



Australian Government

Department of Education, Employment and Workplace Relations

RIIBHD302A Conduct underground development drilling

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers conducting development drilling in underground metalliferous mines. It includes: planning and preparing for drilling; drilling and monitoring progress; packing-up the drill site and carrying out operator maintenance and housekeeping activities.

Application of the Unit

Drill rigs may include: diesel, electric, hand-held, hydraulic, pneumatic, rotary, track, wheeled. This unit is appropriate for those working in driller roles, in underground mines, within:

- Metalliferous 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

Elements describe the essential outcomes of a unit of competency.	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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for drilling	1.1. Access, interpret and apply compliance documentation relevant to conducting development drilling in underground metalliferous mines 1.2. Receive, interpret and clarify shift change over details including relevant geo-technical details 1.3. Select and use appropriate personal protective equipment 1.4. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.5. Conduct equipment pre-start checks to ensure equipment is safe and ready to use 1.6. Confirm work area ventilation before entry into work area 1.7. Check job site and identify and manage possible misfires
2. Drill and monitor progress	2.1. Conduct work according to site procedures, regulations, OHS, other relevant legislation, manufacturer's specifications safely and efficiently 2.2.2 Identify, manage and report hazards and potential risks according to drilling plan 2.3. Use approved dust suppression and extraction methods 2.4. Maintain safety of driller and surrounding personnel 2.5. Operate equipment safely within working environment limitations and face/ground conditions 2.6. Interpret drill plans then drill holes and realign equipment according to drill design 2.7. Monitor site conditions and adjust drilling techniques and components to maintain drilling operations 2.8. Monitor drilling progress by monitoring equipment indicators 2.9. Remove drill cuttings and sludge to ensure drill hole remains clean 2.10. Diagnose and take appropriate

	action to manage <i>drilling problems</i> and advise appropriate personnel 2.11. Mark misdirected drill holes 2.12. Install collar pipes or lifters in readiness for charging
3. Pack up drill site	3.1. De-rig equipment 3.2. Clear site of debris 3.3. Remove <i>auxiliary services</i> to allocated area 3.4. Confirm equipment is ready for transport
4. Carry out operator maintenance	4.1. Carry out shutdown procedures 4.2. Service and make minor adjustments to equipment 4.3. Inspect equipment and reports faults and make equipment available for routine operational servicing
5. Carry out housekeeping activities	5.1. <i>Clean equipment</i> to maintain condition of equipment and ensure safe and efficient operations 5.2. Clean and stores auxiliary service equipment 5.3. Complete all required documentation clearly, concisely and on time 5.4. Pass on end of shift information to oncoming shift

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 in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct underground development drilling:

- apply legislative, organisation and site requirements and procedures
- maintain, clean and operate equipment
- apply drilling techniques
- apply driving techniques
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct underground development drilling:

- auxiliary services procedures
- cleaning procedures
- down hole problems
- drilling procedures
- environmental procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data (e.g. basic)
- hazardous goods procedures (e.g. handling and transport)
- inspection procedures
- isolation procedures
- manufacturer's specifications
- mining regulations
- operational procedures and checks
- recovery procedures
- road rules
- site procedures
- site safety requirements
- start-up and shutdown procedures
- storage procedures
- towing procedures
- underground procedures

Evidence Guide

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.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	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: • knowledge of the requirements, procedures and instructions for the conducting of underground development drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of underground development drilling • working with others to undertake and complete underground development drilling that meets all of the required outcomes • consistent timely conducting of underground development drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• 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. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • 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. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • 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.
Method of assessment	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: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete underground development drilling
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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, 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.

Relevant compliance documentation

may include:

- legislative, organisation and site requirements and procedures
- manufacturer's guidelines and specifications
- Australian standards
- code of practice
- 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

Equipment may include:

- collar piping
- covering devices (e.g. plugs, cones, hessian bags)
- drill rig (e.g. electric/hydraulic, pneumatic)
- drilling components (e.g. drill rods, bits, augers, down hole hammer, down hole tools)
- extra lighting (e.g. flood lights)
- flags
- hoses
- inclinometer
- lifting and handling equipment
- long hole extension drills
- measuring tape
- oils
- paint (e.g. spray cans)
- plates
- recovery equipment
- scaling bars
- signs
- support vehicles
- tamping sticks
- tapes
- witches hats
- recommended/required PPE

Pre-start checks may include:	• air filter restriction indicator • cab (e.g. horn, lights, air conditioner) • computer systems • display instrumentation and gauges (e.g. indicators, gauges, laser levels) • engine and stop engine lights (e.g. orange and red) • fire and suppression systems • fire extinguishers • fluid levels (e.g. windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • visual and audio warning devices and lights • drilling equipment (e.g. drill rig booms, drifters, hydraulic hoses, drill steels, bits and couplings) • drill rig platform, steps and hand rails
Potential hazards and risks may include:	• ground control failure • lack of ventilation • loose material on working surface • misfires • gases • entry by unauthorised personnel • uncovered open holes • unstable ground conditions • airborne dust and fibres • unstable footing • poor housekeeping • noise • rotating machinery (e.g. drill steels) • electrical hazards • airborne rock fragments • vibration from hand held equipment
Drilling plan may include:	• access to inclines and decline depending on the complexity of the process • drive plan • equipment and resource allocations/requirements • face • geological details • verbal or written instructions • mine site details

	• services • stope
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (e.g. vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Personnel may include:	• blasters • contractors • drillers • drivers • holders of appropriate tickets • inspectors • licensed operators • maintenance staff • personnel authorised by mine management • service personnel • supervisors • surveyors • tradespersons
Drill techniques may include:	• adjustment to feed • compacting • hammer • removing debris • rotation • speed and pull force adjustments • adjustments to drill steel angle
Indicators for proposed holes may include:	• collar tubes • cones • pegs • spray painting
Drilling problems may be:	• environmental • geological (e.g. ground conditions) • mechanical (e.g. bogged)
Auxiliary services may include:	• compressed air • de-watering pumps • electricity • ventilation • water
Parts of equipment cleaned may	• platform • steps and hand rails (removal of oil, grease,

include:	debris)
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Unit Sector(s)

Blast Hole Drilling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.