Australian Government

CPPSIS4025A Collect basic GNSS data

Release 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

CPPSIS4025A Collect basic GNSS data

Modification History

Unit revised and not equivalent to CPPSIS4005A Collect basic GPS data
New unit title
Terminology updated
Element structure, performance criteria, and critical aspects reviewed to reflect workplace requirements
Skills and knowledge requirements and the range statement updated

Unit Descriptor

This unit of competency specifies the outcomes required to collect data using basic global navigation satellite system (GNSS) equipment and to be able to use suitable software to communicate with a GNSS receiver. It requires the ability to combine technical application in a team environment with sound communication skills. Functions would be carried out under limited supervision and within organisational guidelines.

Application of the Unit

This unit of competency supports the application of basic planning, organising and communication skills, the use of technology, and technical understanding in interpreting specifications. The skills and knowledge acquired upon completion of this unit would apply to the needs of employees in supporting positions for surveying, town planning, cartography, mapping and geographic information systems.

Licensing/Regulatory Information

No licensing, legislative and regulatory requirements apply to this unit at the time of endorsement.

Pre-Requisites

Nil

Employability Skills Information

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 required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for GNSS data collection.	1.1	A data collection plan is developed, detailing key activities and timelines, which are scheduled with full consideration of the ***specifications*** and team activity.
		1.2	***Organisational GNSS survey requirements*** are complied with and recorded.
		1.3	***Equipment*** is prepared for the survey with consideration of the specific ***project parameters and requirements***.
		1.4	Designated responsibilities are communicated to and by ***relevant personnel*** to ensure clarity of understanding of the work and to provide a basis for ongoing data assessment.
2	Collect GNSS data.	2.1	GNSS equipment is operated according to manufacturer specifications and ***organisational guidelines***.
		2.2	***Point positional data*** is collected and related to a reference system based on specifications.
		2.3	GNSS data is collected using methodologies detailed in the data collection plan.
		2.4	Conditions for obtaining optimum GNSS positions are determined.
		2.5	Basic methods to improve the accuracy of GNSS point positioning are recognised and used.
		2.6	GNSS measurements are ***validated*** and recorded on the ***reference system*** according to the project specifications.

		2.7	Discrepancies between specifications and actual activities are identified and addressed.
		2.8	***OHS*** requirements are adhered to.
		2.9	GNSS equipment is operated according to manufacturer specifications and organisational guidelines.
3	Finalise the collection process.	3.1	Basic ***GNSS software*** is used to communicate with basic GNSS receivers.
		3.2	GNSS software is used to determine ***required information***.
		3.3	Measured GNSS data is compared against design.
		3.4	Checks are completed according to organisational requirements.
		3.5	***Required documentation*** is completed according to organisational guidelines.
		3.6	Appropriate software is used to process the data in order to determine required information, according to organisational guidelines.

Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills

- analytical skills to determine appropriate GNSS data collection methods
- communication skills to:
  - discuss vocational issues effectively with colleagues
  - impart knowledge and ideas through oral, written and visual means
- computer skills to complete GNSS documentation
- literacy skills to:
  - assess and use workplace information
  - read and interpret datums and projections
  - read and record data, and write technical reports
  - research and access routine sources of spatial data
- numeracy skills to:
  - analyse errors
  - record with accuracy and precision
  - undertake computations
- organisational skills to:
  - prepare and administer documentation
  - prioritise activities to meet contractual requirements
- project management skills
- spatial skills to:
  - perform GNSS data archival and retrieval
  - perform GNSS data management and manipulation
  - manage files
  - solve basic problems relating to height, depth, breadth, dimension, direction and position in actual operational activity and virtual representation

Required knowledge

- accuracy and precision requirements related to collecting GNSS data
- data formats
- data management
- GNSS equipment
- industry standards
- limitations of equipment

- methods for GNSS data processing and data manipulation
- organisational policies and guidelines, such as OHS guidelines
- planning and control processes
- safe work practices
- relevant industry requirements and standards
- spatial reference systems
- surveying computation skills
- understanding of errors, accuracy and precision in collection techniques

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment

This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example CPPSIS4021A Maintain spatial systems, CPPSIS4022A Store and retrieve spatial data, and CPPSIS4024A Collect and set out spatial data.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- matching collection objectives with resources
- accessing and interpreting basic design information to identify the components to be measured and monitored
- performing basic measurements
- reducing and manipulating GNSS data
- recording and reporting non-conformity aspects
- knowledge of GNSS data collection methods.

Specific resources for assessment

Resource implications for assessment include access to:

- assessment instruments, including personal planner and assessment record book
- assignment instructions, work plans and schedules, policy documents and duty statements
- registered training provider of assessment services
- relevant guidelines, regulations and codes of practice
- suitable venue and equipment.

Access must be provided to appropriate learning and assessment support when required.
Where applicable, physical resources should include equipment modified for people with disabilities.

Context of assessment

Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.

Method of assessment

Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment).
Demonstrated competency in a range of situations, that may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace.
Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation

in realistic simulated environments may be substituted.

Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of surveying and spatial information services requirements to assess competency.
Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).
Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.
All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.
Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.
In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.
Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

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 in the performance criteria is detailed below. Add any 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.

Specifications may include:

- detailed technical descriptions of survey data and its requirements
- preparation of cross-sections and plans with all information included.

Organisational GNSS survey requirements may include:	• administration (e.g. postcodes, suburbs, and federal and state electoral counties) • analysis of environmental, land and geographic information • asset management • cartographic services • civil engineering • digital imagery • electricity • emergency services management • environmental datasets • geographic information systems • integrated services – environmental, land and geographic related datasets • land ownership tenure system • local government • location-based services • global positioning • mapping facilities • programming GNSS • site analysis • survey marks • sewerage • telecommunications • town planning • utility services, such as water.
Equipment may include:	• any geodetic GNSS receiver • associated equipment capable of differential and real time modes of operations.
Project parameters and requirements may include:	• coordinate systems • datum • display formats • information displays • outputs.
Relevant personnel may include:	• colleagues • registered surveyors • site personnel • staff or employee representatives • supervisors or line managers • suppliers • users.
Organisational guidelines	• appropriate timelines

may include:	• code of ethics • company policy • final product formats • formal design parameters • legislation relevant to the work or service function • manuals • OHS policies and procedures • personnel practices and guidelines outlining teamwork, work roles and responsibilities • requirements for data processing.
Point positional data may include:	• basic GNSS positions, not including differential methods.
Validated means reflecting the true state of a test result, including tests for systematic distortions such as:	• confounding bias • information/data bias • observational bias • recall bias • selection bias.
Reference system refers to:	• projection and datum parameters required for GNSS equipment and processing software.
OHS may include:	• Australian standards • development of site safety plan • identification of potential hazards • inspection of work sites • training staff in OHS requirements • use of personal protective clothing • use of safety equipment and signage.

GNSS software refers to:	• GNSS software package designed to process GNSS data and output required information, which may include:
	  • global positioning system (GPS)
	  • global navigation satellite system (GLONASS).

Required information may include:	• calculated information • metadata • positional data • set out positional accuracy.
Required documentation may include:	• electronic or paper-based correspondence with client • field records • final report • records of conversation • survey plots • organisational work activity sheets.

Unit Sector(s)

Surveying and spatial information services

Custom Content Section

Not applicable.