



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **RIIOGF302A Operate drilling fluids and mud pits**

**Release: 1**

## RIIOGF302A Operate drilling fluids and mud pits

### Modification History

Not applicable.

### Unit Descriptor

This unit covers the operating of drilling fluids and mud pits in the drilling industry. It includes planning and preparing for operations; operating mud pits; operate, maintaining and repairing mud conditioning equipment; and monitoring mud.

### Application of the Unit

This unit is appropriate for those working in offshore derrickman roles or as 'mud specialists' working on larger, more complex operations, 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.
---	--

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply <b>compliance documentation</b> relevant to the work activity 1.2. Obtain, confirm and apply <b>work instructions</b> for the allocated task 1.3. Identify, manage and report all potential <b>hazards</b> 1.4. Resolve <b>coordination requirements</b> with others at the site prior to commencing and during work activities 1.5. Confirm availability and status of necessary permits to work in accordance requirements 1.6. Confirm availability of necessary third party utilities in accordance requirements
2. Operate mud pits	2.1. Give safety the highest priority during the operation and entry of mud pits 2.2. Align valves in pits to ensure correct pit usage as directed 2.3. Double check plugs for operation 2.4. Seal or secure tanks to prevent accidental entry 2.5. Set high and low <b>alarms</b> where applicable 2.6. Operate mud pit room ventilation system as required 2.7. Operate hoppers in accordance with procedures 2.8. Operate dust extraction system during mixing, if applicable 2.9. Check safety showers and eye washes are accessible and operational 2.10. Supervise forklifts operations 2.11. Store chemicals in appropriate storage area 2.12. Read, interpret and place materials safety data sheet (MSDS) in an accessible place
3. Operate, maintain and repair mud conditioning equipment	3.1. Engage and/or adjust appropriate <b>equipment</b> as directed by supervisors or mud engineer 3.2. Clean all equipment and visually inspect

	<p>for leaks, proper operation, in accordance specifications</p> <p>3.3. Identify faults or potential faults and report immediately</p> <p>3.4. Perform periodic or scheduled preventative maintenance on all mud treatment units in accordance with specifications</p>
4. Monitor mud	<p>4.1. Monitor and <b>record</b> mud properties and parameters</p> <p>4.2. Set alarms to monitor mud</p> <p>4.3. Check viscosity and weight of mud conform to specifications as directed by mud engineer</p> <p>4.4. Maintain appropriate volumes and types of drilling fluids as required by well program or company</p> <p>4.5. Use appropriate mixing procedures to obtain desired properties</p> <p>4.6. Apply proper safety procedures and equipment for mixing and handling of chemicals</p> <p>4.7. <b>Recognise warning signs of a kick</b> and report immediately</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 operate drilling fluids and mud pits:

- apply legislative, organisation and site requirements and procedures
- recognise and report equipment malfunction or failure
- supervise and train subordinates to provided standards
- work as directed by driller and assistant driller
- operate equipment in accordance with good oilfield practice and company policy
- align valves in pits for operability and safety
- operate and service mud treatment equipment
- perform periodic or scheduled preventative maintenance on mud condition equipment
- replace screens and cones on shakers and desilters/desanders
- operate and service transfer valve
- weigh mud and perform viscosity checks
- maintain volumes and types of drilling fluids as required
- use correct mixing procedures to ensure required properties in drilling fluid
- use correct safety procedures and equipment for mixing and handling chemicals in accordance with manufacturer's data sheet
- regularly monitor pit levels, mud properties and cuttings size
- perform numerical calculations including:
  - mud viscosity
  - mud weight
  - volume
  - uphole velocity
  - quantities
  - pressure
  - water loss

### 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 operate drilling fluids and mud pits:

- legislative and organisations safety guidelines, procedures and practices drilling operation procedures

- safe operating procedures when operating equipment
- functions of the mud pits
- warning signs of kicks
- troubleshooting techniques

## 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.

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<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"> <li>• knowledge of the requirements, procedures and instructions for operating of drilling fluids and mud pits</li> <li>• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the operation of drilling fluids and mud pits</li> <li>• working with others to undertake the operation of drilling fluids and mud pits that meets all of the required outcomes</li> <li>• consistent timely operating of drilling fluids and mud pits that safely, effectively and efficiently meets the required outcomes</li> </ul>
<b>Context of and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.</li> <li>• Aboriginal people and other people from a non English speaking background may have second</li> </ul>

	<p>language issues.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Where applicable, physical resources should include equipment modified for people with disabilities.</li> <li>• Access must be provided to appropriate learning and/or assessment support when required.</li> </ul>
<b>Method of assessment</b>	<p>This unit maybe assessed in a holistic way with other units of competency. The assessment strategy for the assessment of this unit must include more than one of the following assessment methods:</p> <ul style="list-style-type: none"> <li>• written and/or oral assessment of the candidate's required knowledge</li> <li>• observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> <li>• implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes</li> <li>• consistently achieving the required outcomes</li> </ul> </li> <li>• first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> <li>• working with others to undertake and complete the operating of drilling fluids and mud pits</li> </ul> </li> </ul>
<b>Guidance information for assessment</b>	<p>Consult the SkillsDMC Implementation 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.

<p><b>Relevant compliance documentation</b> may include:</p>	<ul style="list-style-type: none"> <li>• legislative, organisational and site requirements and procedures</li> <li>• manufacturer's guidelines and specifications</li> <li>• Australian standards</li> <li>• code of practice</li> <li>• Employment and workplace relations legislation</li> <li>• Equal Employment Opportunity and Disability Discrimination legislation</li> </ul>
<p><b>Work instructions</b> may be from briefings or handover details that may include:</p>	<ul style="list-style-type: none"> <li>• safety briefing/induction</li> <li>• pre-tour safety meeting</li> <li>• weekly safety meetings</li> <li>• Job Safety Analysis (JSA)</li> <li>• agreed procedures may include:</li> <li>• company</li> <li>• facility</li> <li>• client</li> <li>• toolbox</li> <li>• permit to work</li> </ul>
<p><b>Work instructions</b> may include:</p>	<ul style="list-style-type: none"> <li>• individual operation</li> <li>• team operation</li> <li>• use of personal protective equipment</li> <li>• consideration of toxic substances</li> <li>• continuous communication maintained</li> <li>• reacting to on-site emergencies</li> <li>• safety equipment, including: <ul style="list-style-type: none"> <li>• fire protection</li> <li>• First Aid</li> <li>• survival</li> </ul> </li> <li>• personal protective equipment, which may include <ul style="list-style-type: none"> <li>• eye protection</li> <li>• hearing protection</li> <li>• gloves</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• footwear</li> <li>• hard hats</li> <li>• respirators</li> <li>• aprons</li> <li>• rubber boots</li> <li>• full face visors</li> <li>• rubber gloves</li> </ul>
<b>Hazards</b> may include:	<ul style="list-style-type: none"> <li>• blow out gas to surface</li> <li>• ignition of gas</li> <li>• toxic gases</li> <li>• pressurised coal seam gas system</li> </ul>
<b>Coordination requirements</b> may include:	<ul style="list-style-type: none"> <li>• drill team</li> <li>• operators of other equipment</li> <li>• maintenance personnel</li> <li>• supervisors</li> <li>• worksite personnel</li> </ul>
<b>Alarm</b> systems may include:	<ul style="list-style-type: none"> <li>• gas</li> <li>• fire</li> <li>• high and low alarm</li> <li>• mud density alarm</li> <li>• low/high pressure</li> </ul>
<b>Equipment</b> may include:	<ul style="list-style-type: none"> <li>• shaker</li> <li>• degasser</li> <li>• desilter</li> <li>• desander</li> <li>• mud cleaner</li> <li>• agitators</li> </ul>
<b>Recording</b> requirements can include:	<ul style="list-style-type: none"> <li>• shaker screens</li> <li>• mud properties</li> <li>• volume of liquid mud</li> <li>• size of cuttings</li> <li>• pit level</li> <li>• service and maintenance</li> <li>• replacement parts</li> <li>• chemical stocks</li> </ul>
<b>Recognised warning signs of a kick</b> are:	<ul style="list-style-type: none"> <li>• pit level change</li> <li>• mud property change</li> <li>• volume of mud change</li> <li>• size of cuttings change</li> <li>• pump pressure</li> </ul>

## **Unit Sector(s)**

Drilling (Oil and Gas)

## **Competency field**

Refer to Unit Sector(s).

## **Co-requisite units**

Not applicable.