



Australian Government

Department of Education, Employment and Workplace Relations

RIINHB324A Conduct grouting or cementing operations

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers conducting grouting or cementing operations in the drilling industry. It includes: planning and preparing for the process; performing measurement and calculations; conducting the grouting or cementing of hole; respond to problems; and managing cleaning of all equipment at completion of operations.

Application of the Unit

This unit is appropriate for those working in drillers roles, at worksites within:

- Drilling

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

Elements describe the essential outcomes of a unit of competency.	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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the grouting or cementing process	1.1. Access, interpret and apply <i>compliance documentation</i> relevant to drilling industry <i>grouting and cementing</i> operations 1.2. Obtain, confirm and apply <i>work instructions</i> for the allocated task 1.3. Identify, manage and report all potential <i>hazards</i> 1.4. Resolve <i>coordination requirements</i> with others at the site prior to commencing and during work during the grouting or cementing process 1.5. Obtain and use appropriate <i>personal protective equipment</i> for grouting or cementing operations as listed in the work instructions or materials safety data sheets (MSDS) 1.6. Ensure adequate material and equipment is available to complete the task successfully 1.7. Select the appropriate grouting or cementing procedure to suite the application
2. Perform measurement and calculations	2.1. Read tape measure accurately to carry out measurements of tank capacities, casing or rod lengths as required 2.2. Record or complete tally sheets for number of lengths of casing placed in the hole as required 2.3. Carry out <i>calculations and measurements</i> 2.4. Record legibly on all reports
3. Conduct grouting or cementing of hole	3.1. Manage mixing grout and any additives as per standard procedures 3.2. Ensure that materials safety data sheets (MSDS) requirements for all materials used are followed 3.3. Conduct grouting or cementing of hole using appropriate equipment and techniques 3.4. Place grout or cement using appropriate techniques 3.5. Monitor process to ensure consistency and accuracy of placed grout or cement

	<p>3.6. Construct well head, hole identification and install hole security devices if required</p> <p>3.7. Dispose of any excess grout or cement according to site waste management procedures</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>
5. Manage cleaning of all equipment at completion of grouting or cementing operations	<p>5.1. Ensure there is no spillage of grout, cement or additives to minimise any associated safety hazards</p> <p>5.2. Ensure cleaning equipment is used safely and effectively</p> <p>5.3. Give approved instructions and occupational health and safety requirements on the use of hazardous chemicals for cleaning</p> <p>5.4. Ensure that all <i>cleaning equipment</i> is kept in good working condition</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 grouting or cementing operations in the drilling industry:

- apply legislative, organisation and site requirements and procedures
- apply communication procedures
- use mixing equipment
- measure tank dimensions and calculate volumes
- calculate specific gravity of mixtures and hydrostatic pressures including pressure differences between annulus and inside of casing
- record casing lengths and quantities accurately

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 grouting or cementing operations in the drilling industry:

- site and equipment safety requirements
- possible effects of grout, cement or cement additives on health
- environmental requirements and procedures
- team roles and objectives during the grouting or cementing operations
- properties of grout, cement or cement additives
- safe work procedure for the grouting or cementing process

Evidence Guide

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.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<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 grouting or cementing operations in the drilling industry • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of grouting or cementing operations in the drilling industry • working with others to undertake and complete the grouting or cementing operations that meet all of the required outcomes • consistent timely completion of grouting or cementing operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	<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 English speaking background may have second

	<p>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 grouting or cementing operations in the drilling industry
Guidance information for assessment	<p>Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.</p>

Range Statement

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.

Relevant compliance documentation may include:	<ul style="list-style-type: none"> • legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity, Disability Discrimination legislation
Grouting or cementing application may include:	<ul style="list-style-type: none"> • securing casing for a production bore (gas, water or hydrothermal) • stabilising walls of drill hole • installing surface casing or standpipe • hole abandonment procedures • blocking sections of the hole
Grouting or cementing techniques may include:	<ul style="list-style-type: none"> • pressure grouting or cementing • tremie method of placement • placing grout or cement using in socks or sausages • pouring grout or cement down hole
Work instructions may come from:	<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 • lighting conditions • plant or equipment defects • hazards and potential hazards

	<ul style="list-style-type: none"> • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	<ul style="list-style-type: none"> • spread of contaminants as a result of the grouting or cementing process or cleaning processes • working in proximity to drilling rig • string makeup and breakout hazards • hazardous chemicals
Coordination requirements may include:	<ul style="list-style-type: none"> • driller's assistants • other equipment operators • supervisors • mine or client personnel
Personal protective equipment includes:	<ul style="list-style-type: none"> • steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Calculations and measurements may include:	<ul style="list-style-type: none"> • diameters casing, hole • casing volumes • casing quantities and length • hole volumes • tank volumes • annular volumes • component volumes for grouting or cementing • hydrostatic pressures • specific gravity of grout or cement
Operational problems may include:	<ul style="list-style-type: none"> • loss of grout or cement through walls of hole • casing fracturing or collapsing due to differential hydrostatic pressures • air locks or voids in grout or cement • grout or cement setting too fast • heat damaging casing • grout or cement not setting or being washed away
Cleaning equipment may include:	<ul style="list-style-type: none"> • pressure cleaning • chemical cleaning • manual cleaning • abrasive mechanical cleaning

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.