



Australian Government

RIIUND601D Establish and maintain the ventilation management system

Release: 2

RIIUND601D Establish and maintain the ventilation management system

Modification History

Release	Comment
1	This unit replaces RIIUND601A Establish and maintain the ventilation management system
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 the ventilation management system in Coal and Metalliferous mining.

This unit is appropriate for those working in management roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

Unit Sector

Coal mining

Metalliferous mining

Elements and Performance Criteria

1. Identify, analyse and evaluate hazards associated with mine atmosphere	1.1 Access, interpret and apply ventilation management documentation and ensure the work activity is compliant 1.2 Identify and evaluate the sources and hazards of dust, gases and fumes 1.3 Identify, analyse and evaluate the likely impact of gas drainage 1.4 Identify, analyse and evaluate the hazards of spontaneous combustion, fire and explosion 1.5 Identify, analyse and evaluate the impact of ventilation pressure differentials
---	---

	1.6 Identify, analyse and evaluate the effect of changes in air temperature, pressure and humidity
2. Identify, analyse and evaluate events which impact on ventilation	2.1 Identify and evaluate the impact of disruption to the ventilation system 2.2 Identify and evaluate the causes and effects of recirculation 2.3 Identify, analyse and evaluate the potential for and likely impact of windblast 2.4 Identify, analyse and evaluate the potential for and likely impact of outburst 2.5 Identify, analyse and evaluate the impacts of holing into previous workings 2.6 Identify, analyse and evaluate the impact of water 2.7 Identify, analyse and evaluate the potential for, and likely impact of spontaneous combustion, fires and explosion
3. Identify, analyse and evaluate mine ventilation control options and measures	3.1 Identify, analyse and evaluate the types, applications and limitations of the ventilation control devices 3.2 Identify and evaluate the impact of mine design on the ventilation system 3.3 Identify and evaluate the methods, purposes and limitations of mine monitoring systems and processes
4. Design and develop the ventilation management system	4.1 Access, interpret and clarify the relevant legislative and site requirements 4.2 Incorporate the principles and requirements of mine ventilation, including the effects of mine gases into the design and development of the ventilation system 4.3 Identify design criteria and specification for ventilation networks and incorporate 4.4 Identify, evaluate and incorporate the requirement for mine fans 4.5 Evaluate ventilation control device options against requirements and incorporate 4.6 Incorporate ventilation and environmental monitoring systems
5. Establish the ventilation management plan	5.1 Establish and incorporate mine ventilation objectives, systems descriptions and responsibilities into the ventilation management plan 5.2 Establish procedures for the installation, operation and maintenance of ventilation monitoring systems 5.3 Prepare and establish procedures for the installation, operation and changes to ventilation control devices

	5.4 Determine trigger levels for each hazard and incorporate 5.5 Establish a ventilation system maintenance program and procedures and incorporate 5.6 Incorporate audit, review and update procedures for the ventilation systems 5.7 Establish a program including systems and procedures to satisfy identified ventilation management training requirements 5.8 Establish a procedure for planning, controlling, implementing, recording and communicating changes to mine ventilation systems and components and incorporate
6. Plan and prepare for the implementation of the ventilation management plan	6.1 Identify and interpret the relevant legislative and site requirements 6.2 Access and interpret the ventilation management plan 6.3 Identify, clarify and communicate roles and responsibilities 6.4 Identify, forecast, obtain and allocate/schedule required resources 6.5 Implement the ventilation management training program 6.6 Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to ventilation management implementation procedures
7. Audit and review the ventilation management plan	7.1 Audit ventilation standards for compliance 7.2 Audit ventilation control devices for compliance 7.3 Audit monitoring systems for compliance 7.4 Audit ventilation recording systems for compliance = 7.5 Audit ventilation system maintenance program and procedures for compliance 7.6 Audit the ventilation management training program for currency, relevance and compliance 7.7 Audit and review the planning process of future ventilation requirements 7.8 Identify and correct 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

RIIUND601A Establish and maintain the ventilation management system

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 RIIUND601D Establish and maintain the ventilation management system

Modification History

Release	Comment
1	This unit replaces RIIUND601A Establish and maintain the ventilation management system
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 establishment and maintenance of the ventilation management system including:
 - accessing and analysing archival and historical ventilation information
 - interpreting and applying mathematical and scientific theorems/laws related to ventilation
 - accessing, evaluating and applying design criteria for ventilation systems and devices
 - interpreting computer spreadsheets and ventilation modelling/simulations
 - accessing, evaluating and applying data from monitoring systems and equipment
 - establishing ventilation training requirement, programs, systems and procedures
- demonstrates completion of the establishment and maintenance of the ventilation management system that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
 - identifying, collecting, collating and evaluating data, events and activities that impact on ventilation systems
 - identifying and evaluation limitation of ventilations control devices and systems
 - designing and developing the ventilation management system
 - establishing technical procedures relating to ventilation
 - incorporating mine ventilation plan into work activity

- conducting enquiries/investigations throughout the audit of ventilation management plan
- providing solutions to noncompliance or other discrepancy
- preparing reports on ventilations management plan audits

Knowledge Evidence

The candidate must demonstrate knowledge in establishing and maintaining the ventilation management system through:

- methods of mine ventilation and their applications/limitations including:
 - exhaust/force
 - antitropical
 - homotropical
 - flank returns
 - ascensional/descensional
 - bleeder
 - ZUY systems
 - other combinations
- identifying methods of panel ventilation and their applications/limitations including:
 - homotropical and antritropical auxiliary fans
 - coursed ventilation (narrow side/wide side)
 - machine mounted scrubber systems
 - compressed air venturis
 - bleeders
- impact of mining techniques and mine and panel design on ventilation
- impact of coal characteristics and coal seam gradients on mine ventilation design
- principles and impacts of the ventilation system of gas drainage, spontaneous combustion, outburst and windblast
- mine gases; the types and their characteristics under varying circumstances, sources, physiological effects and methods of detection
- dust, fumes and other particulate matter; the types, sources, physical and physiological effect, and control/mitigation methods
- mine fires; the types, sources of ignition, possible effects on the ventilation circuit and prevention/control/mitigation methods
- mine explosions; types, ignition sources, possible effects on the ventilation circuit and prevention/control/mitigation methods
- pressure changes; causes, the impacts on the ventilation system, and responses (to include the causes and effects of natural ventilation and recirculation)
- heat/humidity; the sources and factors which may impact ventilation and personnel
- mine roadways and shafts; their design parameters and impact of mine ventilation
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations

- ventilation control devices; the types, purposes, design criteria and specifications, distribution/placement criteria and limitations
- de-gassing; methods of control – including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders
- ventilation networks and individual circuit design criteria, specifications and design processes
- fixed ventilation monitoring systems types, characteristics, uses and limitations
- portable monitoring equipment, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitation and uses of computer modelling and simulation techniques
- computer-based systems for mine environmental analysis
- ventilation management plan development requirements and processes
- ventilation surveys; the types, frequency and method for conducting including pressure/quantity/temperature and gas/dust
- processes and techniques for determining alarms and trigger points/levels
- general uses and application of ventilation theory

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 is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; 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>