



Australian Government

CPPSIS6022A Create mine drawings

Release 1

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Modification History

Unit revised and not equivalent to CPPSIS6002A Create mine drawings
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 create mine drawings using suitable software. It requires knowledge of surface mining operations and the ability to use computer-aided design (CAD) software to draft mine drawings to meet job specifications. Functions would be carried out within organisational guidelines.

Application of the Unit

This unit of competency supports the application of planning, organisational, communication and sound problem-solving skills; accuracy and error analysis; designing and interpreting technical documentation; and high-level understanding of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in surveying.

Licensing/Regulatory Information

Licensing, legislative and regulatory requirements for this unit may include the relevant components of 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

- | | | |
|---|--------------------------|---|
| 1 | Prepare CAD environment. | <p>1.1 <i>Objectives</i>, deliverables, constraints and principal work activities are defined and documented according to written spatial data specifications.</p> <p>1.2 System variables are customised to suit standard operating procedures.</p> <p>1.3 Relevant manuals, instructions and operating procedures for software and hardware being used are obtained according to workplace procedures.</p> <p>1.4 CAD menus are customised to suit standard operating procedures.</p> <p>1.5 <i>Drawing</i> defaults are customised to suit the applicable drafting standards and procedures.</p> |
| 2 | Create mine drawings. | <p>2.1 Mine drawings are created to meet job specifications using available software systems.</p> <p>2.2 Drawing <i>entities</i> are linked to database <i>attributes</i> to suit job requirements.</p> <p>2.3 <i>Supplementary data</i> is extracted from mine drawings to meet job requirements.</p> <p>2.4 Detailed views are created using various scales to meet job requirements.</p> <p>2.5 Plots are produced at required scales to meet job requirements.</p> <p>2.6 <i>Surface mining methods</i> and techniques are incorporated</p> |

- into the design of the surface mine.
- 2.7 Mine drawings include Mines Safety requirements and mine ventilation requirements.
 - 2.8 **OHS** requirements are adhered to throughout the conduct of the design and drawing procedures.
- 3 Produce output.
- 3.1 Files are saved in various **formats** according to standard operating procedures.
 - 3.2 Entities are produced from the drawing files or database and are listed in the required format to meet job requirements.
 - 3.3 Supplementary data is extracted from engineering drawings to meet job requirements.
 - 3.4 Identified spatial components are accurately measured or set out.
 - 3.5 Measured spatial data is reduced to project reference system.
 - 3.6 Captured data is used to calculate mine volumes.
 - 3.7 Measurements are validated and recorded according to project specifications.
 - 3.8 Quality assurance processes and risk management requirements are incorporated into design of mines.
- 4 Finalise the task.
- 4.1 **Required documentation** is completed promptly, accurately and according to **organisational guidelines**.
 - 4.2 **Relevant personnel** are informed of the results.
 - 4.3 Spatial data is archived according to **project specifications**.

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 develop business documentation and apply surveying software
- initiative and enterprise skills to create, extract and output information from engineering plans
- literacy skills to:
 - assess, develop and use workplace information
 - read and write key performance reports, including 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:
 - plan and coordinate technical and human resource inputs to research activities
 - plan and prioritise activities to meet contractual requirements
- spatial skills to:
 - exercise precision and accuracy in relation to mine design
 - archive and retrieve spatial data
 - manage and manipulate spatial data
 - manage files
 - solve complex problems relating to height, depth, breadth, dimension, direction and position in actual operational activity and virtual representation

Required knowledge

- data formats
- data management
- industry requirements and standards

- interaction of surveying software with surveying equipment
- organisational policies and guidelines
- planning and control processes
- safe work practices
- spatial reference systems
- standard plan design and presentation conventions

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 CPPSIS6031A Carry out basic mine design.
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: • applying mathematical principles and skills to a range of surveying-related problems • assessing and recording information from varied engineering sources • knowledge of mathematical concepts and techniques • operational knowledge in a broad range of CAD environments • numerically solving surveying problems.
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.

Objectives may include:

- client requirements
- written survey data specifications.

Drawings may include:

- charts
- diagrams
- plans.

Entity refers to a single item created on the screen such as:

- arc
- circle
- hatch
- line
- text.

Attributes are properties associated with an entity and may include:

- colour
- layer
- level
- line type
- line width
- text.

Supplementary data:

- from mine drawings may include:
 - area
 - lengths
 - perimeters
 - slopes
 - volumes
- from engineering drawings may include:
 - angles
 - area
 - lengths
 - perimeters
 - volumes.

Surface mining methods may include:

- bench blasting using a delay detonator sequence
- development of coal pits, roads and ramps
- drilling
- interburden removal
- pre-strip
- spoil pits
- stockpiles
- dumps and safety berms.

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.
- Formats** may include:
 - DXF (data exchange format)
 - PTS (a format used in the triangulation process to define the position of points and triangles)
 - XLS (Excel spreadsheet format).
- Required documentation** may include:
 - field records
 - final product reports
 - survey plots.
- Organisational guidelines** may include:
 - appropriate timelines
 - final product formats
 - format design parameters
 - guidelines for working with teams
 - legislation relevant to the work or service function
 - particular requirements for data processing.
- Relevant personnel** may include:
 - managers
 - site personnel such as field hands
 - supervisors
 - surveyors.
- Project specifications** refer to:
 - detailed technical descriptions of the survey data and its requirements.

Unit Sector(s)

Surveying and spatial information services

Custom Content Section

Not applicable.