Australian Government

RIINHB308X Conduct wireline core drilling

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Release: 1

RIINHB308X Conduct wireline core 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 the skills and knowledge required to plan, prepare for and conduct wireline core drilling in the drilling sector of the resources and infrastructure industries. It includes inspecting and preparing wireline coring equipment, establishing the hole and circulation system, controlling drilling to achieve the core recovery and quality required by the drilling program, operating the wireline retrieval system, and completing post-drilling shutdown, maintenance, environmental and recordkeeping requirements.

This unit is appropriate for drillers working in operational roles, who conduct wireline core drilling under limited supervision and take responsibility for their own work outcomes.

Licensing/Regulatory Information

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

Pre-requisite unit(s)

No pre-requisite units

Competency field(s)

N/A

Unit sector(s)

N/A

Elements and Performance Criteria

1. Plan and prepare for wireline core drilling	1.1 Obtain, review and confirm the drilling program, hole design, core interval, core-recovery and quality requirements, work instructions, permits and services and required outcomes 1.2 Access and apply geological or geotechnical information, drill plans, rig specifications and workplace procedures

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	1.3 Identify, minimise and manage hazards and risks, including environmental for the drilling context, including surface or underground conditions and wireline operations 1.4 Confirm environmental controls, emergency procedures and exclusion zones according to site requirements 1.5 Select, inspect and wear personal protective equipment according to site requirements 1.6 Select equipment and consumables required by the drilling program and suited to the anticipated formation 1.7 Confirm drilling crew roles, competencies, responsibilities and communication requirements 1.8 Plan contingencies for changes in formation, hole stability, circulation, equipment performance, core quality, wireline retrieval and environmental conditions
2. Inspect and prepare wireline coring equipment	2.1 Complete pre-operational inspections of the drill rig, safeguards, rod-handling equipment, pumps and ancillary systems 2.2 Complete pre-operational inspections of the bottom hole assembly, drill string and wireline retrieval system 2.3 Assemble and function-check the inner-tube and backend assembly and wireline retrieval system using specified components, lubrication, adjustment and tightening requirements 2.4 Identify, tag, quarantine and report defective or unsuitable equipment according to workplace procedures 2.5 Position and secure rods, casing, inner tubes, overshots, tooling, core trays and consumables to support safe handling and sample integrity
3. Establish the hole and circulation system	3.1 Confirm the rig is positioned, stabilised and aligned with the specified collar location and drilling direction 3.2 Establish water supply and drilling-fluid system and monitoring systems 3.3 Prepare drilling fluid to specified properties and confirm available volume, quality and compatibility 3.4 Commence the hole using controlled parameters and verify alignment, then install, seal and confirm the stability of collar casing to suit the ground and drilling context 3.5 Monitor circulation, pressure, returns, drilling fluid properties, leakage and containment 3.6 Record initial hole, equipment, fluid and operating information

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4. Conduct and control wireline core drilling	4.1 Load and connect the core barrel and drill rods using specified handling, thread-care, make-up and torque requirements 4.2 Operate rod-handling and drilling equipment while maintaining exclusion zones, communication and line-of-fire controls 4.3 Select, monitor and adjust drilling parameters and outputs according to ground conditions and drilling performance 4.4 Maintain circulation, hole condition and drilling-fluid properties and prevent uncontrolled discharge, loss or contamination 4.5 Identify changing hole conditions, determine possible causes and respond, according to workplace procedures 4.6 Complete the planned core run using controlled procedures and confirm the core is retained and establish the specified safe retrieval state 4.7 Calculate and verify drilled depth, core-run interval and drill-string inventory
5. Operate wireline retrieval system	5.1 Assemble and maintain wireline overshot according to manufacturer and workplace requirements 5.2 Deploy and operate the overshot retrieval and dry release system to recover the inner-tube assembly while maintaining wireline control and core integrity 5.3 Select and use pump-in and dry-hole lowering devices appropriate to hole orientation, depth and fluid condition
6. Complete post-drilling operation processes	6.1 Complete planned hole, shift or task requirements and confirm the status of the hole, drill string, inner tube, core and equipment 6.2 Shut down, depressurise and isolate drilling, fluid and wireline equipment according to workplace procedures 6.3 Secure the hole according to site and workplace procedures 6.4 Clean and inspect bottom hole assembly, drill string and wireline retrieval system 6.5 Assess and maintain equipment within the scope of own role and according to workplace procedures 6.6 Identify, tag, quarantine and report defects according to workplace procedures 6.7 Manage fluids, cuttings, waste and spills and secure the work area according to environmental requirements 6.8 Complete drilling, core sample, survey, orientation, maintenance, defect, consumable, and shift and handover records 6.9 Communicate drilling progress, core-recovery outcomes, hole and equipment condition, restrictions and outstanding actions

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Assessment Requirements for RIINHB308X Conduct wireline core 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 wireline core drilling that meets the required drilling and retrieval outcomes on at least two separate occasions and in at least two different ground or formation conditions, including:
    - establishing and drilling the hole to the approved drilling program
    - controlling the drilling operation and drilling fluid system to achieve and maintain the core recovery required by the drilling program, keeping the hole clear and stable throughout each core run
    - retrieving the inner tube using the wireline system, including pump-in and dry-hole lowering deployment
    - completing drilling records for each hole drilled according to drilling program requirements

During the course of the above, the candidate must:

- apply the hole plan, drilling program, and workplace and site procedures
- complete supporting tasks according to the hole plan and workplace procedures, including:
    - conducting pre-operational inspections, assembling and function-checking the inner-tube and backend assembly, and maintaining equipment within scope of own role, including tagging, quarantining and reporting any defective or unsuitable component
    - using collar casing equipment and attachment techniques, mixing and applying collar sealants, and testing drilling fluid viscosity and specific gravity
    - preserving sample integrity during core handling and tray placement
    - shutting down, depressurising and isolating drilling, fluid and wireline equipment, securing the hole and work area on completion of drilling,
    - managing fluids, cuttings, waste and spills to meet site environmental requirements
- work effectively with others by communicating to receive and clarify work instructions, using a range of communication techniques and equipment, and complying with record keeping and reporting requirements

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:

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- workplace and site requirements and procedures for wireline core drilling, including:
    - work health and safety, including personal protective equipment, exclusion zones and line-of-fire controls
    - environmental requirements and controls for the drilling site
    - emergency response
    - drilling crew roles, responsibilities and communication methods
    - documentation used to plan drilling, including drilling programs, drill plans, rig specifications and geological or geotechnical information
- ground conditions and hole integrity, including:
    - how formation characteristics influence equipment selection, drilling parameters, core recovery and hole stability
    - indicators of changing hole conditions, their likely causes and appropriate responses
    - purpose of collar casing and sealing, and the consequences of inadequate collaring for hole stability and alignment
- drill string, bottom hole assembly and wireline coring equipment, including:
    - principles of thread care, make-up and torque, and the consequences of incorrect connections
    - methods for calculating drilled depth, core-run interval and drill-string inventory, and the consequences of calculation errors
    - function of coring components and how their condition affects drilling performance, core recovery and retrieval
- drilling fluids and circulation, including:
    - functions of drilling fluids and the reasons for maintaining specified properties, volume and compatibility
    - what changes in circulation, pressure, returns and fluid properties indicate about hole conditions
    - causes and consequences of uncontrolled discharge, fluid loss and contamination, and methods of prevention
- core recovery, core quality and downhole data, including:
    - factors that affect core recovery, core quality and sample integrity during drilling, retrieval and handling
    - purpose of retaining the core and establishing a safe retrieval state at the completion of a core run

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    - purpose of downhole surveys and core orientation, and the consequences of hole deviation
- wireline retrieval, including:
    - hazards associated with wireline operations, including line of fire, and their controls
    - principles of overshot latching and release, causes of retrieval failure, and inspection and maintenance requirements for the wireline retrieval system
    - factors that determine the selection of pump-in and dry-hole lowering devices
- shutdown, maintenance and reporting, including:
    - purpose and sequence of shutting down, depressurising and isolating equipment, and securing the hole
    - limits of equipment maintenance within the scope of own role, and the purpose of tagging, quarantining and reporting defective equipment
    - methods for managing fluids, cuttings, waste and spills, and securing the work area at the completion of drilling
    - purpose of accurate drilling, core, survey, maintenance and handover records, and the information required at handover

Assessment Conditions

The assessment must:

- include access to:
    - personal protective equipment
    - equipment required to conduct wireline core drilling
    - workplace documentation such as, drill plans, site plans and procedures, manufacturer instructions and safety data sheets
- 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.

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*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.

Unit Mapping Information

Previous Code and Title	Equivalence	Comments
RIINHB308D Conduct wireline core drilling	Equivalent	Updates to application, 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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