



Australian Government

Department of Education, Employment and Workplace Relations

TLIB4077A Inspect and prepare a heritage steam locomotive

Release: 1

TLIB4077A Inspect and prepare a heritage steam locomotive

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to inspect and prepare a heritage steam locomotive with relevant workplace practices, rail regulations and codes of practice. It includes the checking and preparation of a heritage steam locomotive, visually examining the locomotive, conducting in-cab checks, and moving and positioning the locomotive for service in accordance with workplace requirements. This unit replaces part of the previous unit TDTC1401A Prepare, operate, monitor and stable steam locomotive. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

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Persons achieving competence in this unit will need to fulfil the applicable legislated rail safety requirements including acts and regulations from each 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 heritage railway systems.

Work is performed under minimal supervision, generally within a team environment. It involves the application of routine operational principles and procedures to inspect, prepare and position a steam locomotive as part of workplace activities across a variety of operational contexts in the Australian heritage rail system.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability Skills 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

ELEMENT

PERFORMANCE CRITERIA

1 Light fire and raise steam

- 1.1 Roster is checked and interpreted for day's train driving activities
- 1.2 Allocation of locomotives is checked as per notices and in conjunction with train controllers and roster clerk
- 1.3 Locomotive to be inspected and prepared is located in the yard
- 1.4 Pre-light-up procedures applicable to the type of fire box are identified and followed to enable safe boiler operation
- 1.5 Light-up procedures and safety practices are followed to build up steam within the boiler and to ensure 'smoking' is minimised
- 1.6 Instruments and equipment are monitored to ensure safe and efficient operation as steam pressure is raised to operating level
- 1.7 Where a problem is indicated, action is taken to determine the cause and to rectify or report the situation

2 Prepare for steam locomotive work activities

- 2.1 Roster is checked and interpreted for day's train driving activities
- 2.2 Allocation of locomotives is checked as per notices and in conjunction with train controllers and roster clerk
- 2.3 Trackside safety and basic electrification awareness procedures are followed while locating the allocated locomotive in the yard
- 2.4 Locomotive inspection and preparation duties are identified and interpreted
- 2.5 Train schedules and notices and other operational and regulatory documentation is accessed and interpreted
- 2.6 Communication equipment required for the day's operations is obtained and checked to ensure that it is functional
- 2.7 Required personal protective equipment is obtained for use during the day's train driving activities
- 2.8 Locomotive to be inspected and prepared is located in the yard

3 Inspect and prepare locomotive

- 3.1 Features, functions and location of locomotive and associated equipment are identified
- 3.2 Log book is checked to confirm serviceability of locomotive
- 3.3 Preparation and safety checks are conducted, in accordance with OH&S and other workplace policies and procedures
- 3.4 Locomotive, kit and equipment are checked and defects and deficiencies are recorded and rectified, isolated, tagged (where applicable) or reported as per workplace procedures and regulatory requirements
- 3.5 Availability of appropriate fuel, lubricating oils, water and sand quantities (where applicable) are checked against journey requirements and appropriate action is taken to replenish them if

ELEMENT	PERFORMANCE CRITERIA
	required
	3.6 Relevant OH&S and regulatory requirements are followed
4 Conduct in-cab checks	4.1 Locomotive is checked in correct sequence and all equipment is confirmed operating to optimum requirements 4.2 Cab layout is checked and confirmed to meet operating requirements 4.3 Pre-departure mechanical checks are correctly performed and correct functioning of all equipment is confirmed as per workplace procedures and operating requirements 4.4 Operational controls and indicators are checked to ensure they are functioning correctly and appropriate action is taken if they are not working correctly 4.5 Communication equipment is checked to ensure that it is functioning correctly and appropriate action is taken if it is not working correctly 4.6 Auxiliary equipment is checked and is confirmed to be operational in accordance with operating requirements 4.7 Fire extinguisher, safety equipment, emergency toolbox and any other required equipment are checked to confirm they are in position and meet operational requirements 4.8 Pre-departure checks are carried out to ensure locomotive is braking and powering effectively and is safe to move
5 Complete documentation	5.1 All required documentation concerning the inspection, preparation and start up of the locomotive is completed in accordance with workplace procedures and regulatory requirements 5.2 Log book and other service records on the locomotive are completed in accordance with workplace procedures and regulatory requirements
6 Position motive power unit	6.1 Authority to move and position locomotive is obtained and relevant personnel are advised of intention and procedures 6.2 Locomotive is operated in accordance with standard procedures and regulatory requirements and within operating and operational constraints 6.3 Locomotive is positioned in accordance with operational requirements and directions 6.4 Locomotive performance is monitored during operation in order to confirm effective operation or to identify defects 6.5 Equipment defects are identified, rectified and recorded or relevant personnel are advised for assistance 6.6 Relevant OH&S and regulatory requirements are followed to ensure safety and to prevent injury and damage

ELEMENT**PERFORMANCE CRITERIA**

6.7 Train controller and other relevant personnel are advised that the locomotive is secured in the required position and is ready for service

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Applicable legislated rail safety requirements including acts and regulations from each state and territory together with any nationally approved compliance codes and/or guidelines and local rail regulations and codes of practice as they relate to heritage railway operations
- Relevant OH&S and environmental procedures and regulations
- Locomotive controls, instruments and indicators and their purpose, location and use
- Inspection procedures for a heritage steam locomotive
- In-cab pre-operational checks for a heritage steam locomotive
- Procedures for lighting fire and raising steam on heritage steam locomotives
- Operating procedures for locomotives
- Braking and safety system procedures for steam locomotives
- Operating controls to start, accelerate, decelerate and stop a heritage steam locomotive
- Procedures for adjusting controls to optimise the operation of a heritage steam locomotive
- Procedures for managing and controlling hazardous situations when preparing and firing up a heritage steam locomotive
- Procedures for starting and operating auxiliary systems on a locomotive
- Procedures for checking fuel and fluid levels and carrying out lubrication processes on a locomotive
- Principles, purpose and location of controls, monitoring devices, braking, power source and traction systems
- External features of a steam locomotive that must be checked during a pre-operational visual inspection
- Procedures for minor maintenance including cleaning, brake shoe/pad replacement and sand box requirements
- Procedures for identifying equipment defects, assessing and reporting for appropriate action
- Typical defects that can occur on a steam locomotive and related action that should be taken
- Requirements for completing relevant documentation when inspecting and preparing a steam locomotive

REQUIRED KNOWLEDGE AND SKILLS

- Procedures to be followed in the event of an emergency
- Functions of all supervisory indicators and controls and related checks for correct operation
- Communication equipment checks and operating procedures
- Lubrication requirements for a heritage steam locomotive
- Cleaning requirements for a heritage steam locomotive
- Functions of auxiliary systems on a heritage steam locomotive and related checks for correct operation
- Fuel capacity and range (where applicable)
- Local procedures and operating requirements
- Procedures for operating communications equipment with required protocol

Required skills:

- Communicate effectively with others when inspecting and preparing a heritage steam locomotive
- Operate electronic communication equipment to required protocol
- Read and interpret instructions, procedures and information and signs relevant to the visual inspection, preparation and positioning of a heritage steam locomotive
- Document outcomes of visual inspection of a heritage steam locomotive
- Complete documentation related to the preparation and positioning of a steam locomotive
- Work collaboratively with others as part of a train crew
- Interpret and follow instructions and prioritise work
- Identify and assess steam locomotive defects and deficiencies and take appropriate action to report, isolate, repair or replace any identified defective equipment as per workplace procedures
- Implement contingency plans for unplanned events
- Modify activities depending on differing operational contingencies, risk situations and environments
- Adapt to differences in steam locomotives and associated equipment and procedures
- Monitor and anticipate operational problems and hazards and take appropriate action
- Check and replenish fluids and carry out lubrication requirements on a steam locomotive
- Conduct an inspection of a steam locomotives and associated equipment
- Prepare a steam locomotive prior to service
- Light fire and raise steam on a steam locomotive
- Position a steam locomotive in readiness for service

Evidence Guide

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 underpinning knowledge and skills
 - relevant legislation and workplace procedures
 - other relevant aspects of the range statement

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

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:
 - through activities in an appropriately simulated environment at the registered training organisation, and/or
 - in an appropriate range of situations in the workplace

Range Statement

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.

- | | |
|--|---|
| Operations may be conducted: | <ul style="list-style-type: none">• by day or night• in all relevant weather conditions |
| Heritage steam locomotives may include: | <ul style="list-style-type: none">• any heritage steam locomotives in service within Australia |
| Equipment on a heritage steam locomotive may include: | <ul style="list-style-type: none">• steam locomotive instrumentation (gauges)• feed water controls• boiler controls and safety devices• braking systems• driving and other operational controls• communication systems• warning equipment• ancillary systems• vigilance systems• traction systems• head and marker lights |
| Communications equipment may include : | <ul style="list-style-type: none">• portable and fixed two way radio• mobile phone |
| Inspection of a heritage steam locomotive may include: | <ul style="list-style-type: none">• lights• hoses• couplings• brake equipment• wheels• seals• sand and fuel• glass windows and doors• audible faults (e.g. hiss of escaping air or steam)• visible faults (e.g. oil leaks, tears and cracks) |
| Pre-operational checks will include: | <ul style="list-style-type: none">• brake checks• driver's safety control test• functionality checks of supervisory controls and indicators• check of communication equipment (depending on type of locomotive, this may include radio, passenger emergency systems, etc.)• radio communication check with train controller• windows and blinds• fire extinguishers• emergency toolbox |

RANGE STATEMENT

- Auxiliary equipment may include:
- steam regulator
 - cab sprinkler
 - gauges
 - generator
 - sandboxes
 - whistle
 - steam turbine generator
 - all ancillary valves
 - hand brake
 - injectors
 - lubricators
 - gauge glasses
 - blower
 - damper
 - cylinder cocks
 - mechanical stoker
 - oil burning apparatus
- Risk minimisation may require differentiating between faults, defects and deficiencies that:
- do not present a hazard and could be attended to under running maintenance or in a normal maintenance schedule
 - present a potential hazard and need to be attended to under running maintenance or at the next most practical opportunity
 - present an immediate hazard and require immediate attention
- Relevant personnel may include:
- train crew
 - train controllers and signallers
 - rostering supervisors and staff
 - other train drivers and crews
 - depot coordinators
 - yard masters, supervisors and other operational personnel
 - service delivery supervisors
 - station yard staff
 - maintenance and cleaning personnel
 - immediate internal or external customers
- Action taken upon the identification of faults, defects or deficiencies may include:
- reporting the problem and carrying out repairs (depending on the level and extent of work required), or isolating and tagging the faulty equipment and advising appropriate personnel of the fault and need for repair or replacement
- Depending on the organisation concerned workplace procedures
- standard operating procedures
 - company procedures
 - enterprise procedures

RANGE STATEMENT

may be called:

- organisational procedures
- established procedures

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

Positioning of steam locomotive may involve:

- operation of manual points
- operation of turntable
- coupling/uncoupling to other rolling stock

Information and documents may include:

- applicable legislated rail safety requirements including acts and regulations from each state and territory together with any nationally approved compliance codes and/or guidelines
- steam locomotive operational records and user log books
- maintenance notices, records and requests
- preparation sheets certificates and service dockets
- train running sheets
- time sheets
- roadworthy certificate
- operational instructions, policies and procedures, including: those related to preventing steam locomotives from moving; track speed, length and load limitations; monitoring and complying with signals; and procedures for operating in accordance with specific track conditions
- documented details of the train including length and weight
- emergency procedures manual

Applicable legislation, regulations and codes may include:

- applicable legislated rail safety requirements including acts and regulations from each state and territory together with any nationally approved compliance codes and/or guidelines

RANGE STATEMENT

- 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

Competency Field B - Equipment Checking and Maintenance