



Australian Government

Department of Education, Employment and Workplace Relations

RIINHB219A Assist with air drilling

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with air drilling in resources and infrastructure industries. It includes planning and preparing for assisting with air drilling, supporting the air drilling process, collaring holes and inserting casings, handling samples, using restraining devices, mixing drilling fluids for air/foam drilling and carrying out basic maintenance of tools and equipment.

Application of the Unit

Air drilling is used for environmental, geotechnical, mineral exploration, mineral production, blast hole, seismic and water well drilling. This unit is appropriate for those working in drillers assistants 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

<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
1. Plan and prepare for assisting with air drilling	1.1. Access, interpret and apply <i>compliance documentation</i> relevant to the work activity 1.2. Obtain, confirm and apply work instructions for the allocated task 1.3. Identify, manage and report all potential <i>hazards</i> 1.4. Resolve <i>coordination requirements</i> with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle, use and store rotary air drilling equipment and all associated tools, sampling devices and connecting equipment 1.6. Select and use appropriate <i>personal protective equipment</i> and protective clothing
2. Support the air drilling process	2.1. Fit and remove and measure correct <i>bits</i> and down-hole tools to/from the drill string 2.2. Prepare drill string in readiness for tripping and drilling 2.3. Sharpen drill bits in accordance with specifications 2.4. Add and remove <i>drill rod</i> to and from the drill string 2.5. Inspect and maintain <i>drill pipe</i> , bits, threads and other down-hole equipment 2.6. Use <i>pipe and casing handling equipment</i> 2.7. Install and seal casing using the correct methods as per company policies/procedures 2.8. Use, install and maintain stuffing boxes and collar T pieces as per manufacturer's requirements
3. Handle samples	3.1. Obtain and/or lay out <i>samples</i> as required 3.2. Split, bag, label and store samples for transport according to workplace or site specific requirements 3.3. Clean and service <i>sampling equipment</i> as required 3.4. Obtain uncontaminated samples using

	<p>appropriate sampling methods</p> <p>3.5. Take necessary safety precautions when handling potentially hazardous samples</p> <p>3.6. Safely clear blockages in sample and delivery system</p> <p>3.7. Note and report possible changes to sample quality due to blockages</p>
4. Use restraining devices	<p>4.1. Fit <i>restraining devices</i></p> <p>4.2. Identify <i>dangers of high velocity samples</i> in air drilling and take appropriate measures to minimise hazard</p>
5. Mix drilling fluids for air/foam drilling	<p>5.1. Wear appropriate protective clothing</p> <p>5.2. Check labels and read and interpret safety information/ hazard codes</p> <p>5.3. Mix the <i>drilling fluid</i> as required</p> <p>5.4. Store drilling fluid components and <i>additives</i> safely and according to requirements</p>
6. Carry out basic maintenance of tools and equipment	<p>6.1. Perform inspections and routine checks on ancillary equipment such as air compressor and injection pump</p> <p>6.2. Perform inspections and basic maintenance of pipe handling equipment</p> <p>6.3. Observe OHS procedures in carrying out equipment maintenance</p> <p>6.4. Select and maintain bit sharpening equipment in accordance with site specifications</p>

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 assist with air drilling:

- apply legislative, organisation and site requirements and procedures
- operate ancillary equipment such as air compressors, boosters and cyclones (equipment is to some extent dependent on the type of air drilling being carried out)
- apply basic maintenance and servicing of compressors and auxiliary equipment
- measure and identify hammer bits, shrouds and related components
- identify thread types in use on site
- identify bits in use and how to measure them
- use various rod handling equipment on site
- assist with the removal/adding of drill rods to the line string
- apply refuelling procedures for vehicles, drill rigs and ancillary equipment
- identify correct lubricants
- apply correct handling of samples
- apply good housekeeping principles
- disassemble, inspect and reassemble DTH hammers
- install restraining devices to pressure and delivery hoses
- inspect and replace inner tubes in RC pipe
- inspect and replace sealing devices in RC pipe
- install T piece to collar casing
- identify and mix of drill additives
- identification of bits
- apply basic maintenance of water delivery pumps
- apply vehicles cleaning procedures
- drive vehicles

Note: these skills may not be used by ALL air drilling methods

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 assist with air drilling:

- reasons for identification and care of samples including storage and transport
- OHS and environment requirements and procedures
- use of materials safety data sheets (MSDS)
- basic operation of compressors and the need for cleanliness when carrying out

compressor maintenance

- critical need to match threads with threads on tubular components
- drilling operational requirements and procedures
- theory behind sharpening bits
- monitoring of sample quality to restrict contamination
- importance of correct measurement of bits and other related components
- methods for clearing blockages in air or rotary holes
- methods of clearing blocked sample and delivery hoses
- requirement of restraining devices on all high pressure and delivery hoses
- potential hazards with the operation of rod handling devices

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 assisting with air drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient assisting with air drilling • working with others to undertake and complete the air drilling tasks that meets all of the required outcomes • consistent timely completion of assisting with air drilling tasks that safely, effectively and efficiently meets the required outcomes
<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. • 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.

	<ul style="list-style-type: none"> • 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.
<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 • consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • working with others to undertake and complete air drilling tasks
<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 • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
<p>Hazards may include:</p>	<ul style="list-style-type: none"> • release of gases from formation or samples obtained • spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling and recovery of the samples • working in proximity to drilling rig • use of high pressure air for drilling operations • entanglement in rotating pipes • string makeup and breakout hazards • drilling equipment and down-hole tools will depend on the air drilling method being used
<p>Coordination requirements may include:</p>	<ul style="list-style-type: none"> • other equipment operators • maintenance personnel • supervisors • mine personnel
<p>Personal protective equipment includes:</p>	<ul style="list-style-type: none"> • steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
<p>Bits may include:</p>	<ul style="list-style-type: none"> • tri-cone bits • blade bits • tungsten carbide 'core' bits • DTH hammer bits RC and conventional • PCD bits

Rod and pipe may include:	<ul style="list-style-type: none"> • air core rods • casing • conventional drill pipe • dual wall reverse circulation drill pipe • API and IF threads
Pipe and casing handling equipment may include:	<ul style="list-style-type: none"> • rod clamps (hydraulic or manual) • manual handling • hoisting plugs • C spanner • hook and clam shell pipe or rod sling • hydraulic pipe/rod/casing spinner • mechanised rod handler • slips • slips basket
Samples may include:	<ul style="list-style-type: none"> • chip samples (RAB, Aircore, DTH hammer, RC samples) • 'core' samples from air core drilling
Sampling equipment may include:	<ul style="list-style-type: none"> • cyclones • sample splitters • wet samplers • rotary samplers
Restraining devices may include:	<ul style="list-style-type: none"> • internal cable whip checks • double eyelet sock type whip checks • full sock whip checks
Dangers of high velocity samples may be caused by:	<ul style="list-style-type: none"> • high wear rates on components • sample hose blockages • sample hose rupture
Drilling fluids and additives may include:	<ul style="list-style-type: none"> • air • foam • polymers • water

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.