



Australian Government

Department of Education, Employment and Workplace Relations

RIIMCU405A Apply and monitor the outburst management plan

Release: 1

RIIMCU405A Apply and monitor the outburst management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of the outburst management plan in the coal industry. It includes planning and preparing for the application of the outburst mining management plan, applying and monitoring the outburst mining activities, and applying outburst mining management system maintenance procedures. 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.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</p>
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<p>1. Plan and prepare for the application of the outburst mining management plan</p>	<p>1.1. Access, interpret and apply <i>compliance documentation</i> relevant to the work activity</p> <p>1.2. Identify and clarify roles and responsibilities, as specified in the <i>outburst mining management plan</i></p> <p>1.3. Communicate and clarify work group individual responsibilities and tasks in an effective and timely manner</p> <p>1.4. Identify, obtain and allocate resources required for the application of the <i>outburst mining management plan</i></p> <p>1.5. Identify and satisfy individual training needs through accessing the established outburst mining management training program and systems</p> <p>1.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to outburst mining management procedures</p>
<p>2. Apply and monitor the outburst mining activities</p>	<p>2.1. Interpret and apply procedures covering the relocation, operation and maintenance of the drilling rig</p> <p>2.2. Interpret, apply and monitor core sampling techniques, procedures and processes</p> <p>2.3. Interpret and apply environmental monitoring, recording and reporting procedures</p> <p>2.4. Interpret, apply and monitor ventilation control measures which impact on outburst mining</p> <p>2.5. Interpret, apply and monitor actions and procedures in response to gas threshold levels</p> <p>2.6. Confirm, apply, communicate and post permit to mine procedures</p> <p>2.7. Interpret, apply and monitor procedures covering outburst mining personnel safety measures and techniques</p> <p>2.8. Inspect equipment protection/defensive requirements and measures to ensure compliance with standards</p>

	2.9. Contribute to systems audit and review requirements in accordance with the <i>outburst mining management plan</i>
3. Apply outburst mining management system maintenance procedures	3.1. Carry out inspections, repair and maintenance activities in accordance with the <i>outburst mining management plan</i> 3.2. Record, report and review maintenance activities in accordance with the <i>outburst mining management plan</i>

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to apply and monitor the outburst management plan:

- apply legislative, organisation and site requirements and procedures for applying and monitoring the outburst management plan
- access, interpret and apply technical information
- access and interpret archival and historical outburst information related to the mine
- access and interpret design criteria for outburst management systems and devices
- interpret computer spreadsheets and outburst modelling / simulations
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access and interpret data from monitoring systems and equipment
- operate hand held monitoring equipment
- interpret outburst training requirement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to apply and monitor the outburst management plan:

- legislative and statutory requirements for mining structures, including mine plans, ventilation, gas monitoring, strata support and safety management plans
- mine planning and design
- the systems of mining, including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress analysis, including mining induced stress and topography
- sedimentology, including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, windblast, outburst, gas content and over and underlying strata
- systems of work, including bord and pillar, place changing, longwall, highwall, auger mining, pillar extension, partial extension and punch mining
- mining structure failure modes
- exploration techniques
- geology, lithology and strata gas characteristics
- mining and general engineering principles relevant to the behaviour of excavations in rock
- ground support systems

- audit methodologies
- geotechnical engineering
- excavation engineering
- tunnel engineering and shaft sinking
- rock mechanics
- mine surveying
- mining of coal deposits
- thermodynamics
- the impact of differing geological features and conditions on outburst, including faults, dykes, intrusions and strata deformities
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection
- de-gassing; methods of control, including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders
- fixed monitoring systems types, uses/limitations, design criteria, specifications and design processes
- portable monitoring equipment, types, uses/limitations
- computer-based systems for outburst analysis
- mine outburst management plan development requirements and processes
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- emergency response and disaster planning processes and techniques
- the effects of coal seam characteristics on outburst
- methods of control of outburst
- outburst indicators and ratios
- risk management procedures
- applicable mine rescue procedures
- roles and responsibilities in accordance with outburst mining management plan

Evidence Guide

<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<p>Overview of assessment</p>	
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:</p> <ul style="list-style-type: none"> • knowledge of the requirements, procedures and instructions for the application and monitoring of the outburst management plan • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the application and monitoring of the outburst management plan • working with others to plan, prepare and conduct the application and monitoring of the outburst management plan • evidence of the consistent successful application and monitoring of the outburst management plan
<p>Context of and specific resources for assessment</p>	<ul style="list-style-type: none"> • This unit must be assessed in the context of the 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 workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

	<p>required on the job.</p> <ul style="list-style-type: none"> • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
<p>Method of assessment</p>	<p>This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:</p> <ul style="list-style-type: none"> • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • working with others to undertake and complete the application and monitoring of the outburst management plan • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application and monitoring of the outburst management plan
<p>Guidance information for assessment</p>	<p>Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.</p>

Range Statement

<p>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, if used in the performance criteria, is detailed below. 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) may also be included.</p>	
<p>Relevant compliance documentation may include:</p>	<ul style="list-style-type: none"> • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
<p>Outburst mining management plans establish procedures for maintaining a safe environment including:</p>	<ul style="list-style-type: none"> • hazard identification and quantification • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
<p>Actions (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.</p>	
<p>Audit is the validation process to ensure the system, procedures, processes meet the established objectives and are implemented.</p>	
<p>Risk is defined as: <i>the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood</i> (definition from AS/NZS 4360:1999 Risk Management).</p>	
<p>Hazard is defined as: <i>a source of potential harm or a situation with a potential to cause loss</i> (definition</p>	

from AS/NZS 4360:1999 Risk Management).	
Principles of mine design include:	<ul style="list-style-type: none"> • recovery • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations • access
Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.	
Hazards may include:	<ul style="list-style-type: none"> • irrespirable atmosphere • noxious atmospheres • flammable or explosive mixtures • induced outburst
Geological and hydrogeological information includes that related to, but not limited to:	<ul style="list-style-type: none"> • subsidence • roof and floor technical data • gas content and composition • over and underlying strata • water-bearing strata • permeability of seam and strata • physical properties • caving characteristics • outburst and stress waves • faults • intrusions and deformities
Geological and physical conditions of the seam and surrounding strata which may contribute to outburst potential may include:	<ul style="list-style-type: none"> • cutters • changing cleat • coal colour • free gas into atmosphere and mylonite
Mine site historical information may include:	<ul style="list-style-type: none"> • sedimentology aspects of the mine site relating to subsidence • outburst • gas content and composition

	<ul style="list-style-type: none"> • roof and floor technical data • over and underlying strata • water bearing strata • permeability of seam and strata • hydrology • physical property testing results • caving characteristics and ground stress behaviour
<p>Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.</p>	
<p>Mine gases may include CO or methane in addition to normal atmosphere gases.</p>	
<p>Ventilation structures may include:</p>	<ul style="list-style-type: none"> • stoppings • overcasts • regulators • preparation seals • fire doors • bulk heads • goaf seals • final seals • pressure chambers
<p>Geological conditions may include:</p>	<ul style="list-style-type: none"> • faults • dykes • intrusions and strata deformities • existing or induced stress or strain
<p>Coal seam characteristics may include inherent factors such as:</p>	<ul style="list-style-type: none"> • rank • petrology • moisture • particle size • seam gas • pyrites <p><i>Or depositional factors such as:</i></p> <ul style="list-style-type: none"> • seam thickness • multi seams • seam dip • depth of cover

	<ul style="list-style-type: none"> • cleat • friability • intrusions
Mine atmosphere monitoring may include:	<ul style="list-style-type: none"> • continuous monitoring • portable (hand held) monitoring • collection of bag samples • gas chromatography • ventilation measurements from all areas of the mine, including sealed area and waste workings
Defects to mine structures may include:	<ul style="list-style-type: none"> • deterioration of materials • quality of construction • effects of surrounding strata • physical damage • water damage
Infrastructure includes:	<ul style="list-style-type: none"> • pipes • valves • hoses • pumps • drainage plant • flame arresters • power supply to bore holes • cleaning equipment • all other plant and equipment

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.