



Australian Government

TLILIC0017 Licence to operate a derrick crane

Release: 1

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Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to operate a derrick crane safely. Competence in this unit, does not in itself result in a High-Risk Work Licence (HRWL) to operate this plant.

Derrick crane means a slewing strut-boom crane with its boom pivoted at the base of a mast that is:

- capable of luffing under load
- guyed (guy-derrick) or held by backstays (stiff-legged derrick).

This unit applies to the activities of a person operating a derrick crane.

A person performing this work is required to hold a derrick crane HRWL.

This unit requires a person operating a derrick crane to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency. This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations and meets Commonwealth, state and territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licensing class as detailed in this unit.

Pre-requisite Unit

Not applicable.

Competency Field

LIC - Licencing Units.

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan work/task

- 1.1** Task requirements are identified from work orders or equivalent, a lift plan is confirmed with associated personnel and a site inspection is conducted in accordance with workplace procedures
- 1.2** Work area operating surface is confirmed to determine the quality of ground suitability for operational use of derrick crane in accordance with workplace procedures
- 1.3** Derrick crane Rated Capacity (RC) and the lifting gear Working Load Limit (WLL) are established for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
- 1.4** Appropriate paths for operating the derrick crane and moving and placing load/s in work area are assessed and determined in accordance with workplace procedures
- 1.5** Relevant hazard identification and risk elimination/control measures are applied and advised to associated personnel in accordance with workplace procedures
- 1.6** Traffic management plan implementation is confirmed and followed in accordance with workplace procedures
- 1.7** Appropriate communication procedures are identified and tested with associated personnel in accordance with workplace procedures
- 1.8** All tasks are confirmed to ensure requirements for the relevant work area in accordance with a lift plan and workplace procedures

- 1.9 Information required to ensure that lifting equipment and gear inspection, use, maintenance and storage complies with manufacturer requirements is obtained and interpreted
- 2 Prepare for work/task**
- 2.1 Consultation with workplace personnel is established and maintained to ensure all crane and lifting operations are clear and consistent with site requirements in accordance with a lift plan and workplace procedures
- 2.2 Risk control measures for hazards identified are checked for implementation in accordance with the lift plan and safe work procedures
- 2.3 Pre-start derrick crane checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with safe work procedures and manufacturer requirements
- 2.4 Derrick crane is positioned and confirmed as correctly set up, including any lifting gear as per the lift plan, in accordance with relevant manufacturer requirements, including load chart/s and safe work procedures
- 2.5 Boom/jib and lifting gear set-up is confirmed, as required, in accordance with specific manufacturer requirements and safe work procedures
- 2.6 Operational checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
- 2.7 Crane logbook is checked to confirm current compliance, is correct for the crane type, is completed and signed and required rectifications have been signed off in accordance with manufacturer requirements and safe work procedures
- 2.8 Weather and work environment conditions are assessed to determine any impact on derrick crane operations in accordance with manufacturer requirements and safe work procedures
- 2.9 Weight of load is identified or calculated

- 2.10** Derated WLL of lifting equipment resulting from selected slinging techniques is calculated and confirmed as suitable to meet the requirements of the lift plan
 - 2.11** Suitable lifting points and slinging techniques are identified
 - 2.12** Lifting equipment and gear is confirmed as ready for safe use
 - 2.13** Load destination stability is confirmed ensuring it is able to bear the load and is prepared for safe access and landing
- 3 Perform work/task**
 - 3.1** Lifts are determined within the RC of the derrick crane in accordance with the load chart/s and lift plan
 - 3.2** Boom/jib and hook block are safely positioned over the load following directions from associated personnel in accordance with the lift plan and safe work procedures
 - 3.3** Main hook, including any lifting gear where required, is connected to the load and used safely in accordance with the lift plan, safe work procedures and manufacturer requirements
 - 3.4** Test lift is carried out in accordance with dogging and safe work procedures
 - 3.5** Loads are transferred using relevant crane movements and tag lines, as required, in accordance with lift plan and safe work procedures
 - 3.6** Load and crane movement is monitored constantly and crane is operated safely in accordance with lift plan and safe work procedures
 - 3.7** All required communication signals are correctly interpreted and followed whilst crane is operated in accordance with the lift plan and safe work procedures
 - 3.8** Load is lowered and landed safely in accordance with lift plan and safe work procedures

- 3.9** Lifting gear is disconnected from load and crane is positioned safely and efficiently for next task in accordance with lift plan and safe work procedures
 - 3.10** Lifting equipment and gear are inspected for defects, and defective items are isolated, tagged and reported
- 4 Pack up**
 - 4.1** Crane boom/jib, lifting gear and associated equipment are stowed and secured as required in accordance with manufacturer requirements and safe work procedures
 - 4.2** Relevant motion locks and brakes are applied as required in accordance with manufacturer requirements and safe work procedures
 - 4.3** Crane is shut down and secured to prevent unauthorised access/use in accordance with safe work procedures
 - 4.4** Shutdown crane checks are carried out in accordance with safe work procedures and manufacturer requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the TLI Transport and Logistics Training Package Companion Volume Implementation Guide.

Unit Mapping Information

Supersedes and is equivalent to TLILIC0007 Licence to operate a derrick crane.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

Assessment Requirements for TLILIC0017 Licence to operate a derrick crane

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant mathematical calculations in conjunction with lift plan and load chart to determine radius requirements and relevant lifting gear to perform work/task to enable crane to be configured for load, including:
 - boom
 - line pull
 - type of hook
- applying relevant communication signals from associated personnel
- applying relevant crane movements, including:
 - boom/jib up and down (luffing)
 - catching load swing appropriately
 - positioning and using main hook and lifting gear to connect to load safely
 - raising and lowering hoist
 - slew boom/jib
- carrying out operational checks ensuring:
 - all controls are located, identified and tested for functionality
 - all hydraulic functions are operational
 - lifting gear movements and control functions are smooth and comply with lift plan
 - hazard warning systems, safety, audible and visual warning devices are checked to ensure they are functional, including:
 - lights
 - warning devices/horns
 - anti-two block alarms (where fitted)
 - start-up is in accordance with manufacturer requirements and safe work procedures
 - there are no unusual noises
- complying with Commonwealth, state and territory work health and safety (WHS)/occupational health and safety (OHS) legislation and safe work procedures
- communicating with other associated personnel through using appropriate worksite procedures, including:

- two-way radio
- active listening
- demonstrating and interpreting hand signals
- questioning to confirm understanding
- signage/visual aids
- whistles
- written instructions
- conducting and applying hazard and risk assessment strategies, including:
 - confirming work area operating surface suitability based on crane and task requirements
 - dynamic loads
 - load swing
 - overloading
 - lifting and placing load
 - asymmetric loads
 - overhead hazards
 - restricted and poorly ventilated areas
 - risk of collision with people, moving plant and fixed structures
 - adequate lighting
 - weather conditions
- conducting pre-start checks, including:
 - engine/mechanical fluid level checks as required by manufacturer requirements
 - presence of correct logbook
 - evidence of damage
 - fluid leaks
 - lights work effectively
 - locating, identifying and confirming all controls
 - fire extinguisher
 - safety equipment checks
 - signage and labels to ensure they are visible and legible
 - checking for signs of paint separation and stressed welds indicating potential structural weakness
 - updating records as required
 - visual damage or equipment faults
- confirming and following traffic management plan procedures relevant to their role in the work area
- determining any defects or faults with operation of crane and reporting to relevant person/s
- ensuring risk control measures within the work area are effective in accordance with workplace procedures
- following directions of dogger or rigger
- interpreting and confirming relevant documentation for the work task and relevant area

- monitoring load disconnection from hook is safe and ensuring no movement of controls
- operating a slewing derrick crane to lift and move three different loads using the main hook that:
 - is 25% of the maximum working radius with a load weighing at least 25% of the crane's Rated Capacity (RC) at that radius, and
 - is 40% of the maximum working radius with a load weighing at least 40% of the crane's RC at that radius, and
 - is 50% of the maximum working radius with a load weighing at least 50% of the crane's RC at that radius
- positioning derrick crane in relevant area for next task
- positioning the derrick crane for safe operation for:
 - application of the task
 - manoeuvring loads in the workplace
 - stability of the derrick crane and the load
- recording and maintaining accurate information relating to crane operations
- reporting to relevant person/s on site risk control measures that are not in place or deficient
- setting up and validating an exclusion zone
- shutting down a derrick crane in accordance with manufacturer requirements and safe work procedures
- planning for and managing load stability, including:
 - confirming and inspecting appropriate lifting gear and applying slinging techniques appropriate to the type of load, its mass and centre of gravity
 - identifying the Working Load Limit (WLL) tags of the lifting equipment and gear and calculating the deration of the WLL resulting from the slinging techniques applied
- test-lifting load just clear of lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure:
 - slinging is correct
 - all crane equipment is functioning properly
 - load centre of gravity is correct
 - loads of unusual shape or weight distribution are correctly slung
- test-lifting load just clear of lifting plane to allow for checks of crane computer (where fitted) to ensure:
 - load measuring equipment can be used to verify calculated weight of load
 - near capacity loads do not overload crane
- using communications signals, including:
 - hoist down - hand and whistle and radio
 - hoist up - hand and whistle and radio
 - luff boom down - hand and whistle and radio
 - luff boom up - hand and whistle and radio
 - slew left - hand and whistle and radio
 - slew right - hand and whistle and radio

- stop - hand and whistle and radio.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- appropriate worksite communication procedures, including:
 - listening
 - hand signals
 - questioning techniques
 - signage
 - two-way radios
 - written instructions
 - whistles
- crane configuration mathematical calculations to:
 - estimate loads
 - establish counterweight/s requirements
 - establish radius requirements
- relevant lifting gear to perform work/task
- crane, lifting gear, load chart/s and manufacturer requirements
- crane configuration and set-up of:
 - boom/jib
 - back stays
 - counterweights
 - guys
- derrick crane characteristics and capabilities to allow crane configuration to suit a range of loads
- hazards, including:
 - erection, pack-up and crane stability, crane tipping and demolition sites
 - ground stability, including ground condition, recently filled trenches
 - insufficient lighting
 - obstacles or obstruction
 - other specific hazards and dangerous materials
 - overhead hazards, including:
 - electric lines
 - service pipes
 - structures
 - vegetation (trees)
 - traffic, including pedestrians, vehicles and other plant
 - operations on unusual, uneven or difficult terrains

- lift-impacting factors, including:
 - centre of gravity
 - dynamic nature of load
 - flex/deflection of boom
 - length
 - radius of lift
 - weight
- manufacturer requirements and instructions on shutting down and packing up crane
- relevant workplace instructions, safety information and emergency procedures
- relevant documentation requirements and procedures for recording, reporting and maintaining workplace records and information
- risk assessment management and mitigation strategies, including hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - personal protective equipment (PPE)
- roles and responsibilities of duty holders in accordance with legislative obligations of WHS/OHS requirements, safe work and workplace procedures
- pre-start and operational checks required for a derrick crane
- problems and appropriate response procedures to unplanned and/or unsafe situations and environmental conditions
- hazards commonly encountered while preparing load:
 - instability of landing surfaces
 - overhead and underground hazards
 - insufficient lighting
 - traffic
 - weather
 - pedestrian traffic
 - work at heights
- selection, inspection, care, handling, application, limitations and storage of lifting equipment and gear:
 - flexible steel wire rope (FSWR) sling
 - synthetic sling
 - chain sling (including shortener)
 - spreader bar or lifting beam
 - tag line
 - shackles
 - eyebolts
- methods of making temporary connections to loads using fibre and synthetic ropes:

- single sheet bend
- clove hitch
- rolling hitch
- bowline
- stability of load and avoidance of hazards, including:
 - allowing for boom deflection
 - boom/jib as low as possible
 - carrying load near to ground surface
 - crane stability
 - gently accelerating and braking to minimise load swing
 - lowering load safely onto appropriate dunnage taking into consideration swing and restrictions of area
 - using handheld tag lines
- starting procedure of crane in accordance with manufacturer requirements
- typical routine problems encountered operating a crane and equipment, and adjustments required for correction
- weather bureau forecasts and associated information and environmental conditions that could impact operation, including:
 - lightning
 - wind
 - water impacted ground
 - ultraviolet (UV) exposure
- work area suitability based on relevant ground reports, including:
 - backfilled ground
 - bitumen
 - concrete
 - hard compacted soil
 - pre-contaminated soils
 - rock
 - rough, uneven ground
 - soft soils
- workplace standards, requirements, policies and procedures for conducting operations for the derrick crane.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

- Simulators must not be used in the assessment of this unit of competency.

Resources for assessment must include access to:

- appropriate derrick crane, lifting gear and associated equipment in safe/serviceable condition in accordance with manufacturer specifications comprising:
 - a strut-boom crane with its boom pivoted at the base of a mast which is either guyed (guy-derrick) or held by backstays (stiff-leg derrick) and which is capable of luffing under load
- appropriate loads as outlined in the Performance Evidence requirements
- appropriate personnel to sling and direct loads, including:
 - licenced dogger or rigger
- communication equipment, including:
 - two-way radios
 - whistles
- relevant personal protective equipment (PPE)
- relevant documentation for operating a derrick crane, including:
 - approved codes of practice and relevant guidance material
 - relevant Australian technical standards
 - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable).

Links

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