



Australian Government

CPPSIS5047A Conduct an advanced GNSS data collection and set out survey

Release 1

CPPSIS5047A Conduct an advanced GNSS data collection and set out survey

Modification History

Unit revised and not equivalent to CPPSIS5017A Conduct an advanced GPS data collection and set out survey

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 conduct global navigation satellite systems (GNSS) surveys for both data collection and engineering set outs, as related to an engineering/construction environment. It requires the ability to interpret and analyse information and apply technical skills. Functions would be carried out within organisational guidelines.

Application of the Unit

This unit of competency supports the application of planning, organising, accuracy, supervising and problem-solving skills; sound use of technology; and implementing and monitoring specifications. The skills and knowledge acquired upon completion of this unit would support the needs of employees in surveying, cartography, town planning, mapping or geographic information systems.

Licensing/Regulatory Information

Licensing, legislative, regulatory and certification requirements may impact on this unit. Incorporate these requirements according to state, territory and federal legislation.

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

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|---|-------------------------|---|
| 1 | Prepare for the survey. | <p>1.1 Key activities and timelines are scheduled with full consideration of the <i>specifications</i> and available resources.</p> <p>1.2 <i>Organisational GNSS survey requirements</i> are identified, complied with and recorded.</p> <p>1.3 <i>Equipment</i> is prepared for the survey with consideration of the specific <i>project parameters and requirements</i>.</p> <p>1.4 Existing survey control data is obtained and <i>validated</i>.</p> <p>1.5 Set out data is collated, validated, manipulated as required, and uploaded into the GNSS receiver.</p> <p>1.6 Designated staff responsibilities are communicated to <i>relevant personnel</i> to ensure clarity of understanding of the work and provide a basis for ongoing assessment.</p> |
| 2 | Conduct the survey. | <p>2.1 GNSS equipment is operated according to <i>manufacturer specifications</i> and <i>organisational guidelines</i>.</p> <p>2.2 GNSS survey is related to a <i>reference system</i> based on survey requirements.</p> <p>2.3 GNSS data is collected using methodologies detailed in the data collection plan according to specifications.</p> <p>2.4 <i>OHS</i> requirements are planned for and adhered to.</p> <p>2.5 <i>Quality assurance processes</i> are adhered to according to organisational guidelines.</p> |

- 3 Finalise the survey.
 - 3.1 ***Appropriate software*** is used to process the data according to organisational guidelines to determine ***required information***.
 - 3.2 Validation checks are completed according to ***project specifications***.
 - 3.3 Discrepancies between specifications and the actual data collected are identified and evaluated.
 - 3.4 ***Required documentation*** is completed 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

- communication skills to:
 - consult effectively with clients and colleagues
 - impart knowledge and ideas through oral, written and visual means
- computer skills to complete business documentation
- literacy skills to:
 - assess and use workplace information
 - read and write technical reports
 - research and evaluate
- numeracy skills to:
 - analyse errors
 - conduct image analysis
 - interpret and analyse statistics
 - perform mental calculations
 - record with accuracy and precision
 - undertake high level computations
- organisational skills to:
 - coordinate technical and human resource inputs to research activities
 - plan and manage projects
 - prioritise activities to meet contractual requirements
- spatial skills to:
 - display proficiency in the operation of GNSS equipment
 - exercise precision and accuracy in relation to GNSS survey and data collection
 - archive and retrieve spatial data
 - manage and manipulate spatial data
 - manage files

Required knowledge

- abilities of work teams
- accuracy and precision requirements related to GNSS network surveys
- data formats
- GNSS data processing and data manipulation
- guidelines of projects

- industry standards
- limitations of equipment
- organisational policies and guidelines, such as OHS guidelines
- planning and control processes
- project review and reporting procedures
- surveying reference systems
- understanding of errors, accuracy and precision in set out surveys

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 CPPSIS5052A Integrate surveying datasets.
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: • accessing and interpreting design information to identify the components to be measured and monitored • performing measurements • planning resources • reducing 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

- administration (e.g. postcodes, suburbs, and federal and state electoral counties)

include:

- 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
- site analysis
- survey marks
- sewerage
- telecommunications
- town planning
- utility services, such as water.

- Equipment** may include:
- any geodetic GNSS receiver, including:
 - global positioning system (GPS)
 - global navigation satellite system (GLONASS)
 - 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.
- 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.
- Relevant personnel** may include:
- colleagues
 - registered surveyors
 - site personnel
 - staff or employee representatives
 - supervisors or line managers
 - suppliers
 - users.
- Manufacturer specifications** may include:
- equipment specifications
 - operator manuals.
- Organisational guidelines** may include:
- appropriate timelines
 - 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.
- 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.
- Quality assurance processes** may include:
- internal and external
 - product or service measurement against set criteria
 - standard verification
 - target monitoring.
- Appropriate software** may include:
- GNSS software package designed for GNSS survey planning, processing and adjusting of raw GNSS data.
- Required information** may include:
- calculated information
 - metadata
 - positional data
 - set out positional accuracy.
- Project specifications** may include:
- detailed technical descriptions of required GNSS survey data.
- 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.