



Australian Government

Assessment Requirements for MSL925005

Analyse measurements and estimate uncertainties

Release: 1

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Modification History

Release 1. Supersedes and is not equivalent to MSL925003 Determine measurements of uncertainty. Prerequisite units added. Title changed. Minor change to Performance Evidence for clarity. Removal of duplicating (legal, ethical) or unnecessary (WHS) item in Knowledge Evidence.

Performance Evidence

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

- analysed measurements and estimated uncertainties including each of the following at least once across 3 data sets:
 - developing and using a measurement model
 - using statistical analysis to estimate and report measurement uncertainty in accordance with the *ISO Guide to the Expression of Uncertainty in Measurement*
 - calculating a combined standard uncertainty using root-sum-of-squares, accounting for correlations where necessary
 - gathering information about uncertainty components from calibration reports or reference material report
 - calculating sensitivity coefficients either mathematically, numerically or experimentally
 - reporting results and uncertainties in the required formats
 - organising and maintaining all sources of uncertainty and the associated data in the uncertainty-analysis table
 - using the uncertainty-analysis table to identify the largest uncertainty.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- steps in the measurement, test or calibration involved
- difference between errors, corrections and uncertainties
- uncertainty in the uncertainty estimation process
- uncertainty components, including:
 - calibration uncertainty
 - instability or drift in the calibrated instrument
 - repeatability of the results
 - resolution or readability of the instrument
 - environmental influences

- reference material uncertainty
- factors arising from the instrument being used under different conditions to those when it was calibrated
- factors arising from using an instrument under a different operating environment or procedures
- reproducibility of quality control data and when this is applicable
- workplace procedures for:
 - determining the uncertainty components associated with each of the inputs and whether they are significant and for applying appropriate corrections
 - determining uncertainty components from quality control data
- manufacturer's specifications (including instrument drift specification and reference materials)
- concept of degrees of freedom
- characteristics of a valid measurement
- the role of measurement uncertainty in conformity assessment
- reporting requirements: the uncertainty in measurement (GUM), National Association of Testing Authorities (NATA) or other applicable reference material
- Australian and international standards, codes and guides as they relate to the job role.
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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:
 - data sets and records
 - test methods and description of test set-up
 - computer and relevant software or laboratory information management system
 - workplace procedures.

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

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>