



Australian Government

Department of Education, Employment and Workplace Relations

RIIBHD301A Conduct surface blast hole drilling operations

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of surface blast hole drilling operations in resources and infrastructure industries. It includes planning and preparing for operations, marking out drill patterns, operating the drill system, relocation of the drill, and carrying out post-operational procedures.

Application of the Unit

Surface blast hole drills may include: diesel, electric, or pneumatic powered; pneumatic or hydraulic operated; rotary or rotary percussion; and tracked or wheeled drill rigs.

This unit is appropriate for those working in driller roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- 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. Plan and prepare for operations	1.1. Access, interpret and apply compliance documentation relevant to the conducting of surface blast hole drilling operations 1.2. Obtain, interpret and clarify work requirements and procedures for the satisfactory completion of the allocated job 1.3. Access, interpret and apply geological and survey data required to complete the allocated job 1.4. Inspect and prepare work area in coordination with others to work requirements and procedures 1.5. Identify, manage and report potential hazards and risks in accordance with requirements and procedures 1.6. Resolve coordination requirements with others at the site prior to commencing and during work activities in accordance with requirements and procedures 1.7. Select personal protective equipment appropriate for work activities in accordance with requirements and procedures
2. Mark out drill pattern	2.1. Adjust drill pattern within authorised tolerances and drilling plan in accordance with requirements and procedures 2.2. Obtain authorisation for changes to drill pattern plan in accordance with requirements and procedures 2.3. Place indicators on drill pattern in preparation for drilling in accordance with requirements and procedures 2.4. Mark out drill pattern ensuring it is visible and aids the drilling process in accordance with site requirements and procedures 2.5. Protect pre-existing drill holes according to characteristics of hole and in accordance with requirements and procedures
3. Operate the drill system	3.1. Carry out pre-start, start-up, park-up and shutdown procedures in accordance requirements and procedures

	3.2. Locate and set up drill and equipment according to drilling plan in accordance with requirements and procedures 3.3. Select and modify the operating technique to appropriately meet changing work conditions in accordance with requirements and procedures 3.4. Conduct, control and monitor operations within the equipment limitations and requirements and procedures 3.5. Stabilise hole by collaring and by adjusting drilling techniques 3.6. Act on or report monitoring systems and alarms in accordance with the requirements and procedures 3.7. Recognise and respond to hazardous and emergency situations in accordance with the requirements and procedures 3.8. Complete work in accordance with the agreed work requirements and within the operating capacity of the allocated equipment 3.9. Adhere to emergency procedures to ensure safety of personnel, plant and equipment 3.10. Monitor material for quality during the drilling process at predetermined depths
4. Relocate drill	4.1. Receive route and location plan and confirm them by site inspection, in accordance with requirements and procedures 4.2. Complete and/or follow work area preparation, in accordance with requirements and procedures 4.3. Resolve coordination issues in accordance with requirements and procedures 4.4. Relocate drill in accordance with the requirements and procedures
5. Carry out post-operational procedures	5.1. Inspect, fault find and report in accordance with requirements and procedures 5.2. Carry out routine operator servicing, maintenance and housekeeping tasks in accordance with requirements 5.3. Provide operator support during preparation for and conduct of major

	maintenance tasks in accordance with requirements 5.4. Maintain and process <i>records and reports</i> in accordance with requirements and procedures
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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 surface blast hole drilling operations:

- apply legislative, organisation and site requirements and procedures
- interpret legislative requirements and procedures
- interpret site requirements and procedures
- interpret manufacturer's requirements and procedures
- interpret work requirements
- interpret geological and survey data
- identify worksite hazards and response procedures
- read and interpret plans, reports, maps and specifications
- interpret equipment technical information
- organise work tasks
- apply drilling techniques
- apply maintenance and house keeping requirements and procedures
- operate and maintain drilling and ancillary equipment
- use communications equipment
- maintain records
- prepare reports
- work in a team
- carrying out relevant calculations, which may include; addition, subtraction, multiplication, division
- use appropriate instruments to measure volume, mass and length

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 surface blast hole drilling operations:

- legislative, site and manufacturer's requirements and procedures
- worksite coordination requirements and procedures
- site operating techniques and systems
- monitoring systems and alarms requirements and procedures
- ground preparation requirements and procedures
- inspection, fault finding and reporting requirements and procedures
- routine operator servicing, maintenance and housekeeping requirements and

procedures

- site environmental and heritage requirements and constraints
- dust suppression techniques
- drill system characteristics, technical capability and limitations

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 conducting surface blast hole drilling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of surface blast hole drilling operations • working with others to undertake and complete surface blast hole drilling operations that meets all of the required outcomes • consistent timely completion of surface blast hole drilling operations 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 surface blast hole drilling operations
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
Work requirements and procedures may come from briefings, handovers, and work orders and may be written or verbal, formal or informal, depending on the complexity of the process and may include:	- nature and scope of tasks - the drill pattern plan - achievement targets - operational conditions - dust suppression - site layout and out of bounds areas - worksite inspection requirements - lighting conditions - plant or equipment defects, - hazards and potential hazards - coordination requirements or issues
Geological data may include relevant site-specific information in relation to:	- rock type and characteristics - faults and joints - water tables or other water sources
Survey data may include relevant site-specific information in relation to:	- floor heights - bench widths - grades
Inspection of the work area may include:	- identification of hazards - confirming geological and survey data, which may include: - high wall and low wall condition - amount of scale - stability of ground

	• broken ground • degree of compaction • dry and wet ground • location of water table • slope of working surface • old underground workings and voids • determination of appropriate path of movement for equipment
Preparation of the work area may include:	• selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection • preparing floor, pads, roads, ramps and bench requirements • pads that are flat, sloping or benched
Potential hazards and risks may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles • Installed services • damaged or defective pressurised hoses and fastenings • powerlines • dust • noise • conveyors • overhead services • void

	• tow and bent rods • changing work conditions • void management
Coordination may include with:	• shotfirer • mobile plant operators • processing plant operators • maintenance personnel • cable reelers • water truck operators • service vehicle operators • crane and float operators • contractors • other drillers • inspectors • supervisors • visitors
Drilling plan may be written or verbal, formal or informal, depending on the complexity of the process and may include:	• access road plan • drill pattern • equipment and resource allocations/requirements • face plan • geological details • mine site • services • pre-start and start-up procedure may include: • external check of the machine • inspection of attachments to ensure security and identify defects • checking of fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • carry out lubrication • checking of display instrumentation and gauges (indicators, gauges, laser levels), computer systems, engine and stop engine lights • inspection of air filter restriction indicator • inspection and checking of cab (horn, lights, air conditioner) • testing of engine and stop engine lights • testing visual and audio warning devices and lights • checking instruments and control lever

	reporting of defects and damage
Pre-start and start-up procedures may include:	- external check of the machine - checking and topping up fluid levels (including windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) - lubrication - inspection of attachments to ensure security and defects - instrument checks (indicators, gauges, laser levels, computer systems. engine and stop engine lights) - control lever checks - reporting defects and damage - air filter restriction indicator - cab (horn, lights, air conditioner) - visual and audio warning devices and lights
Park-up and shutdown procedures may include:	- securing equipment as required by site procedures - rendering attachments safe - clearing access ways
Equipment may include:	- witches hats - tapes, signs, flags, pegs - rope - measuring tape - cutting implements - lifting and handling equipment (winch, crane, block and tackles) - ancillary equipment (generators, pumps, lights, compressors, cleaning equipment, power tools and hand tools)
Operating techniques may include:	- locating the drill, including using positioning systems (global or other) - setting up the drill - adding and removing drill steel, rods, pipes, casing and other down hole tools - stabilisation the drill angle - selecting and size and type - controlling drill depth - controlling speed - adjustment of feeds - controlling rotation and feed pressure, - controlling pull force - compacting

	- controlling the hammer - monitoring and adjusting associated equipment performance - applying dust suppression requirements - collaring of holes - rod handling - removing debris - working safely around: - overhead powerlines - other machines and personnel
Changing work conditions may include:	- variation in drill angle - problems with face stability - variation in rock types or ground conditions - down hole problems - hole deviation - loss of circulation return - loss of rod or bit - rod or bit breakages - variations in weather conditions - day and night - encountering old workings
Monitoring of materials may include:	- sampling - visual inspection
Relocate may include:	- walking - driving - towing - transporting - cable location and handling
Routine operator service, maintenance and housekeeping may include:	- scheduled servicing - changing bits, rods, shanks and drive bushes - greasing - bit sharpening and tool servicing - cleaning, which may include: - degreasing - forced air - steam cleaning - vacuum - water - centraliser/gate adjustment/repair - dust collector/filter bag changes

	• accumulator recharging • drifter travel alignment and changing • removing: • broken drill bits • rags • rock chips
Records and reports may include:	• rotation and feed pressure • rods, bits and associated equipment usage • sampling records • work as completed sketches • bore hole collar levels • drilling rate (m/hr) • fuel usage • computer readings • end of shift documentation • supplies logs • work logs

Unit Sector(s)

Blast Hole Drilling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.