



**Australian Government**

# **RIINHB304D Conduct air drilling**

**Release: 2**

## RIINHB304D Conduct air drilling

### Modification History

| Release | Comment                                                                                                                                                                                                                                                                                                         |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | This unit replaces RIINHB304B Conduct air drilling                                                                                                                                                                                                                                                              |
| 2       | Required frequency and volume of evidence amended in Performance evidence.<br>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 air drilling in the Resources and Infrastructure Industry.

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 air drilling           | <p>1.1 Access, interpret and apply conduct air drilling documentation, and ensure the work activity is compliant</p> <p>1.2 Obtain, read, interpret, clarify and confirm work requirements</p> <p>1.3 Identify and address potential risks, hazards and environmental issues and implement control measures</p> <p>1.4 Select and wear personal protective equipment appropriate for work activities</p> <p>1.5 Communicate and coordinate activities with others throughout the work activity</p> <p>1.6 Obtain and interpret emergency procedures, and be prepared for fire/accident/emergency</p> |
| 2. Inspect and maintain air drilling equipment | <p>2.1 Carry out pre-start and start up procedures</p> <p>2.2 Ensure restraining devices are not damaged or worn and are correctly fitted</p> <p>2.3 Fit or replace restraining devices</p>                                                                                                                                                                                                                                                                                                                                                                                                          |

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|                                      | <p>2.4 Inspect and maintain the cyclone in safe and serviceable condition</p> <p>2.5 Ensure mounting and security of cyclone is adequate for safe operation, particularly when down hole water may result in release of energy</p> <p>2.6 Maintain dust suppression systems to ensure minimal emission of airborne dust and integrity of sample quality</p> <p>2.7 Inspect pressure relief valves to ensure they have not been tampered with</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3. Drill using air drilling methods  | <p>3.1 Identify, select and apply rig operational controls</p> <p>3.2 Select and use appropriate drill rod and drill string components given hole specification and anticipated ground conditions</p> <p>3.3 Operate make-up and break-out equipment</p> <p>3.4 Select and use appropriate type and size of in-hole tools given hole specification and anticipated ground conditions</p> <p>3.5 Drill/open-up hole collar as required to suit given ground conditions and hole specification</p> <p>3.6 Install drill hole collar casing and seal at the hole collar</p> <p>3.7 Install outside hole return collar device, if required, given hole specification of open or reverse circulation drill hole</p> <p>3.8 Operate drill rod and pipe handling equipment</p> <p>3.9 Add and remove drill rods or casing and other in-hole equipment</p> <p>3.10 Monitor and adjust air pressure and other drilling parameters to achieve maximum performance</p> <p>3.11 Monitor and control down hole water conditions to ensure integrity of the hole, drill cuttings and sample quality</p> <p>3.12 Monitor and control discharge from outside hole return collar device</p> <p>3.13 Calculate depth of hole</p> |
| 4. Select and use drilling additives | <p>4.1 Identify ground conditions requiring the use of drilling additives</p> <p>4.2 Select appropriate drilling additives to suit ground conditions</p> <p>4.3 Preparing required drilling additives</p> <p>4.4 Use drilling additives to achieve required results</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 5. Take samples                      | <p>5.1 Select and check sample devices to ensure client sample</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                    | <p>quantity and quality specifications are met</p> <p>5.2 Clean or supervise the cleaning of sample devices</p> <p>5.3 Monitor splitting, bagging, presentation, and marking of samples to ensure client specifications are met</p> <p>5.4 Identify and promptly rectify sample blockages affecting or having the potential to affect sample quality</p> <p>5.5 Clear sample delivery hose blockages safely</p> <p>5.6 Clear outside return hole blockages of collared holes as required</p> <p>5.7 Supervise drill crew and ensure all sampling tasks are carried out correctly and safely</p>                                                                             |
| 6. Respond to problems                             | <p>6.1 Monitor drill cuttings or sample quality, quantity and air return</p> <p>6.2 Identify possible problems in equipment or process</p> <p>6.3 Determine possible cause(s) of problems</p> <p>6.4 Rectify problem(s) using appropriate solution within area of responsibility</p> <p>6.5 Follow through items initiated until final resolution has occurred</p> <p>6.6 Report problems outside area of responsibility to designated person</p>                                                                                                                                                                                                                           |
| 7. Complete equipment maintenance and housekeeping | <p>7.1 Supervise the use of specified personal protective equipment when using grinders or bit sharpening equipment</p> <p>7.2 Supervise the selection and correct fitting grinding disks, wheels and stones</p> <p>7.3 Monitor wear of in-hole tools</p> <p>7.4 Check, maintain, and/or replace compressed air hoses and hose fittings or clamps</p> <p>7.5 Supervise the correct sharpening and maintenance of in-hole tools</p> <p>7.6 Inspect, dismantle, replace worn or damaged components and reassemble in-hole equipment</p> <p>7.7 Carry out shutdown and secure equipment</p> <p>7.8 Ensure housekeeping activities are completed</p> <p>7.9 Process records</p> |

## 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

RIINHB304B Conduct air 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 RIINHB304D Conduct air drilling

### Modification History

| Release | Comment                                                                                                                                                                                                                                                                                                         |
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| 1       | This unit replaces RIINHB304B Conduct air 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 air drilling including:
  - applying prescribed thread form torque parameters during make-up of down hole equipment and consumables
  - applying correct internal and external calipers, vernier, rule and or tape measure for identification of drill pipe/rod diameter wear limits, measurement of bits/shrouds and other down hole equipment
  - applying correct measurement of drill string length
  - applying methods for calculating hole depth
- works effectively with others to undertake and complete air drilling tasks 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 air drilling that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - fitting/replacingg must demonstrate knowledge restraining devices
  - ensure mounting and security of cyclone is adequate for safe operation, particularly when down hole water may result in release of energy

- maintaining dust suppression systems to ensure minimal emission of airborne dust and integrity of sample quality
- selecting and using appropriate drill rod and drill string components given hole specification and anticipated ground conditions
- drilling/open-up hole collar as required to suit given ground conditions and hole specification
- installing drill hole collar casing and seal at the hole collar
- monitoring and adjusting air pressure and other drilling parameters to achieve maximum performance
- monitoring and controlling down hole water conditions to ensure integrity of the hole, drill cuttings and sample quality
- monitoring and controlling discharge from outside hole return collar device
- calculating depth of hole
- selecting appropriate drilling additives to suit ground conditions
- preparation of required drilling additives
- selecting and checking sample devices to ensure client sample quantity and quality specifications are met
- monitoring splitting, bagging, presentation, and marking of samples to ensure client specifications are met
- supervising drill crew and ensuring all sampling tasks are carried out correctly and safely

## Knowledge Evidence

The candidate must demonstrate knowledge in conducting air 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 importance to match like threads with like threads on all threaded components and make up torque requirements applicable to thread form in use
- understanding the relationship between pressure, volume, hole diameter, pipe diameter and calculation of up hole velocity
- understanding the drill pipe, rod and thread form wear limit parameters
- understanding the need for correct hole collaring, use of casing and collar sealing techniques
- complying with the TC bit sharpening procedures
- identifying the potential problems related to inaccurate measurement and usage sequence of ground engaging consumables and related down hole components
- identifying the hazard control measures to enable safe use of compressed air
- identifying the importance of sample quantity

- understanding the role that drill cuttings blockages play in affecting sample quality
- identifying the safe procedures to clear down and up hole drill cuttings blockages within the outside hole return, down hole equipment and up hole sample system and/or hose
- identifying the critical need for correct fitting inspection and maintenance replacement of restraining devices
- identifying the hazards associated with the collection of high velocity drilling cuttings
- identifying the reasons for checking inner tubes and inner tube sealing devices in RC drill pipe
- identifying the hazards associated with wire-line operations and applicable control measures
- identifying the various thread forms used in air drilling
- identifying the various in-hole tools and correct application given ground conditions
- identifying the need for managing uncontaminated samples
- 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                                                         |

|                                                       |                                                                                                                                                                                                                                                                                                                                |         |
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| 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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