Australian Government

MSL905002 Create or modify calibration procedures

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

MSL905002 Create or modify calibration procedures

Modification History

Release 1. Supersedes and is equivalent to MSL905002A Create or modify calibration procedures

Application

This unit of competency covers the ability to create or modify calibration procedures in response to the introduction of alternative/new equipment, changing test circumstances, activities involved in research and development trials or to meet client needs. The unit covers research of current calibration procedures and technology, development or modification of a procedure, its subsequent trialling and confirmation that it is fit for purpose. This unit of competency does not cover the ability to create or edit software controlled calibration procedures as this is covered in another unit of competency.

This unit of competency is applicable to calibration technicians/specialists who carry out test and/or calibrations in first, second and third party laboratories, and laboratories where testing and/or calibration forms part of inspection or product certification. It covers the work of only those personnel who 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.

While no specific licensing or certification requirements apply to this unit at the time of publication, laboratory operations are governed by relevant legislation, regulations and/or external accreditation requirements. Local requirements should be checked.

Pre-requisite Unit

MSL904001 Perform standard calibrations

MSL905001 Perform non-standard calibrations

Competency Field

Calibration

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Unit Sector

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 calibration procedures**	1.1	Confirm that the authorised calibration procedure is not appropriate for intended use or requires modification
		1.2	Research suitable alternative established calibration procedures, if available
		1.3	Establish whether an available procedure can be customised or if a new procedure is needed
		1.4	Obtain internal approval to develop or modify a calibration procedure, as necessary
		1.5	Confirm that available resources meet all the requirements of the alternative or new procedure
		1.6	Gain authorisation for any deviation from requirements previously agreed with client
2	**Develop procedure**	2.1	Identify and document all relevant calibration data to be collected, including parameters and ranges to be tested
		2.2	Describe all new instructions or modifications to methods to ensure repeatability of test
		2.3	Document all hazards and safety measures to be observed
		2.4	Specify data to be recorded and produce a results template, if required
		2.5	List the requirements for calibration approval and rejection
		2.6	Confirm that all calibration requirements can be fulfilled by using the procedure

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3	**Prepare equipment for testing**	3.1	Use the appropriate personal protective equipment (PPE), safety equipment and procedures
		3.2	Assemble and set up reference standards and associated equipment prior to testing
		3.3	Verify performance of reference standards and measuring equipment prior to use and adjust or calibrate as necessary
		3.4	Identify and minimise potential sources of measurement error
4	**Trial modified or new calibration procedure**	4.1	Perform individual steps and confirm they are adequately documented to ensure repeatability of measurement
		4.2	Critically analyse readings to confirm they are the result of a valid measurement and record data as required
		4.3	Adjust device under test to bring readings within tolerance and record results
		4.4	Analyse the resulting test data to detect trends or inconsistencies that may significantly affect the accuracy or validity of test results
5	**Confirm the modified or new procedure is fit for purpose**	5.1	Compare results achieved with those from other calibration procedures
		5.2	Systematically analyse all measurement and environmental factors that may influence the result and take corrective action, if necessary
		5.3	Arrange for internal peer checking of calibration procedure, data and results and incorporate feedback
		5.4	Quantify the uncertainties of results obtained by analysing equipment specifications and test methodology
		5.5	Compare results with those obtained by other laboratories, if applicable

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		5.6	Confirm that the modified or new procedure is fit for purpose and relevant to the client's needs and document as necessary
6	**Document and review modified or new calibration procedure**	6.1	Ensure that the procedure is written in accordance with workplace procedures or statutory and regulatory requirements
		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.

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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.

Standards, codes, procedures and/or workplace requirements

Standards, codes, procedures and/or workplace procedures include the current version of one or more of:

- Australian and international standards and codes covering:
  - general requirements for the competence of testing and calibration laboratories, laboratory safety, quality and environmental management
  - accuracy of measurement methods and results, expression of uncertainty (GUM), quantifying uncertainty in analytical measurement, and quality assurance of measurement equipment
- national work health and safety (WHS) standards, codes of practice
- registration/licensing and/or National Association of Testing Authorities (NATA) accreditation requirements
- safety requirements for equipment, materials or products; material safety data sheets (MSDS); and incident and accident/injury reports
- standard operating procedures (SOPs), recording and reporting procedures
- quality manuals, equipment and operating/technical manuals
- test methods and calibration procedures (validated and authorised)
- test methods and calibration procedures published by international, national or regional standards, reputable technical organisations, scientific texts or journals and equipment manufacturers
- laboratory layout, work flows and schedules

Modifying or developing new test methods

Modifying or developing new test methods involves, but is not limited to, using, testing and/or calibrating one or more of the following:

- common test equipment, such as anemometers, balances, barometers, callipers, environmental chambers, hygrometers, manometers, masses, micrometers, pressure equipment, spectrophotometers, tape measures, rules, temperature (digital) indicating systems, thermometers, thermocouples, timing devices, vibration analysis equipment and weighing instruments
- electrical reference standards, such as air-lines, analogue meters,

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attenuators, bridges-manual balance, capacitors, DC voltage references, digital instruments (calibrators, DMMs, electronic transfer standards), inductors, instrument and ratio transformers, instrument transformer test sets, potentiometers, resistors, radio frequency (RF) power meters, RF thermistor mounts and thermal converters, shunts, time interval and frequency standards, transfer standards AC-DC, voltage dividers, volt ratio boxes and watt-hour references

- working standards, instruments and testing equipment, such as electromagnetic compatibility (EMC) test equipment, field strength meters, flammability test equipment, gauges/test fingers/test pins, hipot testers, impact hammers, impulse testers, instrument calibrators, network analysers, signal generators and spectrum and harmonic analysers

Hazards

Hazards include, but are not limited to, one or more of:

- electric shock
- disturbance or interruption of services
- manual handling of heavy equipment boxes
- sources of electromagnetic radiation (lasers and RF generators/transmitters)
- fluids under pressure
- heat sources, such as ovens

Safety procedures

Safety procedures include, but are not limited to, one or more of:

- ensuring access to service shut-off points
- use of PPE, such as hearing protection, gloves, safety glasses and coveralls
- handling and storing hazardous materials and equipment in accordance with labels, MSDS, manufacturer's instructions and workplace procedures and regulations
- regular cleaning of equipment and work areas

WHS and environmental management requirements

WHS and environmental management requirements include:

- complying with WHS 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 samples
- accessing and applying current industry understanding of

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infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health, where relevant

Unit Mapping Information

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Links

MSA Training Package Implementation Guides - http://mskills.org.au/training-packages/info/

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