



Australian Government

Department of Education, Employment and Workplace Relations

RIIOGD203A Prepare and operate drilling fluid systems

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation and operation of drilling fluid systems in the drilling industry. It includes planning and preparing for operations, establishing operational requirements, selecting and testing equipment, preparing drilling fluids, pumping drilling fluids, and operating the hopper system. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role 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. Conform to safe working practices and current legislative and operational requirements 1.5. Resolve coordination requirements with others at the site prior to commencing and during work activities 1.6. Obtain personal protective equipment 1.7. Assess geographic layout of the active, reserve and slug pits under work instruction 1.8. Assess operation of mud mixers, dump valves and equalising valves under work instruction 1.9. Identify and locate mud pump and discharge system
2. Establish operational requirements	2.1. Clarify difficulties in carrying out the instructions with the relevant personnel 2.2. Confirm availability and status of necessary permits to work in accordance with operational and legislative requirements 2.3. Confirm availability of necessary third party utilities in accordance with operational requirements 2.4. Confirm availability of required quantities and type of consumables against operational requirements 2.5. Identify errors, omissions and shortages and take appropriate remedial action within functional responsibility
3. Select and test equipment	3.1. Identify and select equipment appropriate for the work to be performed and conforming to operational requirements 3.2. Confirm equipment is functional and fit for the purpose and the environment in which it

	will be used 3.3. Identify defects in the equipment and take appropriate remedial action within functional responsibility
4. Prepare drilling fluids	4.1. Confirm availability of sufficient quantities and types of fluids against operational requirements 4.2. Confirm tanks and mixing equipment are clean and free from contamination in accordance with instructions 4.3. Mix and treat fluids in accordance with the specification 4.4. Obtain, correctly label and store samples according to operational requirements 4.5. Identify defects in the equipment and take appropriate remedial action within functional responsibility
5. Pump drilling fluids	5.1. Confirm recording and monitoring devices are preset to required parameters 5.2. Operate equipment in accordance with operational requirements 5.3. Identify faults and defects accurately and take appropriate remedial action within functional responsibility 5.4. Assist with obtaining samples, weigh, measure viscosity and record details as per instructions 5.5. Operate pipe in the derrick manually and under supervision 5.6. Grease crown block and identify hanging sheaves 5.7. Record data accurately at appropriate times and frequencies in accordance with operational requirements
6. Operate hopper system	6.1. Recognise operation of the hopper system 6.2. Operate and maintain hopper system and associated components in accordance with company and manufacturer's requirements 6.3. Measure and log mud properties correctly 6.4. Recognise, record and report changes in returns of drilling fluid and pit volumes

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 of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to prepare and operate drilling fluid systems:

- apply legislative, organisation and site requirements and procedures for preparation and operation of drilling fluid systems
- maintain and operate mud mixers, dump valves and equalising valves in the mud pits system
- safely add mud materials to the mud systems under the mud engineer's instructions
- operate and maintain all the mud treatment units
- accurately take mud properties readings and legibly record them
- interpret and act on additional flow in the mud returns or an increase in mud pit volume
- operate pipe in derrick as directed either manually or using hydraulic racking system where fitted
- assess need and action greasing of crown block and hanging sheaves

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to prepare and operate drilling fluid systems:

- occupational health and safety obligations
- company and statutory guidelines, procedures and practices
- chemical handling procedures
- operating principles of the systems, equipment and their relationship to other plant
- fluid types and composition
- rig safety and emergency procedures
- safe operating procedures when operating equipment
- layout of mud circulating, mixing and suction systems
- geography of active, reserve and slug pits
- layout of shaker, degasser and settling pits, and sand traps
- materials safety data sheets (MSDS)
- rig maintenance
- 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 preparing and operating drilling fluid systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of preparation and operation of drilling fluid systems • working with others to undertake and complete the preparation and operation of drilling fluid systems that meets all of the required outcomes • consistent timely completion of preparation and operation of drilling fluid 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. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • 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. • 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. • 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 • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the preparation and operation of drilling fluid 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, organisation and site requirements and procedures including: • protective clothing • safe use of hazardous chemicals • (PSLA) Petroleum Submerged Lands Act (where relevant) • duty of care • petroleum regulations • 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 come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• pre-tour meeting • safety meeting • use of hazardous chemicals • safety briefing/induction • weekly safety meetings • Job Safety Analysis (JSA) • toolbox • permit to work • communication through a range of channels including: • 2-way radio • hand signals • Telephone • public address system • written work instructions • geographic layout of the active, reserve and slug pits • operation of mud mixers, dump valves and equalising valves • mud pump and discharge system

	• reading and interpreting mud materials safety data sheets (MSDS) • layout of shaker pits, degasser pit, settling pit and sand trap
Hazards may include:	• working in proximity to drilling rig • working in different conditions including: • wind • rain • snow • dust • hot and cold • calm to severe weather conditions • 24 hour operation
Safe working practices may include:	• use of personal protective equipment • consideration of toxic substances (e.g. H₂S) • continuous communication maintained • reacting to on-site emergencies • dealing with contamination
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Remedial action taken to deal with errors, omissions and shortages may include:	• report • record • adjust • repair • isolate
Equipment may include:	• pumps • lines • hoppers • manifolds • shale shakers • degaser • centrifugers • desanders/desilters
Fluids may include:	• Fluid systems including: • mixing • transfer • bulk • circulating

Mix may include:	• Fluid mix specifications including: • volume • density • viscosity • mud properties
Parameters may include:	• flow rate • pressure • density

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.