



Australian Government

Department of Education, Employment and Workplace Relations

RIIOGD301A Conduct and maintain derrick operations

Release: 1

RIIOGD301A Conduct and maintain derrick operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct and maintenance of derrick operations in the drilling industry. It includes planning and preparing for derrick operations, handling tubulars and equipment, inspecting and performing routine maintenance of derrick and connected equipment, preparing for and drilling surface holes, participating in head-up and pressure tests, drilling main holes, preparing to commence drilling operations, assisting in running and cementing casings, assisting driller on drill floor, and shutting down rig and rig out. 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.
---	--

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for derrick 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. Clarify difficulties in carrying out the instructions with the relevant personnel 1.4. Identify, manage and report all potential hazards 1.5. Resolve coordination requirements with others at the site prior to commencing and during work activities and ensure briefings/handover details are read/passed on 1.6. Confirm availability and status of necessary permits to work 1.7. Confirm availability of necessary third party utilities in accordance with operational requirements 1.8. Confirm availability of required quantities and type of consumables against operational requirements 1.9. Identify errors, omissions and shortages and take appropriate remedial action within functional responsibility 1.10. Inform driller of current operating conditions
2. Handle tubulars and equipment	2.1. Position tubulars and equipment according to operational requirements 2.2. Assist in making and breaking connections where appropriate 2.3. Identify faults and defects accurately and take appropriate remedial action within functional responsibility 2.4. Handle equipment using safe lifting and handling techniques
3. Inspect and perform routine maintenance of derrick and connected equipment	3.1. Inspect safety lines, ropes, air hoists, monkey board, sheaves, crown block, derrick bolts, pins and welds, and all other lines and equipment in or attached to the derrick 3.2. Lubricate air hoists, sheaves, crown block

	fast line guide 3.3. Replace defective parts and effect minor repairs 3.4. Perform jobs or tasks such as hanging back of travelling block, replacement of sheaves, as required 3.5. Complete pre-raise and pre-circulation checks in accordance with statutory and company procedures
4. Prepare for and drill surface hole	4.1. Establish circulation 4.2. Perform pre-spud safety checks 4.3. Check all connections and valves to floor are in proper position 4.4. Maintain drilling fluid volume and properties 4.5. Inform driller of current operating conditions 4.6. Maintain inventory of circulation system/parts 4.7. Check and record mud additives 4.8. Check availability of derrick casing equipment 4.9. Follow all operators' instructions
5. Participate in head-up and pressure test	5.1. preparations for necessary equipment changes 5.2. Prepare drilling fluid 5.3. Assist in nipping-up 5.4. Assist driller in BOP testing
6. Drill main hole	6.1. Consult driller and mud engineer's program, if available, and follow instructions 6.2. Maintain housekeeping and safe practices during drilling 6.3. Assist in completion or abandonment of well as required 6.4. Convert between metric and imperial 6.5. Record reading of depth, direction and azimuth accurately and legibly
7. Prepare to commence drilling operations	7.1. Align equipment on active systems for drilling 7.2. Turn on and check all appropriate machinery

	7.3. Watch for returns if riser installed 7.4. Measure and log pit levels regularly
8. Assist in running and cementing of casing.	8.1. Follow instructions when running casing 8.2. Align valves and fluid system for casing fill-up line 8.3. Rig up, function test, lubricate and operate casing stabbing board 8.4. Attach and secure safety lines to all circulating lines 8.5. Circulate fluid in accordance with instructions 8.6. Mix chemicals for cementers and align pumps to cementing unit 8.7. Weigh cement as it is being mixed 8.8. Align fluid system for displacement of cement 8.9. Monitor returns and pits to assess circulation and returns
9. Assist Driller on drill floor	9.1. Assist in handling and nipping-up of BOP stack 9.2. Carry out role of assistant to driller when on drill floor in accordance with site instructions
10. Shutdown rig and rig out	10.1. Wash and drain circulation system 10.2. Repair equipment in accordance with company and manufacturer's instructions 10.3. Store equipment safely and in accordance with company procedures

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 conduct and maintain derrick operations:

- apply legislative, organisation and site requirements and procedures for conducting and maintaining derrick operations
- interpret and apply occupational health and safety requirements and procedures
- accept constructive criticism
- apply numeracy skills to calculate:
 - fractions, decimals, percentages
 - volume
 - quantities
 - weight
 - length
 - density/specific gravity
 - temperature
 - ph
 - basic geometry, e.g. interpreting depth, direction and azimuth and dip of hole
- developed written and verbal communications skills, including use of:
 - 2-way radio
 - intercom
 - telephone
 - written instruction
 - oral instruction
 - hand signals
 - telephone
 - public address system
- prepare and complete understandable reports
- communicate tactfully with mud engineer and operator's representative and inform driller of problems if they arise

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 conduct and maintain derrick operations:

- recognise and report equipment malfunction or failure
- supervise and train subordinates to provided standards
- work as directed by driller timely and efficiently
- conduct routine maintenance of derrick
- prepare for drilling operations
- prepare for the tripping of tubulars
- assist in running and cementing of casing
- assist driller in handling and nipple up of bop stack
- act as assistant to driller on drill floor
- keep circulation system clean and operating well
- look after equipment and dispose of waste properly
- follow instructions conscientiously
- be aware of position of crew members on floor during handling of drillstem
- safe operating procedures when operating equipment
- conversion between metric and imperial
- 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 conducting and maintaining derrick operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of derrick operations and maintenance • working with others to undertake and complete the conduct and maintenance of derrick operations that meets all of the required outcomes • consistent timely completion of derrick operations and maintenance 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. • 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 conduct and maintenance of derrick operations
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
- safe working practices
- manufacturer's guidelines and specifications
- Australian standards
- code of practice
- Employment and workplace relations legislation
- Equal Employment Opportunity and Disability Discrimination legislation
- Petroleum Submerged Lands Act (PSLA)
- petroleum regulations

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:

- nature and scope of tasks
- specifications
- quality of finished works
- achieved targets
- operational conditions
- obtaining of required permits
- site layout
- out of bounds areas
- worksite inspection requirements
- lighting conditions
- plant of equipment defects
- coordination requirements or issues
- contamination control requirements
- environmental control requirements
- barricade and signage requirements
- job instructions
- technical information
- mud engineer's program
- manufacturer's instructions
- Job Safety Analysis (JSA)
- training materials
- consideration of substances
- continuous communication

	• reacting to on-site emergencies
Difficulties may include:	• working in proximity to drilling rig • weather conditions including: • day/night • storms and lightning • hot/cold • wet/dry
Coordination requirements may include:	• pre-tour safety meetings • work inspection • task specific - job safety analysis (JSA) • tour reports updated • permit prepared where applicable • safety equipment (e.g. harness, lanyards) inspected and used as appropriate • safety briefing/induction • weekly safety meetings • agreed procedures may include: • company • facility • client • toolbox • permit to work
Utilities may include:	• air • fuel • power • craneage • lighting
Remedial action may include:	• reporting • recording • replacing • repairing • adjusting
Tubulars may include	• drill pipe • drill collars • casing • tubing
Equipment may include:	• winches • ropes • racking board • safety belt

	• consumables • derrick climber/fall arrester, geronimo line and rider • backing system - manual/automated • casing stabbing system - board/basket • safety appliances and personal protective equipment derrick escape system
Inspect may include:	• safety lines • ropes • air hoists • monkey board • sheaves • crown block • derrick bolts • pins and welds • all other lines and equipment in or attached to the derrick
Lubricate may include:	• air hoists, sheaves • crown block • fast line guide

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.