



Australian Government

Department of Education, Employment and Workplace Relations

RIINHB305A Conduct continuous flight auger drilling

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of continuous flight auger drilling in resources and infrastructure industries. It includes planning and preparing for conducting continuous flight auger drilling; operating continuous flight auger drills; maintaining equipment; and respond to problems.

Application of the Unit

Flight auger drilling is used in environmental, foundation, geotechnical, minerals exploration, seismic and waterwell drilling. This unit is appropriate for those working in driller roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</p>
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<p>1. Plan and prepare for conducting continuous flight auger drilling</p>	<p>1.1. Access, interpret and apply <i>compliance documentation</i> relevant to the work activity</p> <p>1.2. Obtain, confirm and apply <i>work instructions</i> for the allocated task</p> <p>1.3. Identify, manage and report all potential <i>hazards</i></p> <p>1.4. Resolve <i>coordination requirements</i> with others at the site prior to commencing and during work activities</p> <p>1.5. Take steps to protect the environment and record any environmental incidents</p>
<p>2. Operate continuous flight auger drill</p>	<p>2.1. Collar borehole, start hole, maintain hole alignment, take corrective action for deflections</p> <p>2.2. Make up appropriate drill string</p> <p>2.3. Handle additional augers, inserting them in the drill string</p> <p>2.4. Apply rotation, feed and holdback so that flights are substantially full for the soil being drilled at any given depth</p> <p>2.5. Interpret flow from the flights and other factors to determine conditions at the bit</p> <p>2.6. Describe and log, or record, description of the soils being excavated</p> <p>2.7. Make, break auger string and drive head connections safely</p> <p>2.8. Deploy and recover associated sampling equipment, obtain samples, bag, label and record samples</p> <p>2.9. Maintain a clear hole and a clear bottom and deploy tools for cleaning hole bottom at completed depth and/or prior to sampling tool deployment</p> <p>2.10. Interpret and/or calculate actual depth at any point during drilling, interpret depth of strata changes and identify fill depth in any bore</p> <p>2.11. Select appropriate strategies for recovery of dropped augers</p> <p>2.12. Recover drill string using winch and/or head/kelly and disassemble drill</p>

	<p>string</p> <p>2.13. Select bits for formation being drilled</p> <p>2.14. Select appropriate augering method for situation</p> <p>2.15. Maintain spoil removal from hole collar with appropriate safety protocols and constantly maintain safe working conditions</p> <p>2.16. Abandon, cover and/or secure bores to ensure safety of others and crew</p> <p>2.17. Communicate effectively with crew, clients and management</p> <p>2.18. Prepare and submit paperwork for daily activities including bore logs where appropriate</p> <p>2.19. Ensure appropriate <i>personal protective equipment</i> and work clothing for the task is worn</p>
3. Maintain equipment	<p>3.1. Monitor external wear in drill string, rotate string elements to ensure even wear</p> <p>3.2. Interchange drill bits and/or drill bit elements to maintain free cutting ability</p> <p>3.3. Check all string and <i>equipment</i> elements for wear and proper function</p> <p>3.4. Replace worn elements in string, bits and equipment and recycle 'out of specification' equipment for repair or redundancy</p> <p>3.5. Apply lubrication as appropriate</p> <p>3.6. Maintain good housekeeping on site and for equipment in storage</p> <p>3.7. Keep auger equipment clean</p>
4. Respond to problems	<p>4.1. Identify possible <i>operational problems</i> in equipment or process</p> <p>4.2. Identify symptoms of problems needing remedial action</p> <p>4.3. Determine possible fault causes</p> <p>4.4. Rectify problem using appropriate solution within area of responsibility</p> <p>4.5. Follow through items initiated until final resolution has occurred</p> <p>4.6. Report problems outside area of responsibility to designated person</p>

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct continuous flight auger drilling:

- apply legislative, organisation and site requirements and procedures for conducting of continuous flight auger drilling
- apply occupational health and safety requirement and procedures
- interpret geological maps, bore logs, diagrams, plans and instructions used for recording and prediction
- apply procedure to operate the rig carrier to position and move between holes
- apply rig stabilisation and levelling procedures
- identify components in various auger techniques and sizes
- apply equipment assembly, inspection and servicing procedures
- apply rig operating functions and controls with safety
- apply grout mixing techniques and placement methods
- apply test hole grouting and abandonment requirements and procedures
- apply water levels recording requirements
- use a calculator to calculate hole volume
- apply mechanical and manual handling safety procedures
- apply pressure cleaning devices procedures to decontaminate augers and equipment
- apply 'wireline' deployment and recovery techniques for sampling equipment
- apply, record and report on standard penetration test method
- apply deployment and recovery procedures of drilling and sampling systems using hollow augers as casing and recovery techniques for hollow auger inner rods and plug bits
- use tape measures
- apply conversion between metric and imperial units
- calculate using addition, subtraction, multiplication and division

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct continuous flight auger drilling:

- OHS responsibilities
- site hazards identification, assessment and control measures requirements and procedures
- environmental protection measures and aspects

- equipment and spares identification and characteristics
- equipment technical capabilities, system limitations, gauge readings and their interpretation
- soil sampling techniques, deployment methods and record keeping
- operational maintenance procedures for rig and equipment including pre-start checks
- basic geological formations likely to be encountered and their properties
- use of water, mud and foam injection for jet auger drilling

Evidence Guide

<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<p>Overview of assessment</p>	
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:</p> <ul style="list-style-type: none"> • knowledge of the requirements, procedures and instructions for conducting of continuous flight auger drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of continuous flight auger drilling • working with others to undertake and complete the continuous flight auger drilling tasks that meets all of the required outcomes • consistent timely completion of continuous flight auger drilling tasks that safely, effectively and efficiently meets the required outcomes
<p>Context of and specific resources for assessment</p>	<ul style="list-style-type: none"> • This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

	<p>English speaking background may have second language issues.</p> <ul style="list-style-type: none"> • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	<p>This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:</p> <ul style="list-style-type: none"> • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • working with others to undertake and complete continuous flight auger drilling tasks
Guidance information for assessment	<p>Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.</p>

Range Statement

<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p>Relevant compliance documentation may include:</p>	<ul style="list-style-type: none"> • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
<p>Work instructions may come from:</p>	<ul style="list-style-type: none"> • briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include: <ul style="list-style-type: none"> • nature and scope of tasks • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
<p>Coordination requirements may include</p>	<ul style="list-style-type: none"> • drill team • other equipment operators • maintenance personnel • supervisors • worksite personnel

<p>Hazards may include:</p>	<ul style="list-style-type: none"> • release of gases from formation or samples obtained • spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling and recovery of the samples • working in proximity to drilling rig • use of high pressure air for drilling operations • entanglement in rotating pipes • string makeup and breakout hazards • drilling equipment and down-hole tools will depend on the air drilling method being used
<p>Personal protective equipment includes:</p>	<ul style="list-style-type: none"> • steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
<p>Equipment includes:</p>	<ul style="list-style-type: none"> • solid flight augers including hex coupled augers, hex pins, D clips, screw taper thread (jet augers) and thread lube • hollow flight augers including overshot deployment of sampling tools, various manufacturer's tooling, taper screw threads and dog coupled reversible hollow augers, older hollow auger systems using parallel wall threads and plug bits deployed on inner rods • sampling systems including SPT hammers and split spoons • auger recovery tools, auger retaining plate, lifting sockets and hoisting plugs • O rings and flush hole plug spares for dog couples reversible hollow augers, circlip pliers
<p>Operational problems may include:</p>	<ul style="list-style-type: none"> • straighten holes and starting straight holes • encountering excessive water • sand blowback with hollow augers in wet unconsolidated formations • cork screwing effect when hold back not set properly • rotating too fast so that flights are not properly filled • cross contamination of samples when using solid flight augers • balancing bit cutting action with hole clearing action

	<ul style="list-style-type: none">• recovering samples in wet conditions• OHS issues relating to rotating plant including catching long hair, loose clothing, finger injuries, safety with lifting and carrying
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Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.