Australian Government

RIINHB310X Conduct surface directional drilling

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Release: 1

RIINHB310X Conduct surface directional drilling

Modification History

Release	Comments
1	This unit of competency was first released in RII Resources and Infrastructure Industry Training Package Release 13.0.

Application

This unit describes a participant's skills and knowledge required to conduct surface directional drilling in Mineral Exploration and Coalbed Methane (CBM).

It applies to those working in driller roles. They generally work under minimal supervision to undertake a broad range of skilled applications in varied work contexts, using some discretion and judgement in selecting equipment, services or contingency measures.

Licensing/Regulatory Information

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

Pre-requisite unit(s)

RIINHB307X Conduct conventional core drilling

Or

RIINHB308X Conduct wireline core drilling

Competency field(s)

N/A

Unit sector(s)

Coal mining

Drilling

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Elements and Performance Criteria

1. Plan and prepare for surface directional drilling	1.1 Access, review and confirm hole plan, drilling documentation and work requirements, and ensure the work activity is compliant 1.2 Identify and address potential risks, hazards and environmental issues and implement control measures according to site procedures 1.3 Confirm environmental controls, emergency procedures and, exclusion zones according to site requirements 1.4 Identify and confirm equipment meets the requirement to complete the hole to plan specification 1.5 Select and wear personal protective equipment appropriate for work activities 1.6 Confirm communication and coordination activities according to work requirements
2. Set up drill rig and bottom hole assembly	2.1 Select drilling rig and bottom hole assembly to suit ground conditions and hole plan according to manufacturer specifications 2.2 Carry out pre-start and start up procedures according to manufacturer specifications and workplace procedures 2.3 Orientate the surveying equipment and bottom hole assembly according to manufacturer specifications 2.4 Align bottom hole assembly with survey tool and survey control system according to manufacturer specifications
3. Operate drill according to plan	3.1 Apply rig operational controls according to work requirements and manufacturer specifications 3.2 Drill to hole plan, maintaining hole parameters and dogleg severity within limits 3.3 Monitor bottom hole assembly position and pitch, and steer to achieve required position and direction to suit hole plan and ground conditions 3.4 Interpret gauge and dial readings, drill fluid return and drill cuttings to determine conditions at the bottom hole assembly 3.5 Monitor hazards and risks during drilling and report issues outside area of responsibility to designated person according to workplace procedures 3.6 Maintain drill log according to workplace procedures

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4. Complete post-drilling operation processes	4.1 Carry out shutdown and isolate equipment according to manufacturer specifications and workplace procedures 4.2 Monitor wear on drill rod and threads, and on bottom hole assembly and reamers, against wear limits and take required action according to manufacturer specifications 4.3 Assess damaged threads or replace drill rod as required according to manufacturer specifications 4.4 Clean and check equipment and ancillary equipment according to manufacturer specifications and workplace procedures 4.5 Manage fluids, cuttings, waste and spills and secure the work area according to environmental requirements and workplace procedures 4.6 Process records according to workplace procedures

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Assessment Requirements for RIINHB310X Conduct surface directional drilling

Performance Evidence

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

- conduct surface directional drilling on at least two occasions including:
    - selecting appropriate drilling rig and attaching appropriate bottom hole assembly
    - aligning bottom hole assembly with survey tool and survey control system
    - drilling hole according to hole plan
    - monitoring drill path ensuring hole meets conformance and dogleg severity is within limits
    - steering bottom hole assembly to achieve required position

During the above, the candidate must:

- obtain and apply hole plan, relevant documentation and procedures and confirm work activity is compliant
- monitoring and interpreting:
    - all gauge and dial readings
    - bottom hole assembly position
- adjust drilling parameters to align steering to hole plan
- complete drill logs for each hole, including ground conditions encountered, drilling parameters applied and any changes made to those parameters
- operate fluid mixers to prepare drill fluid to the specification required for the ground conditions encountered
- maintain awareness of bottom hole assembly position relative to the hole plan and surrounding infrastructure, and adjust steering to keep the hole within plan tolerances
- complete post-drilling processes, including shutting down and isolating equipment, inspecting drill rod, thread, bottom hole assembly and reamer wear against wear limits and taking the required action, cleaning and checking equipment and ancillary equipment, managing fluids, cuttings, waste and spills, securing the work area, and processing records
- works effectively with others to undertake and complete surface directional drilling that meets the required outcomes including:
    - communicating with others to receive and clarify work instructions
    - uses a range of communication techniques and equipment to undertake and complete drilling operations to meet required outcomes

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- complying with record keeping and reporting requirements and procedures

Knowledge Evidence

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

- key legislation, procedures, documentation and site requirements for conducting surface directional drilling operations, including;
  - hazards, risks and controls used for the drilling context, including environmental
  - emergency procedures
  - personal protective equipment appropriate to job activities and site requirements
  - production, drilling and equipment records
  - operating drill rig
  - housekeeping
- basic rock and geology types and their impact on surface directional drilling operations
- how geology determines bottom hole assembly selection, and the consequences of selecting a head unsuited to the ground being drilled
- understand the performance specifications of the drill rods and the bottom hole assembly and how this aligns to requirements of the hole plan, including dogleg severity
- the methods of steering the bottom hole assembly, and how ground conditions affect steerability
- the principles of surface directional drilling, including how bottom hole assembly position and pitch are determined
- why testing and monitoring the water is important and how it impacts drilling fluids being used
- basic types of drill fluid properties required to maintain drill hole stability and integrity
- common formation types encountered in surface directional drilling and how each affects penetration rate, steerability, hole stability and fluid loss
- indicators of changing ground conditions observable during drilling, including changes in penetration rate, thrust, rotation torque, fluid pressure, fluid return volume and the character of drill spoil, and what each indicates about conditions at the bottom hole assembly
- the consequences of inadequate hole cleaning

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Assessment Conditions

The assessment must:

- include access to:
    - personal protective equipment
    - equipment required to conduct surface directional drilling operations
    - workplace documentation such as, drill plans, site plans and procedures, manufacturer instructions and safety data sheets
- be conducted in a safe environment
- be assessed in the context of this sector's work environment
- 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
- 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.

*Guidance on simulated environments has been stipulated in the RII Companion Volume Implementation Guide.

Industry Experts

An industry expert engaged by an RTO to wholly or partially conduct assessment, independently or together with another assessor, or be involved in an assessment judgement, must also satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Assessors and industry experts delivering training in the drilling industry sector must also have a minimum of three (3) years industry experience, directly relevant to the training and assessment being provided.

Mandatory Workplace Requirements

Assessment of performance evidence may be in a workplace setting or an environment that accurately represents a real workplace.

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Unit Mapping Information

Previous Code and Title	Equivalence	Comments
RIINHB310D Conduct surface directional drilling	Equivalent	Updates to application, pre-requisite units, elements and performance criteria, performance and knowledge evidence, and assessment conditions

Links

Companion volumes, including implementation guides, are found on the national training register - https://training.gov.au/training/details/RII.

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