



Australian Government

RIINHB315D Conduct top-hole hammer drilling

Release: 2

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Modification History

Release	Comment
1	This unit replaces RIINHB315A Conduct top-hole hammer drilling
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to conduct top-hole hammer drilling in Drilling.

This unit is appropriate for those working in operational roles.

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 this unit

Unit Sector

Drilling

Elements and Performance Criteria

1. Plan and prepare for top-hole hammer drilling	1.1 Access, interpret and apply top-hole drilling documentation and ensure the work activity is compliant 1.2 Obtain, read, interpret, clarify and confirm work requirements 1.3 Identify and address potential risks, hazards and environmental issues and implement control measures 1.4 Select and wear personal protective equipment appropriate for work activities 1.5 Communicate and coordinate activities with others throughout the work activity 1.6 Select, and check for faults, tools and equipment to carry out tasks
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	1.7 Check restraining devices on all pressure hoses 1.8 Fit/replace restraining devices on pressure hoses as required 1.9 Obtain and interpret emergency procedures, and be prepared for fire/accident/emergency
2. Operate top hole hammer drill	2.1 Carry out pre-start and start up procedures 2.2 Identify, select and apply rig operational controls 2.3 Select appropriate rod type, thread form and drill string components for job 2.4 Measure and select appropriate bit for the job 2.5 Collar hole 2.6 Use rod handling equipment safely and correctly 2.7 Add/break out and remove drill rods/pipes and top hole equipment 2.8 Adjust/feed/rotate drill at right rate for optimum penetration 2.9 Adjust impact pressure and rate to match ground conditions 2.10 Adjust air pressure to achieve required hole clearance 2.11 Measure line string and calculate depth of hole
3. Use drilling fluids as required	3.1 Identify hole conditions requiring the use of dust control fluids 3.2 Select suitable ingredients/fluids 3.3 Prepare/monitor the preparation of required fluids 3.4 Use dust control fluids to achieve required result
4. Respond to problems	4.1 Monitor operation and chips/sample/air return 4.2 Identify possible problems in equipment or process 4.3 Clear blockages 4.4 Determine other problems and maintenance tasks needing action 4.5 Determine possible fault causes 4.6 Rectify problem using appropriate solution within area of responsibility 4.7 Follow through items initiated until final resolution has occurred 4.8 Report problems outside area of responsibility to designated person
5. Complete equipment maintenance	5.1 Carry out shutdown procedures and secure equipment

and housekeeping	5.2	Monitor wear
	5.3	Check all equipment and hoses
	5.4	Replace shanks as required
	5.5	Replace/adjust and report damaged/worn parts as required
	5.6	Undertake bit sharpening as required
	5.7	Grease drifter as required
	5.8	Ensure housekeeping activities are completed
	5.9	Process records

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIINHB315A Conduct top-hole hammer drilling

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIINHB315D Conduct top-hole hammer drilling

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Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- implements the requirements, procedures and techniques for the safe, effective and efficient completion of top-hole hammer drilling including:
 - identifying various thread types on the equipment at site and the application of prescribed torque
 - identifying worn drill pipe and damaged threads
 - identifying and measuring various bits in use
 - using the various rod/pipe handling equipment on site
 - correctly and competently add/remove rods/pipe from the string
 - applying rotation speed and weight on the bit to maintain optimum performance
 - measuring line string components and calculating hole depth
 - applying the correct combination of hydraulic oil flow volume and pressure to maintain productivity
 - establishing collar hole
 - ensuring that samples are correctly collected and handled
 - ensuring that all string components are correctly maintained
 - measuring bits and related components to ensure compatibility
 - ensuring that bit sharpening equipment, used to sharpen TC bits are used correctly and safely and that bits are sharpened to correct tolerances
 - selecting various bit types for differing ground conditions

- monitoring sample quality and correctly interpret changes
- using prescribed techniques to safely clear sample delivery hose blockages
- accepting responsibility for the correct installation and maintenance of restraining devices to pressure and sample delivery hoses
- communicating the hazards of cuttings in the return air stream to all crew members
- ensuring that drill pipe is inspected regularly and wear rates monitored
- ensuring that threads are inspected and maintained as required
- works effectively with others to undertake and complete the conduct of top-hole hammer drilling that meets all of the required outcomes including:
 - complying with written and verbal reporting requirements and procedures
 - communicating clearly and concisely with others to receive and clarify work instructions
 - communicating clearly and concisely with others to resolve coordination requirements prior to commencing and during work activities
- demonstrates completion of the conduction of top-hole hammer drilling that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
 - selecting appropriate rod type, thread form and drill string components for job
 - measuring and selecting appropriate bit for the job
 - add/break out and remove drill rods/pipes and top hole equipment
 - adjusting/feeding/rotating drill at right rate for optimum penetration
 - adjusting impact pressure and rate to match ground conditions
 - measuring line string and calculating depth of hole
 - preparing/monitoring the preparation of required fluids

Knowledge Evidence

The candidate must demonstrate knowledge in conducting top-hole hammer drilling through:

- accessing, interpreting and applying the organisation and site requirements and procedures for:
 - work, health and safety
 - environmental issues
 - operating drill rig
 - housekeeping
- critical need to match like threads with like threads on all tubular components and make up torque requirements
- parameters relating to wear of drill pipe and integrity of threads
- function of hole collaring
- methods required to limit the contamination of samples
- theory behind TC bit sharpening
- bit selection for different types of drilling and different ground conditions

- problems related to inaccurate measurement of bits and other related components
- importance of monitoring sample quantity
- role that blockages play in affecting sample quality
- methods commonly used to clear down hole blockages in air drilled holes and the hazards associated with clearing blockages
- methods used to clear a blockage in a sample delivery hose and the hazards associated with clearing blockages
- critical need for restraining devices to be fitted to all pressure delivery hoses and sample delivery hoses, the devices available and their methods of attachment
- dangers of drilled samples being returned to the surface at high velocity in air drilling operations and the parameters involved
- importance of checking gauges and monitoring pressures, flow rates and temperatures
- being prepared for fire/accident/emergency

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit must be assessed in the context of this sector's work environment; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal	1	1 Year

Mining, Extractive (Quarrying) and Civil Construction	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

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