

Draft 0.2

This is a draft update to CPPSIS6033 Conduct underground mine surveys
<https://training.gov.au/Training/Details/CPPSIS6033>

Changed code to CPPSSI6033

Changed PCs to active voice.

Changed 'person' to 'candidate' in PE for consistency.

Have labelled as supersedes and is equivalent to CPPSIS6033 Conduct underground mine surveys

Range of Conditions items moved to KE

Unit of Competency

CPPSI6033 Conduct underground mine surveys

Modification history

Release	Comments
1	Replaces superseded equivalent CPPSI6033A Conduct underground mine surveying. This version first released with CPP Property Services Training Package Version 3

Application

This unit specifies the skills and knowledge required to conduct underground mine surveying operations that comply with standards, legislation and regulations applicable to the mining industry. The unit covers identifying projects and organising resources and planning to support an underground mine surveying operation, including for developing headings, rock stability and ground support, loading and haulage and mine ventilation. The unit includes implementing underground surveying operations using specialist equipment to measure components of an underground mine, capturing and reducing data, and creating mine drawings.

This unit is suitable for surveyors operating at this level who will use broad theoretical and technical knowledge to analyse information as well as interpret and transmit solutions to unpredictable and sometimes complex surveying/spatial information problems. The unit supports those who work in a technical management role in an underground mining environment.

All work must be carried out to comply with workplace procedures, in accordance with relevant State/Territory regulations that govern surveying work as well as work health and safety, regulations and legislation that apply to the workplace.

Cadastral surveying must be undertaken under the supervision of a registered surveyor. Users must check with the relevant regulatory state/territory authority before delivery.

Licensing, legislative, regulatory or certification requirements apply to this unit in some states where mining surveying must be undertaken under the supervision of a registered surveyor. Relevant state and territory regulatory authorities should be consulted to confirm those requirements.

Prerequisite Unit

None

Unit Sector

Surveying and Spatial Information Services

Elements and Performance Criteria

1. Prepare for underground mine surveying.	<ul style="list-style-type: none">1.1 Analyse client requirements, enterprise priorities and plans and drawings to identify project specifications.1.2 Plan processes and procedures involved in undertaking underground mining methods according to enterprise requirements.1.3 Plan mining techniques applicable to developing headings in underground mining operations according to project objectives and enterprise requirements.
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	<p>1.4 Determine underground mining methods for metalliferous and coal mines according to project specifications and enterprise requirements.</p> <p>1.5 Develop project specifications that incorporate levels of rock stability, ground support, and loading and haulage requirements for underground mines.</p> <p>1.6 Detail mine ventilation requirements for underground mines in project specifications according to enterprise requirements.</p>
2. Plan underground mine surveying operations.	<p>2.1 Identify and document surveying objectives, deliverables, constraints, work activities and surveying equipment needs according to spatial data specifications and enterprise requirements.</p> <p>2.2 Implement project management mechanisms to schedule, measure, record and report progress of activities in relation to agreed schedule and plans.</p> <p>2.3 Implement and maintain agreed communication processes between client and other appropriate persons.</p> <p>2.4 Devise and follow risk management and contingency strategies to ensure project complies with legal and statutory standards and enterprise requirements.</p>
3. Conduct operational elements of underground mine surveying.	<p>3.1 Work safely, using personal protective equipment (PPE) when performing surveying tasks.</p> <p>3.2 Measure or set out identified spatial components of mine design according to project specifications.</p> <p>3.3 Reduce measured spatial data to project reference system for comparison with design.</p> <p>3.4 Create mine drawings to meet project specifications.</p> <p>3.5 Reduce and use captured data to calculate mine volumes according to project specifications.</p> <p>3.6 Validate and record measurements according to enterprise requirements.</p> <p>3.7 Identify and resolve problems and manage contingencies according to enterprise requirements.</p> <p>3.8 Set out underground development according to design parameters.</p>
4. Finalise and report project outcomes.	<p>4.1 Finalise and check project for compliance with project specifications, required timeframes and enterprise requirements.</p> <p>4.2 Notify appropriate persons of project results according to enterprise requirements.</p> <p>4.3 Complete documentation and archive spatial data according to project and enterprise requirements.</p>

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPPSIS6033 Conduct underground mine surveys

Links

The Companion Volume Implementation Guide for the CPP Property Services Training Package is available at <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>

Assessment Requirements for CPPSSI6033 Conduct underground mine surveys

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Performance Evidence

To demonstrate competency, a candidate must meet the elements and performance criteria of this unit by conducting two different underground mine surveys.

Each survey must:

- detail:
 - levels of rock stability and ground support
 - loading and haulage requirements for underground mines
 - mine ventilation requirements
 - required equipment
 - strategies for risk and contingency management
 - underground mining methods for metalliferous and coal mines.
- plan for:
 - drainage and dewatering
 - dumps and stockpiles
 - equipment use
 - loading and haulage
 - mine ventilation and air control
 - power and lighting
 - rock stability and ground support
 - water control and supply.
- measure survey components using two of the following pieces of equipment:
 - cavity monitoring systems
 - gyro-theodolites
 - remote sensing
 - Total Station.

Knowledge Evidence

To be competent in this unit a candidate must demonstrate knowledge of:

- terminology and nomenclature applicable to underground mining
- graphical and technical information in mining and engineering plans
- mineral exploration methods, including geophysical, geochemical and geological techniques
- phases and stages of exploration procedure and possible methods of exploration
- mining methods for metalliferous and coal mines
- underground coal mining methods:
 - long wall
 - room
 - pillar
- underground metalliferous mining methods:
 - block caving

- cut and fill stoping and shrinkage stoping
 - sub-level caving
 - sub-level open stoping
- processes and procedures for:
 - mine access
 - mine layout
 - service provision
- specialised surveying equipment requirements and accessibility
- accuracy and precision requirements for surveying data
- data capture and set-out techniques
- data reduction and manipulation techniques relating to height, depth, dimension, direction and position in actual operational activity and virtual representation
- set up and calibration of specialised surveying equipment
- drilling techniques:
 - applicable to blasting in mining operations
 - used for sampling rock and unconsolidated sands
- techniques for providing rock stability and ground support, including cable bolts and rock bolts
- methods for developing headings in underground mining operations
- methods for ensuring adequate mine ventilation:
 - properties of natural air flow
 - requirements for ventilation plans
 - duties of ventilation officer for an underground mining operation
 - exposure standards for atmospheric contaminants
 - procedures for testing and sampling atmospheric contaminants
 - methods for measuring air velocity and determining air quantity given relevant operational data
 - methods of mechanical and auxiliary ventilation
 - sources of atmospheric contaminants in an underground mining environment
- enterprise policies and procedures, standards, regulations and legislation relating to:
 - mining industry and underground mining:
 - mine access
 - layout development
 - service provision, such as water, air, power, lighting and dewatering
 - work health and safety and mines safety requirements
 - risk and contingency management
 - client and stakeholder communication
 - using equipment
 - records and reporting
- techniques for scheduling, measuring and monitoring work progress and planning for risks and contingencies.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

Assessment must be conducted in the workplace or a simulated workplace using realistic conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

Candidates must have access to:

- PPE
- mining and surveying specifications, relevant plans and drawings
- policies, procedures and documentation relating to mining regulations.

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