



Australian Government

CPPSIS6032 Conduct advanced GNSS control surveys

Release: 1

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Modification History

Release 1.

Replaces superseded equivalent CPPSIS6032A Conduct an advanced GNSS control survey.

This version first released with CPP Property Services Training Package Version 3.

Application

This unit of competency specifies the outcomes required to conduct advanced global navigation satellite system (GNSS) control surveys using GNSS equipment and suitable software to communicate with GNSS receivers. The unit covers project managing surveying activities, including planning collection methodologies and allocating resources and work tasks in a team environment. The unit also covers analysing existing survey control data and networks to identify non-conformities and the need for additional controls, and implementing a network of points for controlling horizontal and vertical positions. The unit requires the ability to program, calibrate and operate GNSS equipment, relate surveying data to a reference system, and identify and resolve discrepancies with the reference system.

The unit supports those who work in a technical management role in a surveying team.

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

Pre-requisite Unit

Nil

Unit Sector

Surveying and spatial information services

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions.

1. Prepare for advanced GNSS control survey.

1.1. Survey specifications are identified and analysed and key activities and timelines scheduled according to available resources and organisational requirements.

1.2. Organisational GNSS survey requirements are complied with and recorded.

- 1.3. GNSS equipment is set up and calibrated according to survey and organisational requirements.
 - 1.4. Existing survey control data is obtained, validated and recorded, and need for additional controls is determined based on identified non-conformities.
 - 1.5. Set-out data is collated, validated, manipulated and uploaded into the GNSS receiver.
 - 1.6. Work responsibilities are allocated and communicated to **appropriate persons** according to survey and organisational requirements.
2. Carry out GNSS control surveying tasks.
 - 2.1. GNSS equipment is programmed and operated according to survey and organisational requirements.
 - 2.2. GNSS survey is related to a reference system according to survey specifications.
 - 2.3. Problems relating to discrepancies in the reference system are identified and resolved, or contingencies are managed.
 - 2.4. GNSS data is collected using planned methodologies according to survey and organisational requirements.
 - 2.5. Network of points for controlling horizontal and vertical positions is implemented according to project specifications.
 - 2.6. GNSS measurements are validated and recorded on the reference system according to specifications.
3. Finalise advanced GNSS control survey.
 - 3.1. GNSS software is used to process data according to survey and organisational requirements.
 - 3.2. Validation checks are completed according to project specifications and organisational requirements.
 - 3.3. Discrepancies between survey specifications and actual data are identified and addressed according to survey and organisational requirements.
 - 3.4. Survey is finalised and documentation completed

according to organisational requirements.

Foundation Skills

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

Skill	Performance feature
Learning skills to:	research existing horizontal and vertical control networks.
Planning and organising skills to:	plan and prioritise work to meet contractual timeframes and resource constraints.
Numeracy skills to:	- apply accuracy tolerances to measurements and calculations - conduct precise measurements and computations relating to length, angle, elevation, area and volume.
Oral communication skills to:	ask questions to clarify client requirements.
Reading skills to:	- analyse graphical and technical information in aerial photographs, maps, drawings, field records and survey plots - interpret technical terminology in specifications and contracts.
Writing skills to:	use templates to record field notes.
Technology skills to:	connect equipment to coordinate systems.
Problem-solving skills to:	identify situations impacting on effectiveness of GNSS technologies.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

- Appropriate persons*** must include at least two of the following:
- client
 - colleague
 - engineer
 - manager
 - registered or qualified surveyor.

Unit Mapping Information

CPPSIS6032A Conduct an advanced GNSS control survey

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>

Assessment Requirements for CPPSIS6032 Conduct advanced GNSS control surveys

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Performance Evidence

A person demonstrating competency in this unit must satisfy the requirements of the elements, performance criteria, foundation skills and range of conditions of this unit. The person must also plan and conduct an advanced global navigation satellite system (GNSS) control survey for two different projects using the following pieces of equipment:

- geodetic GNSS receiver
- associated equipment capable of differential and real time modes of operations.

While conducting the above advanced GNSS control surveys, the person must:

- analyse survey specifications, including:
 - cross-sections and plans
 - technical descriptions of surveying data and their requirements
- plan and document survey methodologies and control data
- apply projection and datum parameters when using GNSS equipment and software
- collect data for GNSS positions, including differential methods
- communicate clearly with others to report work information and allocate duties
- comply with industry-accepted standards for validating accuracy of GNSS data and existing control network
- comply with organisational requirements for:
 - recording, storing and filing data
 - resource allocation
 - using and storing equipment
 - working safely, using personal protective equipment (PPE) when conducting field work
- conduct field reconnaissance to analyse existing control networks
- implement a network of horizontal and vertical control points
- identify non-conformances in control networks and the need for additional controls
- implement project management techniques to schedule, monitor and report on survey tasks and outcomes
- program and operate GNSS equipment and software to analyse and manipulate images and data.

Knowledge Evidence

A person demonstrating competency in this unit must demonstrate knowledge of:

- accuracy and precision requirements for GNSS control networks
- GNSS accuracy enhancement techniques
- GNSS availability, structures, capabilities and limitations
- GNSS control surveying techniques
- industry-accepted methods for validating set-out data to identify errors and discrepancies
- methods for accessing, manipulating, retrieving and archiving GNSS data
- organisational policies and procedures relating to:
 - health and safety relating to survey activities
 - reporting and documentation
 - using and allocating resources
 - using GNSS equipment and software
- projection and datum parameters required for GNSS equipment and processing software
- reference and coordinate systems for surveying data, including Australian Height Datum and Map Grid of Australia
- situations and factors that impact on the effectiveness of GNSS technologies
- techniques for project management, including techniques for scheduling, monitoring and reporting on survey tasks and outcomes
- types of GNSS equipment and software and their uses.

Assessment Conditions

The following must be present and available to learners during assessment activities:

- equipment:
 - as specified in the performance evidence, including PPE
- specifications:
 - survey specifications, plans, maps and photographs
 - organisational policies, procedures and documentation relating to work health and safety when using GNSS equipment and conducting field work
- relationships with team members and supervisor:
 - lead role in a team.

Timeframe:

- as specified by project requirements.

Assessor requirements

As a minimum, assessors must satisfy the assessor requirements in the Standards for Registered Training Organisations (RTOs) current at the time of assessment.

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