Australian Government

Assessment Requirements for RIIMCU403D Apply and monitor the gas management plan

Release: 2

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Modification History

Release	Comment
1	This unit replaces RIIMCU403A Apply and monitor the gas management plan
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.

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 evidence that the candidate:

- locates and applies relevant legislation, documentation, policies and procedures
- implements the requirements, procedures and techniques for the safe, effective and efficient application and monitoring of gas management plan including:
    - reading, interpreting, communicating and applying technical information
    - operating hand held monitoring equipment
    - accessing, evaluating and applying data from monitoring systems and equipment
    - collecting, collating, evaluating and reporting gas data
    - applying and interpreting mathematical and scientific theorems/laws related to gas management
    - accessing and interpreting archival and historical gas information related to the mine
    - conducting investigations and preparing reports
    - identifying training needs, and preparing and implementing training plans
- works effectively with others to plan, prepare and apply the gas management plan that meets all of the required outcomes including:
    - organising work activities to meet all task requirements
    - communicating clearly and concisely with others to receive and clarify work instructions
    - complying with written and verbal reporting requirements and procedures
    - resolving coordination requirements throughout work activities

- demonstrates completion of applying and monitoring the gas management plan that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - application of systems for mine gases such as seam gases or gases from introduced sources:
    - methane
    - carbon dioxide
    - oxides of nitrogen
    - hydrogen
    - carbon monoxide
    - sulphur dioxide
    - hydrogen sulphide
    - hydrocarbons
    - combinations
    - oxygen
    - nitrogen
  - application of alarm (also known as trigger level) systems and action plans such as:
    - gas concentration/make/ratios
    - spontaneous combustion (physical and gaseous)
    - combustion indicators
    - condition monitoring for fans (vibration/temperature/current/failures)
    - ventilation devices
    - monitoring hardware
    - virgin gas content of the coal seam
  - application of gas management devices and methods such as:
    - gas drainage
    - infusion
    - scrubbers
    - automatic gas detectors
    - tube bundle systems
    - de-gassing device on auxiliary fans
    - gas monitoring systems
    - inertisation systems
    - monitoring devices, including:
    - barograph
    - tube bundle
    - real time telemetry
    - portable (hand held) monitoring
    - bag samples
    - gas chromatography

Knowledge Evidence

The candidate must demonstrate knowledge of applying and monitoring the gas management plan through:

- accessing, interpreting and applying legislative, organization and site requirements and procedures for:
  - developing the requirements and processes of the gas management plan
  - applying risk assessment and management processes
  - monitoring and maintaining ventilation, including air quality, air quantity, maximum/minimum values, control and distribution, flammable gas limits, ventilation fan, gas monitoring inspections and recording/reporting
  - identifying and managing environmental issues, hazards and risks
  - conducting audit and review processes and techniques
  - identifying training systems
- the impact of mining techniques and mine and panel layout on panel gas management
- the impact of coal characteristics and coal seam gradients on mine gas management
- the impact of differing geological features and conditions on gas management, including:
  - faults, dykes, intrusions and strata deformities
  - strata geology including: coal seam gradient, moisture content, friability, the porous features of the coal seam, stresses and intrusions, and its impact on gas drainage
  - core sampling techniques
  - in-seam drilling techniques
  - impacts of intersecting holes and hole design
- the methods of panel gas management and their application/limitations, including:
  - • forcing and exhausting, homotropal and antitropal (and in conjunction with these, the use of goaf bleed or back return), auxiliary fans, coursed ventilation (narrow side/wide side), recirculation, machine mounted scrubber systems, ducted systems, compressed air venturis and bleeders
- components/factors to be considered in the gas management plan including:
  - mine gases: the types and their characteristics, sources, physiological effects and methods of detection
  - mine fires: the types, sources of ignition, possible impacts on gas management
  - mine explosions: the types, ignition sources and possible effects on gas management
  - gas make characteristics
  - pressure changes: causes and the impacts on gas management
  - heat/humidity: the sources and factors which may impact on gas management
  - the impact of water on ventilation
  - outburst indicators
  - inertisation techniques

- the general effects of velocity pressure, duct and stopping leakage
- using equipment, monitoring systems and techniques including:
  - mine fans: fan types, applications and limitations
  - gas control devices: the types, purposes, design criteria and specifications, distribution/placement criteria and limitations
  - fixed gas monitoring systems: types, uses and limitations
  - portable monitoring equipment: types, uses and limitations
  - computer-based systems used for mine gas analysis
  - gas surveys: the types, frequency and method for conducting, including pressure/quantity/temperature and gas
  - ventilation surveys: the types, frequency and method for conducting, including pressure/temperature/gas
  - alarms and trigger points/levels: types, characteristics, purposes and responses
  - mine and goaf ventilation systems
  - the general purpose and application of sling psychrometer, anemometer, velometer
- applying ventilation theory, including
  - gas laws, including Charles and Boyle
  - natural ventilation
  - Coward's Triangle
  - Graham's Ratio
  - Ellicott's Triangle
  - gas make
  - air quantity measurement
  - control device leakage
  - duct leakage
  - applying emergency response and evacuation/disaster planning processes and techniques

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

Links

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