



Australian Government

Department of Education, Employment and Workplace Relations

RIIOGN303A Operate mud systems

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the operating of mud systems in the drilling industry. It includes planning and preparing for operations; operating mud system; operating, maintaining and repairing mud conditioning equipment; operating and servicing transfer (butterfly) valves in mud pits; and recognising warning signs of kicks.

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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply compliance documentation relevant to the work activity 1.2. Obtain, confirm and apply work instructions for the allocated task 1.3. Identify, manage and report all potential hazards 1.4. Resolve coordination requirements 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 with requirements 1.6. Confirm availability of necessary third party utilities in accordance with requirements
2. Operate mud system	2.1. Ensure compliance with good oilfield practice and company policy when operating equipment 2.2. Align valves in pits to ensure correct pit usage as directed
3. Operate, maintain and repair mud conditioning equipment	3.1. Engage and/or adjust appropriate equipment as directed by supervisors or mud engineer 3.2. Clean all equipment and visually inspect for leaks and proper operation, in accordance with specifications 3.3. Identify faults or potential faults and reported immediately 3.4. Identify, record and report requirement for repair or maintenance of mud conditioning equipment 3.5. Replace screens or cones as necessary, on shakers, desilters, desanders in accordance with specifications 3.6. Perform periodic or scheduled preventative maintenance on all mud treatment units in accordance with specifications
4. Operate and service transfer (butterfly) valves in mud pits	4.1. Align valves as appropriate 4.2. Lubricate valve stems of butterfly valves as appropriate

	4.3.Clean and inspect transfer valves when pits are empty 4.4.Replace or repair defective parts as necessary
5. Recognise warning signs of kicks	5.1.Monitor, adjust and report pit level 5.2.Monitor and report mud properties 5.3.Monitor and report size of cuttings 5.4.Monitor and report volume of mud returns

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 mud systems:

- 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 timely and efficiently
- operate equipment in accordance with good oilfield practice and company policy
- align valves in pits to ensure correct pit usage
- operate mud condition equipment, including shakers, degasser, desilter, desander, mud cleaner and agitators
- perform periodic or scheduled preventative maintenance on mud condition equipment
- replace screens and cones on shakers and desilters/desanders
- operate and service transfer valve
- weight mud for viscosity check
- 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
- numerical calculations including:
 - viscosity
 - mud weight
 - volume
 - up hole velocity
 - quantities
 - pressure

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 mud systems:

- drilling operation
- functions of the mud pits
- warning signs of kicks and indicators
- company and statutory safety guidelines, procedures and practices

- safe operating procedures when operating equipment
- AOA policy procedure and practices
- rig maintenance
- normal drilling operations
- non-routine drilling operations
- man management/rig management

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	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: • knowledge of the requirements, procedures and instructions for operating of mud systems • implementation of requirements, procedures and techniques for the safe, effective and efficient operating of mud systems • working with others to undertake the operating of mud systems that meets all of the required outcomes • consistent timely operating of mud systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• 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 language issues.

	• 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	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: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • 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: • working with others to undertake and complete the operating of mud systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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:	• 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
Work instructions may be in briefings, handover, pre-tour safety meeting and may include:	• review of operational requirements • pumping equipment maintenance and inspection requirements • fluid system to pumps maintenance requirements • PTW review requirements • review of relative Job Safety Analysis (JSA) • solids control equipment maintenance and operation requirements
Hazards may include:	• blow out gas to surface • ignition of gas • toxic gases • pressurised coal seam gas system
Coordination requirements may include:	• drill team • operators of other equipment • maintenance personnel • supervisors • worksite personnel
Equipment may include:	• shaker • degasser • desilter • desander • mud cleaner • agitators
Recording requirements may	• mud test recording

include:	• pit level • service and maintenance • replacement parts
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Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.