



Australian Government

Department of Education, Employment and Workplace Relations

RIIOGN302A Operate mud pumps

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of mud pumps in the drilling industry. It includes planning and preparing for operation, monitoring mud pumps, and maintaining and repairing mud pumps. 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 operational 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. Confirm availability of necessary third party utilities in accordance with operational requirements
2. Monitor mud pumps	2.1. Visually inspect and listen to mud pumps for abnormal sounds or noise 2.2. Check piston lubricating system 2.3. Check pop-off valve setting 2.4. Check pressure of suction and discharge dampeners 2.5. Charge discharge dampener with nitrogen, as required
3. Maintain and repair mud pumps	3.1. Check pony rod clamp when pump is turned off 3.2. Lubricate gear end of pump and check oil levels in gear end of pump 3.3. Identify faults or potential faults and report immediately 3.4. Identify, record and/or report requirement for repair or maintenance of mud pumps 3.5. Replace defective swabs, liner, valves, seats and wear plates of the fluid end of pump 3.6. Ready replacement parts for fluid end of pump 3.7. Check liners and swabs for correctness

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 operate mud pumps:

- apply legislative, organisation and site requirements and procedures for operation of mud pumps
- recognise and report equipment malfunction or failure
- supervise and train subordinates to provided standards
- work as directed by driller timely and efficiently
- check pumps visually and aurally
- check piston lubrication system
- set pop-off valve
- check pressure of suction and discharge dampeners
- charge discharge damper with nitrogen
- check pony rod clamp
- lubricate and check oil levels in gear end of pump
- replace swabs, liners, valves, seats and wear plates of fluid end of pump
- prepare replacement parts for fluid end
- ensure correct liners and swabs are in use
- align correctly mud pump discharge valves
- read:
 - job instructions
 - manufacturer's instructions

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 operate mud pumps:

- mud pumps
- company and statutory safety guidelines, procedures and practices
- emergency signals and procedures
- safe operating procedures when operating equipment
- rig maintenance
- normal drilling operations
- non-routine drilling operations

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 operation of mud pumps • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of mud pumps • working with others to undertake and complete the operation of mud pumps that meets all of the required outcomes • consistent timely operation of mud pumps 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. • 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

	<p>cultural diversity.</p> <ul style="list-style-type: none"> • 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. • 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 • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • working with others to undertake and complete the operation of mud pumps
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 including: <ul style="list-style-type: none"> • occupational health and safety • duty of care • environmental • petroleum regulations • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • permits
<p>Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:</p>	<ul style="list-style-type: none"> • review of operational requirements • maintenance and inspection of pumping equipment • maintain fluid system to pumps • review PTW requirements • pre-tour safety meeting • review of relative Job Safety Analysis (JSA) • communication through a range of channels including: <ul style="list-style-type: none"> • 2-way radio • intercom • telephone • written instruction • oral instruction • hand signals
<p>Hazards may include:</p>	<ul style="list-style-type: none"> • working in proximity to drilling rig • working in a variety of conditions including: <ul style="list-style-type: none"> • day/night • storms and lightning • hot/cold

	<ul style="list-style-type: none"> wet/dry (dusty)
Coordination requirements may include:	<ul style="list-style-type: none"> other equipment operators maintenance personnel supervisors site personnel
Record may include:	<ul style="list-style-type: none"> service and maintenance replacement and parts pump operating logs

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.