



Australian Government

RIIMEX603D Establish and maintain underground mining ground control and stable mining systems

Release: 2

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Modification History

Release	Comment
1	This unit replaces RIIMEX603A Establish and maintain underground mining ground control and stable mining systems
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to establish and maintain underground mining ground control and stable mining systems in Metalliferous mining.

This unit is appropriate for those working in management or technical specialist roles.

No licensing, legislation or certification requirements apply to this unit at the time of publication.

Unit Sector

Metalliferous mining

Elements and Performance Criteria

1. Plan and prepare to establish and maintain underground mining ground control and stable mining systems	1.1 Access, interpret and apply underground mining ground control and stable mining systems documentation and ensure the work activity is compliant 1.2 Obtain, read, interpret, clarify and confirm work requirements 1.3 Identify and address potential risks, hazards and environmental issues and implement control measures 1.4 Select and wear personal protective equipment appropriate for work activities 1.5 Identify, collect, access and interpret mine survey data 1.6 Identify and record the necessary resources required to create and maintain a stable mining structure
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	1.7 Identify, access and interpret mine survey data and historical information 1.8 Identify, assess and record all possible mining structure failure modes relevant to the mine site 1.9 Establish the criteria for establishing the quantitative stability of mining structures
2. Identify and evaluate geological and geotechnical information	2.1 Access, identify, interpret and evaluate exploration techniques 2.2 Access, identify, interpret and evaluate geological structures 2.3 Access, identify, interpret and evaluate hydrogeological features 2.4 Identify, interpret and evaluate hanging wall, foot wall, ore body characteristics and physical properties 2.5 Identify, interpret and evaluate stress regimes
3. Identify and evaluate mining engineering principles and practices	3.1 Investigate, identify, interpret and evaluate types of mining system and methods 3.2 Identify and assess layouts for stable mining structures from engineering analysis 3.3 Identify, interpret and evaluate mining constraints impacting on the development of a stable mining structure 3.4 Identify, interpret and evaluate equipment requirements
4. Identify and evaluate control options	4.1 Investigate, identify, interpret and evaluate ground support systems 4.2 Identify, interpret and evaluate ground support installation, monitoring and assessment systems 4.3 Identify, interpret and evaluate causes and impacts of failure mechanisms 4.4 Identify, interpret and evaluate natural and induced stress control methods
5. Establish ground control and stable mining systems	5.1 Design and establish exploration programs identifying geological features and characteristics impacting on mining operations 5.2 Investigate and design safe access and egress systems Design and establish mining systems 5.3 Design and establish sequences for mining operations 5.4 Design and establish system specifications and documentation 5.5 Establish a program, including systems and procedures to satisfy identified training requirements

	5.6 Establish emergency response and evacuation plans and procedures 5.7 Identify, confirm, establish and implement safe operating procedures
6. Audit and review the effectiveness of ground control and stable mining systems	6.1 Audit stable structure standards 6.2 Audit mine survey data 6.3 Audit monitoring systems 6.4 Audit recording systems 6.5 Audit system maintenance program and procedures 6.6 Audit emergency procedures and plans 6.7 Audit the stable mining structure training program for currency and relevance 6.8 Audit emergency response and evacuation plans and procedures 6.9 Identify and assess future site mining requirements and standards and incorporate into the planning procedures 6.10 Establish procedures for response to non-compliance or other discrepancies/deficiencies revealed by audit

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIMEX603A Establish and maintain underground mining ground control and stable mining systems

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIIMEX603D Establish and maintain underground mining ground control and stable mining systems

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Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include that the candidate:

- locates and applies relevant legislation, documentation, policies and procedures
- implements the requirements, procedures and techniques for the safe, effective and efficient establishing and maintenance of ground control and stable mining systems including:
 - accessing, interpreting and applying technical and mine survey information
 - accessing and analysing archival and historical failure information related to the mine
 - interpreting and applying mathematical and scientific theorems/laws related to stable mining systems
 - interpreting and applying design criteria for stable mining systems
 - interpreting computer spreadsheets and stable mining systems modelling/simulations
 - accessing data from monitoring systems and equipment
 - applying risk management processes and techniques
- works effectively with others to establish and maintain ground control and stable mining systems that meets all the required outcomes including:
 - consulting with surface mining team and provides team leadership
 - sharing information and communicating effectively in the workplace
 - establishing training, coaching and mentoring support for supervisors and managers
 - preparing written reports communicating the pit development status and outcomes

- demonstrates completion of establishing and maintaining underground mining ground control and stable mining systems that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
 - identifying and evaluating:
 - geological and geotechnical information
 - mining engineering principles and practices
 - control options
 - conducting enquiries/investigations and preparing reports
 - analysing and reporting on stable mining systems training needs
 - preparing and establishing systems and procedures
 - auditing and reviewing the effectiveness of ground control and stable mining systems

Knowledge Evidence

The candidate must demonstrate knowledge of establishing and maintaining underground mining ground control and stable mining systems through:

- legislative, organisation and site requirements and procedures for:
 - mine planning and design
 - ground support
 - work health and safety
- critical data including:
 - geological, geotechnical, hydrogeological data
 - hydrological data
 - survey data
 - systems of work including mining and extraction such as pillar recovery and the use of various types of fill material
 - mine surveying
- stress analysis techniques for mining induced stress, vertical and horizontal stress tectonics
- mining structure failure modes
- exploration techniques
- mining and general engineering principles
- audit methodologies
- stress distribution diagrams

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit must be assessed in the context of this sector's work environment; and,

- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

****Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level**

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