Australian Government

TLIPC0011 Identify rolling stock

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Release: 1

TLIPC0011 Identify rolling stock

Modification History

Release	Comments
1	This unit of competency was first released in TLI Transport and Logistics Training Package Release 18.0.

Application

This unit describes the skills and knowledge required to identify the major types of rolling stock used within rail networks and their contribution to rail operations.

It includes identifying the characteristics and purpose of different types of rolling stock, rolling stock systems, rolling stock maintenance activities, manufacturing processes, and the roles of persons involved in the design, manufacture and maintenance of rolling stock.

The unit applies to individuals preparing for entry-level employment or further vocational education and training in the rail industry. Completion of this unit does not provide competency to undertake any regulated, licensed, accredited, safety-critical or role-specific work activities in the rail industry.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite unit(s)

Not applicable.

Competency field(s)

N/A

Unit sector(s)

Rail Sector.

Elements and Performance Criteria

Elements	**Performance criteria**
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

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1	Identify types of rail rolling stock	1.1	Describe the types and purposes of rolling stock in regular use on an urban rail network
		1.2	Describe the types and purposes of rolling stock in regular use on a national or regional network
		1.3	Identify specialised types of rolling stock including freight and heritage and describe the function of each
2	Identify rolling stock systems	2.1	Identify the rolling stock systems within a selected network
		2.2	Describe key principles of each system selected
		2.3	Identify the purpose of bogies and couplers
		2.4	Identify safety systems incorporated into modern rolling stock
3	Identify rolling stock maintenance activities	3.1	Identify location of storage and maintenance depots for a selected train/tram fleet
		3.2	Describe the type of work carried out at storage and maintenance depots
		3.3	Explain the process to wash and clean rolling stock
		3.4	Identify role and responsibilities of key rail persons employed in rolling stock storage and maintenance
4	Identify rolling stock manufacturing	4.1	Identify enterprises which manufacture rail rolling stock and major rolling stock components
		4.2	Outline major stages in the process to design and manufacture rolling stock
		4.3	Identify the roles of key persons involved in the design and manufacture of rolling stock
5	Identify contemporary rolling stock design	5.1	Identify design features that improve passenger safety
		5.2	Identify design features that improve passenger comfort and accessibility

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		5.3	Identify design features that improve operational efficiency and sustainability
		5.4	Identify emerging developments in rolling stock design
6	Report on rolling stock	6.1	Collate information and prepare draft report using correct rolling stock terminology
		6.2	Review draft report to identify areas requiring further information or improvement
		6.3	Amend draft report and finalise for submission

Foundation Skills

For information regarding essential foundation skills and the unit relationship to the ACSF and DigComp (3.0), refer to the TLI Training Package Companion Volume Foundation Skills.

L	R	W	OC	N
2	3	3	2	2

Digital Skills (Ref to DigComp 3.0)
Basic: CS3.4.04: Represent simple sequences symbolically, interpret simple symbolic sequences, and give basic instructions to a computer to perform simple tasks
Basic: CS2.1.01: Identify and use basic features of digital communication tools to interact with individuals and groups. [AI-I].
Int: CS3.2.07: Modify or transform digital textual, numeric or visual representations to effectively and accurately convey the meaning of data and information.

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Assessment Requirements for TLIPC0011 Identify rolling stock

Performance Evidence

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

Evidence must demonstrate the ability to:
• Identify a minimum of 3 examples of in-service rolling stock used within Australian rail networks such as:
  • electric passenger trains
  • diesel-electric locomotives
  • light rail vehicles
  • passenger carriages
  • freight wagons
  • heritage stock
• describe purpose and key characteristics of selected examples of rolling stock
• describe the main systems of at least three types of rolling stock such as:
  • electric trains
  • diesel-electric locomotives
  • light rail vehicles
  • hydraulic vehicles
  • heritage stock (steam)
• identify the purpose of major rolling stock components, braking, bogies, couplers and selected safety systems
• identify the purpose of rolling stock storage and maintenance depots and the activities undertaken within those facilities
• identify the roles and responsibilities of personnel involved in:
  • rolling stock maintenance
  • rolling stock manufacturing
  • rolling stock design
• identify design features that improve:
  • passenger safety
  • comfort and accessibility
  • operational efficiency and sustainability
• identify at least one emerging development in rolling stock design

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- research and collate information from reputable sources and prepare a draft report using rail industry terminology
- review the draft through self-review and feedback to identify gaps and improvements
- amend and finalise report for submission or presentation

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:

- Rolling stock terminology, e.g. bogie, coupler, consist, multiple unit, locomotive, wagon, shunting, line speed, axle load, wheel-rail interface
- In-service rolling stock types on Australian networks:
  - electric multiple units (EMUs)
  - diesel multiple units (DMUs)
  - trams and light rail vehicles
  - diesel-electric locomotives (freight and passenger)
  - emerging battery and hybrid units
- Passenger carriage types, e.g. suburban/commuter, intercity, sleeper, dining/buffet, accessible carriages
- Freight wagon types, e.g. container flats, hoppers (grain, coal, ore), tank wagons, louvre vans, car carriers, livestock wagons
- Infrastructure maintenance and support vehicles, e.g. track recording/inspection vehicles, tampers, ballast regulators, ballast consolidators, crew cars, road-rail vehicles
- Electric train and tram systems:
  - pantograph
  - circuit breaker
  - transformer (AC networks)
  - rectifiers and inverters (traction converter)
  - 3-phase AC traction motors
  - cooling blowers
  - batteries
  - braking (regenerative, friction, air/hydraulic)
  - doors

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  - air-conditioning
  - onboard energy storage for catenary-free trams
- Diesel-electric locomotive systems:
  - diesel engine
  - turbocharger
  - radiator and cooling fan
  - fuel tank
  - alternator
  - rectifier and inverters
  - traction motors
  - traction motor blowers
  - batteries
  - electronic controls and control stand
  - air brake system
- Purpose and types of bogies (wheelsets, suspension, axles) and couplers (automatic, semi-permanent, buffers and chains)
- Rolling stock safety systems, e.g. driver vigilance system, automatic train protection (ATP), speed monitoring, driver monitoring, door interlocks, emergency brakes and help points, data loggers, crashworthy design
- Locations and purpose of stabling yards and maintenance depots for a selected fleet
- Depot work: daily servicing, preventive and corrective maintenance, inspections, wheel turning, overhauls, interior and exterior cleaning and washing (automatic wash plants, graffiti removal)
- Rolling stock maintenance roles, e.g. depot manager, maintenance planner, electrical fitter, mechanical fitter, rolling stock technician, cleaner, shunter
- Rolling stock manufacturers and component suppliers in Australia and internationally, e.g. Alstom, Downer, Siemens, CAF, Stadler, Wabtec, Progress Rail
- Main stages of design and manufacture:
  - requirements and specification, concept and detailed design, prototype, manufacture and assembly, testing and commissioning, acceptance into service
- Design and manufacture roles and skills, e.g. design engineer, drafter, project manager, welder, fitter, electrician, quality inspector, test engineer
- Comfort and accessibility design features:
  - layout and seating, wide doors, level or ramped boarding, priority and wheelchair spaces, audio-visual passenger information, air-conditioning, materials

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- Efficiency and sustainability design features:
  - lightweight materials, regenerative braking, efficient traction systems, LED lighting, recyclable materials
- Emerging developments, e.g. battery and hydrogen trains, catenary-free trams, condition monitoring, automation
- Online research techniques, including checking source credibility and referencing Typical components of a report template

Assessment Conditions

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

Resources for assessment include:

- suitable learning environment such as a classroom equipped with data projector and screen
- computer hardware software with access to the internet
- visual resources and or actual examples of electric and diesel electric rail rolling stock and major components
- relevant template to document report information
- personal protective equipment PPE for onsite visits

Unit Mapping Information

Previous Code and Title	Equivalence	Comments
	Newly created	This unit has been created to address a skill or task required by industry that is not covered by an existing unit of competency

Links

Companion volumes, including implementation guides, are found on the national training register - https://training.gov.au/training/details/TLI.

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