Transport bulk liquefied petroleum gas (LPG) by road

Level 4  Credits 15

Purpose

This unit standard is for drivers of road tank wagons who load, transport, and unload bulk liquefied petroleum gas (LPG), including propane and butane.

People credited with this unit standard are able to: describe the properties and hazards of LPG and the features of tank wagons that transport LPG; carry out a pre-trip inspection; position the vehicle and prepare to load; load a vehicle with bulk LPG; transport a load safely and efficiently to a customer site; deliver a load to a customer site; and describe procedures for emergencies.

Subfield  Commercial Road Transport
Domain  Goods Service
Status  Registered
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Entry information

Candidates must hold a minimum of the full class of licence required for the vehicle being driven, a current D endorsement and current Approved Handler and Approved Filler certificates.

Accreditation

Evaluation of documentation and visit by NZQA, industry and NZ Transport Agency.

Standard setting body (SSB)

NZ Motor Industry Training Organisation (Incorporated)

Accreditation and Moderation Action Plan (AMAP) reference  0092

This AMAP can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Special notes

1 Legal and formal requirements relevant to this unit standard include: Hazardous Substances and New Organisms (HSNO) Act 1996; Health and Safety in Employment Act 1992; Land Transport Act 1998; Resource Management Act 1991;
Transport Act 1962;
Hazardous Substances and New Organisms (Personnel Qualifications) Regulations 2001;
Hazardous Substances (Compressed Gases) Regulations 2004;
Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001;
Hazardous Substances (Classification) Regulations 2001;
Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004;
Hazardous Substances (Emergency Management) Regulations 2001;
Hazardous Substances (Identification) Regulations 2001;
Hazardous Substances (Tank Wagons and Transportable Containers) Regulations 2004;
Hazardous Substances (Tracking) Regulations 2001;
Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999;
Land Transport Rule: Dangerous Goods 2005;
Land Transport (Driver Licensing) Rule 1999;
Land Transport Rule: Heavy Vehicles 2004;
Land Transport (Road User) Rule 2004;
NZS 5433:2007 Transport of dangerous goods on land;

2 Any new, amended or replacement Acts, regulations, Rules, standards, codes of practice, or NZ Transport Agency requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

3 Definitions

Approved Filler means a person who is approved by a test certifier to fill pressurised containers with compressed gases;
Approved Handler means a person who is approved by a test certifier to handle nominated hazardous substances;
BLEVE means a boiling liquid expanding vapour explosion. This can occur with both flammable and non-flammable gases that are liquefied under pressure;
brake interlock means a device that automatically activates the vehicle braking system and immobilises the vehicle while transfer hoses and equipment are connected;
delivery documentation may include hand-held electronic data processing devices;
driving conditions means any of the six conditions (road, weather, vehicle, traffic, light, driver) from which driving hazards will arise;
emergency response documentation may include the SDS (Safety Data Sheet) for the product, an EPG (Emergency Procedure Guide) or the New Zealand Standards publication HB:76 DG Initial Emergency Response Guide;
ERMA is the Environmental Risk Management Authority New Zealand;
organisational requirements include any legal requirements, standards, codes of practice, company and/or site procedures, industry best practice, and manufacturers’ instructions. These must be available to candidates, providers, and assessors; PTO means power take off, which is a mechanical drive taken from a vehicle’s engine or transmission that drives the pump necessary to provide hydraulic pressure; tank means an enclosed pressure vessel exceeding 500 litres water capacity permanently fixed to the chassis of a tank wagon used for the transport or storage of a flammable gas or oxygen; tank wagon means a road transport vehicle constructed to transport bulk hazardous liquids or gases. Tank wagons include tank trucks, tank trailers, tank semi-trailers, and vehicles carrying transportable containers which are loaded and unloaded while mounted on the vehicle; test certificates mean certificates issued by a test certifier; test certifier means a person approved by ERMA to certify that the requirements of the HSNO Act have been met; vehicle dynamic effects are the influences of physics (kinetic energy, centrifugal force, gravity etc) on a heavy motor vehicle, that a driver must manage to maintain stability and control.

4 Competency for this unit standard must be demonstrated on-job.

Elements and performance criteria

Element 1

Describe the properties and hazards of LPG and features of tank wagons that transport LPG.

Performance criteria

1.1 UN class and UN number of LPG are identified in accordance with emergency response documentation.

1.2 Approved Handler and Approved Filler requirements for LPG are identified in accordance with the HSNO regulations.

1.3 Properties of LPG are described in accordance with emergency response documentation. Range the effect of heat and pressure on the gas when stored in a container; causes of a BLEVE; the characteristics of the gas in a leak, fire situation, or in the presence of static electricity; density; odour; expansion rates; upper and lower explosive limits.

1.4 Hazards associated with LPG are described in accordance with emergency response documentation. Range personal, public, environmental.

1.5 Hazardous atmosphere zones are described in accordance with organisational requirements.
1.6 Circumstances in which an LPG tank wagon may be left unattended are described in accordance with organisational requirements.

1.7 The functions of equipment fitted to an LPG tank wagon are described in relation to the safe transport and transfer of LPG.

Range includes but is not limited to – pumping equipment, external piping and fittings, bonding devices, pressure vessel, pressure relief, master switch, valves, warning devices, brake interlock, pressure and ullage gauges.

1.8 Factors that cause static electricity and how to minimise the risks associated with static electricity are described in accordance with organisational requirements.

Element 2

Carry out a pre-trip inspection.

Performance criteria

2.1 The inspection determines whether the Certificate of Fitness for the vehicle and any trailers, test certificates, and the Pressure Vessel Survey are current, and whether the vehicle systems and equipment comply with organisational requirements. Non-complying vehicles or trailers are repaired or reported in accordance with company procedures.

Range includes but is not limited to – fuel, fluids, wheels and tyres, steering, brakes, lights and indicators, communication equipment, vehicle documentation; may include – trailer couplings.

2.2 The inspection of vehicle load transfer equipment for security and state of repair determines whether it meets organisational requirements. Non-complying vehicles or trailers are repaired or reported in accordance with company procedures.

Range may include – pumps, hydraulic hoses and couplings, transfer hoses and reels, bonding devices, couplings, valves, pressure and ullage gauges, engine strangler.

2.3 The inspection determines whether safety equipment meets organisational requirements, is accessible and properly maintained, stowed and secured. Any unserviceable items or items with expired test dates are replaced or reported in accordance with company procedures.

Range includes but is not limited to – correct number and type of fire extinguishers, triangular warning signs, first aid kit, cones, signs, approved torch; may include – spill kit.
2.4 The inspection determines whether personal protective equipment is available, ready for use, and meets organisational requirements.

Range includes but is not limited to – approved gloves, approved neck to toe clothing, full face mask or safety glasses, safety footwear, high visibility clothing; may include – hard hat, hearing protection

2.5 The inspection determines whether the dangerous goods placards are correct for the load being carried and are correctly displayed in accordance with the Dangerous Goods Rule.

Element 3

Position the vehicle and prepare to load.

Performance criteria

3.1 The vehicle is driven into the loading site in accordance with site procedures.

Range may include – vehicle driven onto the weighbridge.

3.2 The vehicle is positioned without damage to property or injury to people and in a position that enables loading to be carried out in accordance with site procedures.

3.3 The park brake is applied and the engine and master switch are turned off.

3.4 Personal protective equipment is used in accordance with organisational requirements.

3.5 The locations of emergency equipment and emergency procedures are identified prior to loading.

Range includes but is not limited to – safety shower, eyewash facility, fire extinguishers, emergency shutdown controls, fire alarm, deluge system, evacuation procedures.

3.6 The product type and quantity to be loaded are checked to ensure they are in accordance with delivery documentation and organisational requirements and within the safe carrying capacity and gross weight limitations of the vehicle. Any discrepancies are rectified in accordance with company procedures.

3.7 Product transfer equipment is connected in accordance with organisational requirements.

Range includes but is not limited to – brake interlock activated, bonding device, transfer hose or loading arm inspected for damage, connections to load-out and tank wagon checked for leaks, hose or loading arm pressurised and checked for leaks before commencing transfer.
Element 4

Load a vehicle with bulk LPG.

Performance criteria

4.1 Site procedures are followed for the input of information into, and the operation of, the load controller.

4.2 The loading process and fill levels are monitored by the driver in accordance with company procedures.

4.3 The vehicle is loaded with bulk LPG safely using only approved equipment and in accordance with organisational requirements.

4.4 When loading is completed, all valves are closed and product transfer equipment is vented and depressurised before uncoupling the hoses from the vehicle. Hoses and other equipment are stowed and secured in accordance with organisational requirements.

4.5 Pre-departure inspection of the loaded vehicle is conducted to ensure all hoses and cables are disconnected, the brake interlock deactivated, and any obstacles cleared.

4.6 The site is restored to a clean and tidy condition in accordance with site procedures.

4.7 The vehicle is weighed, where required, and moved from the loading area without damage to property or injury to people and in accordance with site procedures.

4.8 The delivery documentation is completed, checked, and secured in the vehicle in accordance with organisational requirements.

Element 5

Transport a load safely and efficiently to a customer site.

Range vehicle must be driven over a distance of at least 25 km and be loaded to at least 50% of payload.

Performance criteria

5.1 The vehicle is driven and manoeuvred in accordance with legal requirements and consistent with efficient vehicle operation.

Range efficient vehicle operation includes but is not limited to – observance of speed limits, signs and controls, railway crossing obligations; correct signalling; appropriate transmission use; fuel economy driving.
5.2 The driver interacts courteously and professionally with other road users and any prescribed routes are followed in accordance with organisational requirements.

5.3 Vehicle dynamic effects are managed using techniques that are consistent with the safe operation of the vehicle and reflect the prevailing driving conditions.

Range may include – corners, intersections, following distances, hills, steering control, use of auxiliary braking systems.

Element 6

Deliver a load to a customer site.

Performance criteria

6.1 A pre-delivery assessment is made upon entering the delivery site, and site features that constitute a hazard and/or prevent delivery are rectified or reported in accordance with organisational requirements.

Range may include – vehicle dimension restrictions, ground stability and surface conditions, room to manoeuvre, sources of ignition, other tank wagons (eg Class 3), ease of access and egress without need to reverse, vehicle or pedestrian traffic, likelihood of electrical storms.

6.2 Any site instructions and/or restrictions are complied with.

Range may include – speed, right of way, reporting, access restrictions, prohibited items, electronic restrictions, personal protective equipment, communications, unloading procedures, emergency procedures.

6.3 The vehicle is positioned correctly and safely for discharge. The park brake is applied and the engine switched off or the PTO engaged.

6.4 Personal protective equipment is used in accordance with organisational requirements and steps are taken to apply personal safety measures.

Range may include – manual lifting techniques, three points of contact when using ladders, correct use of walkways.

6.5 The work site is marked with signs and/or cones and the driver remains with the vehicle and manages the delivery. Potential hazards are managed in accordance with organisational requirements.

Range potential hazards may include – pedestrians, vehicles, ignition sources, Class 3 tank wagons, weather.
6.6 The receiving vessel and components are checked for damage, and contents are checked for pressure and/or ullage to ensure capacity is available for the delivery. Any deficiencies are reported or actioned in accordance with company procedures.

6.7 Preparation for delivery is consistent with organisational requirements.

Range brake interlock activated, bonding devices and transfer hoses inspected for damage, connections between receiving vessel and tank wagon checked as sound, hose pressurised and checked as sound, product type confirmed.

6.8 The load is discharged in accordance with safe filling capacity, delivery documentation, any special delivery instructions, and organisational requirements.

6.9 At the completion of the delivery all valves are closed on the vehicle and the receiving vessel, and product transfer equipment is disconnected in accordance with organisational requirements.

Range includes but is not limited to – bonding device disconnected, transfer hoses vented and depressurised before being uncoupled from transfer connections, hoses stowed and secured, brake interlock deactivated.

6.10 The site is restored to a clean and tidy condition in accordance with site procedures.

Range may include – securing the delivery site.

6.11 Delivery documentation is completed to reflect changes in the load, and distributed in accordance with organisational requirements.

6.12 A pre-departure inspection of the vehicle is conducted in accordance with organisational requirements.

Range includes but is not limited to – determining whether all hoses are disconnected and stowed, pump secure or PTO disengaged, warning signs and/or cones are stowed, any obstacles are cleared.

6.13 The vehicle is driven from the site safely in accordance with site procedures.
Element 7

Describe procedures for emergencies.

Performance criteria

7.1 Procedures for emergencies that may occur during loading and unloading are described in accordance with emergency response documentation and organisational requirements.

Range leak, fire, earthquake.

7.2 Procedures for emergencies that may occur in transit are described in accordance with emergency response documentation and organisational requirements.

Range road crash, fire, leak, breakdown.

7.3 Initial responses to a person exposed to LPG are described in accordance with emergency response documentation and organisational requirements.

Range inhalation, cold contact injuries.

Please note

Providers must be accredited by NZQA, or an inter-institutional body with delegated authority for quality assurance, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact the NZ Motor Industry Training Organisation (Incorporated) info@mito.org.nz if you wish to suggest changes to the content of this unit standard.