



Australian Government

RIINHB311D Conduct mud rotary drilling

Release: 2

RIINHB311D Conduct mud rotary drilling

Modification History

Release	Comment
1	This unit replaces RIINHB311A Conduct mud rotary 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 mud rotary drilling in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication

Elements and Performance Criteria

1. Plan and prepare for mud rotary drilling	1.1 Access, interpret and apply conduct mud rotary 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 Obtain and interpret emergency procedures, and be prepared for fire/accident/emergency
2. Operate mud rotary drill	2.1 Carry out pre-start and start up procedures 2.2 Identify, select and apply rig operational controls 2.3 Make up appropriate drill string 2.4 Use bits, rods and casings

	2.5 Seal hole collar 2.6 Feed and rotate drill at right rate for the formation 2.7 Interpret flow from drill to determine conditions at bit 2.8 Adjust flow rates to give desired results 2.9 Check drill bits and string components for wear, gauge, dents and damaged threads 2.10 Use casing, grout screens to correct zones or levels as required 2.11 Continually monitor hazards and risks , and ensure safety of self, other personnel, plant and equipment
3. Operate fluid system	3.1 Determine required up hole velocity and the related fluid properties and feed rate 3.2 Recognise different types of strata 3.3 Design and adjust mud system to suit geological conditions and changes to conditions which might be expected during the drilling 3.4 Ensure there is an adequate supply of water to the site for mud requirements and circulation loss zones 3.5 Make up appropriate formulation using different types of mud and chemicals 3.6 Construct mud pits and systems to suit hole dimensions and site storage requirements 3.7 Monitor, check and adjust flow rate and properties 3.8 Keep fluid clean and chlorinate/sanitise lost circulation if required 3.9 Check and adjust fluid reticulation systems 3.10 Dispose of drill fluids correctly
4. Respond to problems	4.1 Identify possible operational problems in equipment, process or mud 4.2 Determine problems needing action 4.3 Determine possible fault causes 4.4 Rectify problem using appropriate solution(s) within area of responsibility 4.5 Follow through items initiated until final resolution has occurred 4.6 Report problems outside area of responsibility to designated person
5. Complete equipment maintenance	5.1 Carry out shutdown and secure equipment

and housekeeping	5.2	Monitor wear and recognise symptoms of malfunction
	5.3	Check all equipment and hoses
	5.4	Monitor all seals and connections
	5.5	Replace, adjust and report items needing attention.
	5.6	Service gear and adjust glands where required
	5.7	Complete maintenance schedule
	5.8	Check oil drops for signs of repairs needed
	5.9	Maintain inspection and/or service records
	5.10	Ensure housekeeping activities are completed
	5.11	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

RIINHB311A Conduct mud rotary 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 RIINHB311D Conduct mud rotary 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 mud rotary drilling tasks including:
 - conducting routine checks and basic maintenance
 - understanding mud mixing and conditioning
 - identifying and responding to changes in ground conditions
 - conducting sampling
 - applying people skills for dealing with clients, co-workers and management
 - reading, interpreting and applying safety data sheets (SDS) for handling hazardous materials
 - adapting heavy vehicle driving skills to suit conditions
- works effectively with others to undertake and complete mud rotary drilling tasks that meet 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 mud rotary drilling that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:

- making up appropriate drill string
- using bits, rods and casings
- sealing hole collar
- feeding and rotate drill at right rate for the formation
- checking drill bits and string components for wear, gauge, dents and damaged threads
- using casing, grout screens to correct zones or levels as required
- determining required up hole velocity and the related fluid properties and feed rate
- designing and adjusting mud system to suit geological conditions and changes to conditions which might be expected during the drilling
- monitoring, checking and adjusting flow rate and properties

Knowledge Evidence

The candidate must demonstrate knowledge in conducting mud rotary drilling through:

- accessing, interpreting and applying the organisation and site requirements and procedures for:
 - work, health and safety
 - environmental issues
 - operating drill rig
 - housekeeping
- understanding the types of mud and water delivery pumps and their applications
- understanding the methods for the calculation of lag time for discrete formation samples
- read, interpret and apply basic geology data
- 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 Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	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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