Australian Government

Department of Education, Employment and Workplace Relations

RIINHB208B Assist diamond core drilling

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with diamond core drilling in the drilling industry. It includes planning and preparing for assisting with diamond core drilling; supporting the core drilling process; handling core samples; mixing drilling fluids; and carrying out basic maintenance of tools and equipment.

Application of the Unit

Core drilling may also be called wireline core drilling, diamond drilling or coring. It is used for environmental, geotechnical and mineral exploration drilling. This unit is appropriate for those working in as drillers assistants, at worksites within:

- Drilling

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.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with diamond core drilling	1.1. Access, interpret and apply ***compliance documentation*** 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 ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle and store core drilling equipment and all associated tools, sampling devices and connecting equipment 1.6. Set up and stabilise racks 1.7. Wear all necessary ***personal protective equipment*** and protective clothing when assisting with core drilling
2. Support the core drilling process	2.1. Assemble ***core barrel components*** under the direction of the driller 2.2. Prepare drill string in readiness for tripping and drilling 2.3. Add and remove ***drill rods*** and core inner tubes 2.4. Inspect inner tube and core barrel regularly and replace worn or damaged components under the direction of the driller 2.5. Observe housekeeping and site safety measures while supporting core drilling operations 2.6. Use ***rod and casing handling equipment*** according to recommended procedures 2.7. Store and handle diamond tools according to policy
3. Handle core samples	3.1. Dismantle inner tube for recovery of core ***samples*** 3.2. Take necessary safety precautions when handling potentially contaminated samples 3.3. Remove core samples from inner tube and place in core trays in correct sequence 3.4. ***Record*** information on core marker blocks

	and core box accurately and legibly 3.5. Take precautions to ensure no surface contamination of cores and delicate cores are preserved 3.6. Follow safe stacking procedures for core boxes during storage and transportation 3.7. Apply appropriate lifting techniques when lifting full core boxes 3.8. Clean and lubricate inner tube components and re-assemble in preparation for the next run
4. Mix drilling fluids	4.1. Wear appropriate protective clothing when mixing ***drilling fluids*** 4.2. Check labels and read and interpret safety information and hazard codes 4.3. Apply correct mixing procedure for the drilling fluid 4.4. Carry out storage of drilling mud components and additives safely and according to recommendations 4.5. Perform ***basic tests on drilling fluids*** and record and report the results
5. Carry out basic maintenance of tools and equipment	5.1. Perform inspection and checks on serviceability of ***core barrel components*** 5.2. Perform inspections and routine checks on ancillary equipment 5.3. Perform inspections and basic maintenance on rod handling equipment 5.4. Observe occupational health and safety procedures in carrying out equipment maintenance and use correct personal protective equipment 5.5. Fit restraining devices to Kelly hoses

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 diamond core drilling:

- apply legislative, organisation and site requirements and procedures
- measure and identify core bits, reamer shells and related components
- identify thread types
- identify bits to suit
- apply safe storage requirements for diamond tools
- use various rod handling equipment and methods
- apply add and removal techniques for 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
- correctly identify and mix drill fluids
- apply basic maintenance of mud and/or water delivery pumps

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 diamond core drilling:

- occupational health, safety and environment issues
- reasons for identification and care of samples including storage and transport
- information to be placed on core boxes/core marker blocks
- diamond coring equipment, components and nomenclature
- requirements for collaring of bore holes, including equipment, methods, seals and installation
- collection of sludge and chip samples
- procedures and maintenance of stuffing boxes and/or 'T' pieces
- mud pumps and their applications
- basic knowledge of bit types and their applications to different geological conditions
- basic knowledge of fluid circulation system and its effect on hole integrity and sample quality

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 assisting with diamond core drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of assisting with diamond core drilling • working with others to undertake and complete the assisting with diamond core drilling that meets all of the required outcomes • consistent timely completion of assisting with diamond core 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 the assisting with diamond core 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, 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

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• 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 core

	samples • working in proximity to drilling rig • entanglement in rotating rods or casing • blowout of inner barrel splits • string makeup and breakout hazards • hazards with the use of grout mixers, pumps
Coordination requirements may include:	• driller • other equipment operators • maintenance personnel • supervisors • worksite personnel
Personal protective equipment may include:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Core barrel may include:	• double tube wireline core barrels • triple tube wireline core barrels • starter barrels • SPT sampling barrels • chrome barrel
Components may include:	Drill bits • blade bits • tricone bits • PCD bits • surface set diamond core bits and reamers • impregnated diamond core bits and reamers
Drill rods may include:	• wireline drill rod • casing • barrel and inner tube component threads • API and IF threads • 'Q' series threads
Rod and casing handling equipment may include:	• manual handling • mechanised rod handlers • hydraulic rod/casing spinners • hoisting plugs • hook and clam shell • foot clamps (hydraulic or manual)
Casing type may include:	• steel casing • PVC casing

Samples may include:	• core samples • sludge samples from coring and rotary drilling • chip samples
Records may include:	• note book • plastic bags (write on) • hole logs • run sheets • shift report book • diaries • core blocks • core trays
Recorded information may include:	• project number • hole number • tray number • depth (per client and company requirements) • core loss details (i.e. depth interval) • core breaks (made by hammer during removal from inner tube)
Drilling fluids and additives may include:	• drill mud and additives • soluble oil • lost circulation material
Basic tests on drilling fluid may include:	• viscosity • mud weight • use of marsh funnel and cup
Core barrel components may include:	• outer tube • inner tube • split tubes (as required) • core lifter case and core lifter • head assembly • overshot assembly

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.