



Australian Government

Department of Education, Employment and Workplace Relations

CPPSIS5017A Conduct an advanced GPS data collection and set out survey

Release: 1

CPPSIS5017A Conduct an advanced GPS data collection and set out survey

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to conduct advanced global positioning system (GPS) 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

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

Licensing/Regulatory Information

Refer to Application of the Unit

Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

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

ELEMENT

PERFORMANCE CRITERIA

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

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities
- analytical skills (high level)
- communication skills to:
 - consult effectively with clients and colleagues
 - impart knowledge and ideas through oral, written and visual means
- computer skills (high technical user level) to complete business documentation
- interpersonal skills (high level)
- interpreting project requirements
- literacy skills to:
 - assess and use workplace information
 - locate and interpret legislation and other written documentation
 - prepare and manage documentation
 - read and write technical reports
 - research and evaluate
- negotiation skills
- 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
 - prioritise activities to meet contractual requirements
- project planning
- project management skills
- spatial skills to:
 - display proficiency in the operation of GPS equipment
 - exercise precision and accuracy in relation to GPS survey and data collection
 - perform spatial data archival and retrieval and train others in this task
 - perform spatial data management and manipulation and train others in this task
 - perform file management and train others in this task
 - solve problems relating to height, depth, breadth, dimension, direction and

REQUIRED SKILLS AND KNOWLEDGE

- position in actual operational activity and virtual representation
- understand implications of height, depth, breadth, dimension and position to actual operational activity and virtual representation
- team leadership.

Required knowledge and understanding:

- abilities of work teams
- accuracy and precision requirements related to GPS network surveys
- data formats
- errors, accuracy and precision in set out surveys
- GPS 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
- safe work practices
- surveying reference systems (high level).

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, 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 unit CPPSIS5022A 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:

- matching objectives with resources to ensure project proceeds in an organised and timely manner
- ensuring that achievement of required accuracy has been attempted by:
 - accessing and interpreting design information to identify the components to be measured and monitored

- performing measurements
- planning resources
- applying solutions to a range of problems
- documenting and reporting
- GPS data reduction
- organising and prioritising activity
- ensuring that non-conformity aspects are recorded and reported
- taking responsibility for team outputs in work and learning.

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 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

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

Equipment may include:

- any geodetic GPS 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.

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, including equal employment opportunity (EEO) • 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 GPS 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:	• GPS software package designed for GPS survey planning, processing and adjusting of raw GPS data.
Required information may include:	• calculated information • metadata • positional data • set out positional accuracy.
Project specifications may include:	• detailed technical descriptions of required GPS 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)

Unit sector Spatial information services