced calibration practices and technologies, including a thorough understanding of equipment specifications and proprietary software writing skills. They are authorised by their laboratory to create or modify calibration procedures. They work with limited guidance and results of their work are checked by the laboratory manager, quality inspector or designated signatory.

No licensing or certification requirements exist at the time of publication. However, regulations and/or external accreditation requirements for laboratory operations exist, so local requirements should be checked. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

MSL905005 Create or modify calibration procedures

Competency Field

Calibration

Elements and Performance Criteria

Elements describe the essential outcomes.

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

- | | |
|---|--|
| 1 Assess the suitability of available automated procedures | <ul style="list-style-type: none">1.1 Determine the technical and quality deficiencies of the current automated calibration procedure1.2 Research alternative established procedures1.3 Establish whether an available procedure can be customised or if a new procedure is needed1.4 Obtain internal approval to develop an automation plan and strategy1.5 Identify the resources required for automation and verify they meet necessary quality, laboratory and technical requirements |
| 2 Create or edit automated procedure | <ul style="list-style-type: none">2.1 Identify and document all relevant calibration data to be collected, including parameters and ranges to be tested2.2 Check that instructions are adequately documented to ensure repeatability of test2.3 Document hazards and safety measures to be observed2.4 List the requirements for calibration approval and rejection2.5 Specify data to be recorded and produce a results template2.6 Edit or compile the procedure using appropriate software2.7 Confirm that all calibration requirements can be fulfilled by using the procedure2.8 Test run the program, check errors and debug as necessary |
| 3 Configure instruments/equipment | <ul style="list-style-type: none">3.1 Use the appropriate personal protective equipment (PPE), safety equipment and procedures3.2 Configure workstation, reference standards, instruments |

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	and equipment
	3.3 Verify performance of reference standards, instruments and equipment prior to use and adjust or calibrate as necessary
	3.4 Identify and minimise potential sources of measurement error
4 Refine the automated procedure	4.1 Run automated procedure to confirm functionality of all steps
	4.2 Recognise non-conforming results or data and amend the program or troubleshoot procedure/equipment as necessary
	4.3 Verify all data are the result of valid measurements and all calculations are correct
	4.4 Confirm the integrity of procedure at each step to ensure repeatability of measurement
5 Verify automated procedure is fit for purpose	5.1 Generate a calibration report and compare results achieved with other methods
	5.2 Systematically analyse all measurement and environmental factors that may influence results and take corrective action
	5.3 Quantify the uncertainties of results by analysing equipment specifications and test methodology
	5.4 Arrange for internal peer checking of procedure, data and results and incorporate feedback
	5.5 Confirm the procedure is fit for purpose and relevant to the client's needs and document
6 Document and review automated procedure	6.1 Ensure that the procedure is written in accordance with workplace procedures or statutory and regulatory requirements

Elements describe the essential outcomes.

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

- 6.2 Ensure that the procedure has been reviewed in accordance with workplace procedures
- 6.3 Report and present the procedure to appropriate personnel for validation before use

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.

Unit Mapping Information

Equivalent to MSL905003 Create or modify automated calibration procedures, Release 1.

Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa>

Assessment Requirements for MSL905006 Create or modify automated calibration procedures

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- created, edited, tested and documented at least 1 computer controlled calibration procedure, including:
 - estimating measurement uncertainty and applying statistical techniques for analysing test and/or calibration data
 - critically examining each calibration step to ensure repeatability and validity of data.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- procedures, and implications, for creating or modifying automated calibration procedures
- registration/licensing and/or National Association of Testing Authorities (NATA) accreditation requirements
- Australian and international standards covering accuracy of measurement methods and results, expression of uncertainty (GUM), quantifying uncertainty in analytical measurement, quality assurance of measurement equipment
- quality manuals, equipment and operating/technical manuals
- test methods and calibration procedures published by international, national or regional standards, reputable technical organisations, scientific texts or journals and equipment manufacturers, and the hierarchy of these reference materials
- structure and terminology used in standard calibration methods, procedures, requests and instructions
- computer operation/automation using graphical user interfaces
- handling, transport, storage and operation of reference and working standards
- workplace procedures for:

- automated calibration methods equipment and testing method troubleshooting
- calculation procedures to give results in appropriate accuracy, precision and units
- documenting calibration procedures
- laboratory environmental control
- test methods (validated and authorised)
- methods for statistical analysis (means, ranges and standard deviations) and estimation of uncertainty of measurement (may include the use of software)
- workplace and/or legal traceability requirements
- legal, ethical and work health and safety (WHS) requirements specific to the work task.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - specialised calibration/test equipment, reference standards and materials and laboratory facilities
 - access to a library of calibration methods, procedures and equipment specifications
 - laboratory calibration software and programs and manufacturer's proprietary software
 - workplace quality manual and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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