



Australian Government

TLIC3073A Fire a steam locomotive

Release 1

TLIC3073A Fire a steam locomotive

Modification History

Release 1 - New unit of competency

Unit Descriptor

This unit involves the skills and knowledge required to conduct the duties of an assistant on a steam locomotive in accordance with workplace procedures and the requirements of relevant rail regulations and codes of practice.

It includes preparing for operations; preparing and starting the locomotive; assisting with un/coupling and securing the steam locomotive; assisting in operating and stabling the locomotive in accordance with organisational requirements.

Licensing, legislative, regulatory or certification requirements are not applicable to this unit.

Application of the Unit

People achieving competence in this unit will need to fulfil the legislated rail safety requirements including acts and regulations from each applicable state and territory together with any nationally approved compliance codes and/or guidelines and local rail regulations and codes of practice as they apply to the operation of railway systems.

Licensing/Regulatory Information

Not applicable.

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 required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

- 1 Prepare to operate a steam locomotive**
- 1.1 Roster is checked and interpreted for day's operational activities
 - 1.2 Allocation of locomotive is checked
 - 1.3 Train schedules/notices and other operational and regulatory documentation is accessed and interpreted in accordance with workplace procedures
 - 1.4 Required personal protective equipment is obtained for use while operating the locomotive
 - 1.5 Trackside safety and basic electrification awareness procedures are followed while locating the allocated locomotive
- 2 Prepare and start a steam locomotive**
- 2.1 Logbook is checked to confirm serviceability of locomotive
 - 2.2 Locomotive is confirmed as being securely stabled prior to commencing preparation and safety checks
 - 2.3 Preparation and safety checks are conducted in accordance with occupational health and safety (OH&S) and other organisational policies and procedures
 - 2.4 Water levels and fuels are checked and replenished as required
 - 2.5 Mechanical equipment is checked and appropriate action taken as required
 - 2.6 Fire is lit and steam is raised in accordance with organisational instructions, with consideration for thermal expansion and environmental considerations
 - 2.7 For critical or serious equipment faults that cannot be readily rectified, fire is dropped, faulty equipment is isolated and problem is reported for rectification
 - 2.8 All indicators and gauges are continuously monitored and readings are interpreted to confirm effective pressure, water level and air operation and where a problem is indicated, action is taken to determine the cause and to rectify or report the situation
 - 2.9 Operation of locomotive equipment is established and verified
 - 2.10 Lubrication, cleaning, preparation, and provisioning of the locomotive is undertaken in accordance with organisational requirements
 - 2.11 Logbook and other service records on the locomotive are completed in accordance with organisational requirements
- 3 Assist with coupling, uncoupling and**
- 3.1 Rail vehicles are positioned to meet coupling requirements in accordance with organisational policies and procedures

securing rail vehicles

3.3 Coupling systems are identified and applied appropriately to couple and/or uncouple rail vehicles

3.4 Connecting hoses and electrical couplings are connected/disconnected in accordance with organisational policies and procedures

3.5 Hand brakes and other securing devices are applied/released attached/removed in accordance with organisational policies and procedures

4 Assist with operating a steam locomotive

4.1 Safeworking activities are undertaken in accordance with organisational and/or network owner policies and procedures

4.2 Gauges and indicators are monitored and operated in accordance with organisational policies and procedures

4.3 Boiler is fired to meet load requirements and environmental considerations

4.4 Water level is maintained to ensure safe boiler operation meets load requirements and track characteristics

4.5 Assistance is provided with communications with network control officers and ground staff

4.6 Observation of all aspects of the rail corridor and environs is maintained and communicated to driver in accordance with organisational and/or network owner policies and procedures

4.7 In case of driver being incapacitated train is stopped and network control informed and instructions are followed in accordance with organisational policies and procedures

4.8 Assistance with locomotive operation is provided as requested by driver

5 Assist with stabling a steam locomotive

5.1 Locomotive is secured in accordance with directions, workplace procedures and rail regulations

5.2 Boiler water levels are checked and replenished as required

5.3 Locomotive is shut down in accordance with operators instructions

5.4 Ash is disposed of responsibly in accordance with network owner and operators policies

5.5 Assistance is provided to conduct a post-operational inspection

5.6 Logbook and other service records on the locomotive are completed in accordance with organisational requirements

5.7 Controls are secured in accordance with organisational procedures

Required Skills and Knowledge

This section describes the knowledge and skills required for this unit.

Required knowledge:

- Braking and safety system procedures for steam locomotives
- Communication equipment checks
- External features of a steam locomotive that must be checked during a pre-operational visual inspection
- Functions of auxiliary systems on a motive power unit and related checks for correct operation
- In-cab pre-operational checks for a steam locomotive
- Local procedures and operating requirements
- Lubrication requirements for a motive power unit
- Operating controls to start, accelerate, decelerate and stop a steam locomotive
- Operating procedures for steam locomotives
- Principles, purpose and location of controls, monitoring devices, braking, power source and traction systems
- Procedures for checking fuel and fluid levels and carrying out lubrication processes on a steam locomotive
- Procedures for identifying equipment defects and assessing appropriate action
- Procedures for managing and controlling hazardous situations when preparing and starting up a steam locomotive
- Procedures for starting and operating auxiliary systems on a steam locomotive
- Procedures to be followed in an emergency
- Relevant safety, OH&S and environmental procedures and regulations
- Requirements for completing relevant documentation when inspecting and preparing a steam locomotive
- Start-up procedures for steam locomotives
- Visual inspection procedures for a steam locomotive

Required skills:

- Check and replenish fluids and carry out lubrication requirements on a steam locomotive
- Communicate effectively with others when inspecting and preparing a steam locomotive
- Complete documentation related to operating a steam locomotive
- Conduct a visual inspection of a steam locomotive and associated equipment
- Document outcomes of visual inspection of a steam locomotive
- Interpret and follow instructions and prioritise work
- Maintain steam and water levels commensurate with operating requirements
- Operate electronic communication equipment to required protocol
- Prepare a steam locomotive prior to service

- Read and interpret instructions, procedures, information and signs relevant to operating a steam locomotive
- Work collaboratively with others as part of a train crew

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

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 and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
 - the required knowledge and skills
 - relevant legislation and workplace procedures
 - other relevant aspects of the range statement
- Assessment must include exercises which demonstrate competent performance of the following in a range of situations:
 - assisting with pre-operational activities
 - firing a steam locomotive
 - coupling and uncoupling a steam locomotive
 - stabling a steam locomotive

Context of and specific resources for assessment

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
 - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
 - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
 - relevant and appropriate materials and equipment, and
 - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment

- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:
 - through activities in an appropriate range of situations in the workplace

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.

Gauges and instruments may include:

- steam pressure
- sight glasses
- brake gauges
- drivers assistance gauges
- firing gauges

Locomotive equipment may include:

- boiler systems
- feed water systems
- firing systems
- braking systems
- gauges and instrumentation
- communication systems
- whistle
- head and marker lights
- ancillary equipment

Inspection of a steam locomotive may include:

- lights
- motion and valve gear
- boiler integrity and fittings
- running gear and tender
- hoses
- couplings
- doors and door locks
- springs
- brake equipment
- wheels
- seals
- sand and fuel
- glass windows and doors
- compressor oil levels
- audible faults (e.g. hiss of escaping air and/or steam)
- visible faults (e.g. oil leaks, tears and cracks)
- safety appliances

Relevant personnel may include:

- train crew
- train controllers and signallers
- maintenance personnel

Safety and personal protective equipment may include:

- gloves
- sunscreen and sunglasses
- safety glasses
- insect repellent

- safety headwear and footwear
- two-way radios
- hand lamps
- flags
- safety devices
- audible indicators
- breathing equipment
- fire extinguishers
- high visibility clothing
- hearing protection

Information and documents may include:

- notices in driver notice board/box
- train driver roster sheet and/or table card
- operational instructions, policies and procedures
- emergency procedures manual

Applicable legislation, regulations and codes may include:

- legislated rail safety requirements including acts and regulations from each applicable state and territory together with any nationally approved compliance codes and/or guidelines
- relevant Australian Standards and related requirements
- relevant state/territory OH&S legislation
- relevant state/territory environmental protection legislation

Unit Sector(s)

Not applicable.

Competency Field

C – Vehicle Operation