Australian Government

Department of Education, Employment and Workplace Relations

MSL972001A Conduct routine site measurements

Revision Number: 1

MSL972001A Conduct routine site measurements

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to make direct measurements using enterprise procedures. Measurements will be straightforward and involve a minimal number of steps, take a short time, have easily recognised control limits and use equipment calibrated by others.

Application of the Unit

Application of the unit	This unit of competency is applicable to production operators, field assistants and laboratory assistants in manufacturing, construction materials and environmental services industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for measurements	1.1. Confirm the purpose, priority and nature of measurements required 1.2. Liaise with relevant personnel to arrange site access and all necessary clearances/permits 1.3. Identify site hazards and review enterprise safety procedures 1.4. Assemble all measuring and safety equipment and check they are fit for purpose 1.5. Check all equipment/materials against a given inventory and stow them to ensure safe transport 1.6. Arrange appropriate transport for site access as required
2. Perform measurements	2.1. Locate measurement points and services at the site 2.2. Gain access to measurement points by removing covers and locks as appropriate 2.3. Seek advice if the required measurements cannot be made or if procedures require modification 2.4. Operate measuring equipment in accordance with enterprise procedures and manufacturer's instructions 2.5. Take sufficient readings to ensure reliable data 2.6. Record data with appropriate accuracy, precision and units 2.7. Record environmental/site conditions and any other observations that may impact on data quality 2.8. Recognise obvious errors/atypical data and take appropriate corrective action 2.9. Secure measuring points by replacing covers and locking as appropriate
3. Finalise measurements	3.1. Follow enterprise procedures for the cleaning/decontamination of equipment and vehicle as necessary 3.2. Check all equipment and materials against inventory and stow for safe transport 3.3. Liaise with relevant personnel to restore normal production and/or services as necessary 3.4. Report all measurements in accordance with enterprise procedures 3.5. On return, check and document serviceability of equipment before storage

ELEMENT	PERFORMANCE CRITERIA
4. Maintain a safe work environment	4.1. Use established work practices and personal protective equipment to ensure personal safety and that of others 4.2. Minimise environmental impacts of measurements and generation of waste 4.3. Dispose of all waste in accordance with enterprise procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- performing a variety of measurements at a range of sitesfollowing procedures
- making measurements with minimal environmental impact
- accuratelyreading scales/displays for a wide range of values
- recording data which is legible, free of errors and uses appropriate accuracy, precision and units
- demonstrating enterprise and/or legal traceability requirements
- liaising with others to access sites and perform measurements efficiently
- recognising own limitations and the seeking timely advice

Required knowledge

Required knowledge includes:

- key terminology and concepts, such as analogue, digital, accuracy, precision, traceability, uncertainty and chain of custody
- purpose of the measurements
- concepts of metrology
- the international system of units (SI)
- the function of key equipment/materials and principles of operation
- hazards, risks and enterprise safety procedures associated with routine measurements undertaken
- enterprise procedures dealing with:
  - measurements
  - waste management, cleanup and spillage
  - handling, transport and storage of dangerous goods
- relevant health, safety and environmental requirements

Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • follow procedures when performing a variety of measurements at a range of sites • work safely and with minimal environmental impact • liaise with people effectively and courteously • maintain confidentiality and report problems and incidents in accordance with procedures.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL952001A Collect routine site samples*. Resources may include: • access to a variety of sites • measurement and safety procedures • a selection of measuring equipment and documentation.
Method of assessment	The following assessment methods are suggested: • review of the quality of data and documentation provided by the candidate • observation of the candidate performing a range of measurements • feedback from supervisors and clients that relevant procedures were followed • oral/written questioning about measurement procedures. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and

EVIDENCE GUIDE	
	disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and show its relevance in a workplace setting. **Manufacturing and construction materials testing** A laboratory assistant is required to conduct daily routine site measurements around the plant. Each day they contact the engineering department to arrange for an engineer to accompany them to operate all mechanical systems (e.g. valves and pitcovers) associated with collection of samples and/or site measurements. The laboratory assistant locates the required safety equipment, ensures that all measurement equipment is operational and pre-calibrated and dons appropriate personal protective equipment. They record site measurements directly in the plant monitoring log book along with any comments concerning plant operating conditions. Upon returning to the laboratory they enter this information into the laboratory information management system (LIMS). The laboratory assistant then cleans and stores all equipment used in the routine site measurements. **Environmental** A field assistant is part of a team examining the rehabilitation of a mine site. They help to construct a grid map of the study area. The assistant is given identification photo cards for six species of plant and asked to count the number of each species in part of the grid, taking care to minimise environmental impact. They then record the data on a map using a predetermined key.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS ISO 1000-1998 The international system of units (SI) and its application
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS ISO 14000 Set:2005 Environmental management standards set
	  • AS/NZS ISO 9000 Set:2008 Quality management systems set
	• enterprise procedures for specific client measurements at particular sites
	• enterprise recording and reporting procedures
	• equipment manuals
	• equipment startup, operation and shutdown procedures
	• maps and site plans
	• material safety data sheets (MSDS) and safety procedures
	• material, production and product specifications
	• national measurement regulations and guidelines
	• occupational health and safety (OHS) national standards and codes of practice
	• standard operating procedures (SOPs)

Concepts of metrology	Concepts of metrology may include: • that all measurements are estimates

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	• measurements belong to a population of measurements of the measured parameters • repeatability • precision • accuracy • significant figures • sources of error • uncertainty • traceability
Hazards	Hazards may include: • solar radiation, dust and noise • wildlife, such as snakes, spiders and domestic animals • biohazards, such as micro-organisms and agents associated with soil, air and water • chemicals, such as acids and hydrocarbons • manual/handling of heavy equipment or materials • crushing, entanglement and cuts associated with moving machinery • falling objects, uneven surfaces, heights, slopes, wet surfaces, trenches and confined spaces • vehicle handling in rough terrain and boat handling in rough or flowing water • vehicular or pedestrian traffic
Safety practices	Safety practices may include: • use of MSDS • use personal protective equipment, such as hard hats, hearing protection, gloves, safety glasses, goggles, face-guards, coveralls, gowns, body suits, respirators and safety boots • correct labelling of hazardous materials • handling and storing hazardous material and equipment in accordance with labels, MSDS, manufacturer's instructions, enterprise procedures and regulations • regular cleaning and/or decontaminating of equipment • machinery guards • signage, barriers, service isolation tags, traffic

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	control, flashing lights • lockout and tag-out procedures
Measurements	Measurements could include the use of instruments and/or kits to test: • pH, specific ions, such as iron in water using dipsticks • dissolved oxygen (DO) • electrical conductivity (EC)
Other measurements	Other measurements may include: • sound (e.g. dB level and dBA) • light levels and illumination • basic production/process parameters (e.g. flow, temperature, pressure, mass and depth) • simple surveys (e.g. number of trees in quadrant) • background radiation (e.g. Geiger counter) • dimensions • meteorological measurements (e.g. temperature, rainfall and wind)
Common measuring equipment	Common measuring equipment may include: • tape measure, rulers, micrometers callipers and water level indicators • balances • meter/probe systems (e.g. DO and EC) • analogue and digital meters (e.g. voltage, current, resistance, pressure, temperature, barometers, anemometers and hygrometers) • dipsticks or spot test kits • clocks and timing devices
Services	Services may include: • water supply, gas and electricity • telecommunications • irrigation, stormwater, drainage and sewerage systems • production plant
Appropriate corrective actions	Appropriate corrective actions may include: • logical check of equipment setup • check of calibration, zero error and drift for

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	basic instruments • careful re-reading of procedures • repeat measurements • seek advice
Minimising environmental impacts	Minimising environmental impacts may involve: • disposal of surplus, spent or purged materials • recycling of wastes • responsible driving to avoid damage to vegetation and fauna • cleaning of vehicles to prevent transfer of pests and contaminants
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

Competency field

Competency field	

Co-requisite units

Co-requisite units		