



Australian Government

RIINHB329 Conduct sonic drilling operations

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to conduct sonic drilling. It prepares learners to drill using sonic methods, including casing off unconsolidated formations and retrieving core.

It applies to those working in driller roles. They generally perform tasks involving a broad range of skilled applications in a wide variety of contexts, which may involve some discretion and judgement in selecting equipment, services and contingency measures.

Licensing, legislative and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Users must check requirements with relevant body before applying the unit.

Unit Sector

Drilling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan and prepare to conduct sonic drilling	1.1 Obtain, interpret and confirm work requirements 1.2 Access, interpret and apply documentation required to conduct sonic drilling operations and confirm work activity is compliant 1.3 Identify and minimise environmental issues and potential hazards, and assess and address risks within scope of own role and according to workplace procedures 1.4 Select and wear personal protective equipment required for work activity 1.5 Communicate with other personnel at site according to work requirements and confirm briefings and handover details are

ELEMENT	PERFORMANCE CRITERIA
	communicated and received 1.6 Determine drilling and casing diameters required, as determined by sampling requirements, instrumentation install and client specification 1.7 Access, interpret and apply documentation required to determine casing diameter to match core barrel diameter 1.8 Carry out prestart and start-up procedures according to manufacturer specifications and site requirements
2. Drilling with sonic core barrel	2.1 Make up core barrel with bit, ensure bit outside diameter is matched to pass through casing shoe inside diameter 2.2 Inspect bit, core barrel, adapters and threads for damage and wear 2.3 Load core barrel into drill string according to manufacturer specifications 2.4 Commence sonic drilling, adjusting feed, rotation and oscillation to suit ground formation 2.5 Disengage oscillation at end of run before lifting core barrel off bottom of hole 2.6 Sit core barrel on bottom of hole and detach drill head
3. Run casing over core barrel	3.1 Fit casing adapter/deuce to drill head – reverse rotation 3.2 Add casing to drill head 3.3 Make up casing length with casing shoe, check for damage and/or wear of casing, shoe, adapters and threads 3.4 Ream casing over drill string, adjusting feed, rotation and oscillation to suit formation 3.5 Mix and use drill fluids as required 3.6 Break casing joint, leave casing on bottom of hole and remove casing adapter from drill head
4. Retrieve core sample	4.1 Make up drill string to rotation head 4.2 Trip rods and core barrel out of hole 4.3 Prepare work area to retrieve core 4.4 Vibe core from core barrel into polybag or tray 4.5 Trip core barrel and rods back down hole
5. Trip casing out of completed hole	5.1 Use vibe to extract casing from ground 5.2 Trip casing out of hole
6. Conduct inspections of sonic head, spindle, fixtures and fixings, drill rods and casing	6.1 Conduct regular inspections of sonic head, including bolts and mounting points for fatigue caused by sonic vibrations 6.2 Conduct regular inspections of spindle for fatigue caused by sonic vibrations 6.3 Inspect drill rods, core barrels, bits, casing, casing shoes and casing

ELEMENT	PERFORMANCE CRITERIA
	adapters for fatigue caused by sonic vibration 6.4 Use torque wrench to check tension of spindle/swivel bolts

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	Identifies and interprets information from workplace procedures, documentation, legislation and regulations
Writing	Produces and completes workplace reports using appropriate vocabulary, grammatical structures and conventions
Self-management	Monitors and minimises own exposure to worksite hazards during activities

Unit Mapping Information

New unit

Links

Companion Volume implementation guides is found on VETNet -

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

Assessment Requirements for RIINHB329 Conduct sonic drilling operations

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- conduct sonic drilling on at least two occasions, including:
 - sonic drilling through, and casing off, unconsolidated formation
 - retrieving and bagging sample from sonic core barrel
 - inspecting drill head and associated equipment for signs of fatigue.

During the above, the candidate must:

- locate and apply legislation, documentation, policies and procedures required to conduct sonic drilling
- implement the requirements, procedures and techniques for conducting sonic drilling, including:
 - keeping work area clean
 - selecting and wearing required protective clothing and equipment
 - conducting pre-operational checks
 - reporting immediately any malfunction or equipment failure
 - inspection of sonic head assembly for damage caused by sonic vibration
- work with others to assist sonic drilling that meets required outcomes, including:
 - organising work activities to meet all task requirements
 - communicating with others to receive and clarify work instructions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key policies, procedures and established requirements for conducting sonic drilling, including those for:

- work health and safety
- emergencies
- identifying hazards relevant to sonic drilling
- environmental considerations
- housekeeping
- compatibility of different core barrel and bit sizes to differing casing sizes
- bit selection criteria for drilling in different ground conditions
- the importance of checking bolt torques to prevent premature failure due to sonic vibration.

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - personal protective equipment
 - equipment required to conduct sonic drilling
- be conducted in a safe environment; and,
- be assessed in the context of this sector's work environment; and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures and processes directly related to the industry sector for which it is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory regulatory standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/Australian Quality Training Framework mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing the required level of RII training product knowledge
- having an understanding and knowledge of legislation and regulations relevant to the industry and to employment and workplaces

- demonstrating the performance evidence, and knowledge evidence outlined in this unit of competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must have current industry skills directly relevant to the training and assessment being provided. This means the industry subject matter expert must demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 year
	2	2 years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 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.	

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**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 a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a unit of competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

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