



The information in this Best Practise Guide was accurate and reliable at the time of writing and does not supersede legislation or the recommendations of equipment manufacturers.

Best practice guidelines for Loading

Vision, knowledge, performance



He Mihi

Nga pakiaka ki te Rawhiti.

Roots to the East.

Nga pakiaka ki te Raki.

Roots to the North.

Nga pakiaka ki te Uru.

Roots to the West.

Nga pakiaka ki te Tonga.

Roots to the South.

Nau mai, Haere mai

We greet you and welcome you.

ki te Wāonui o Tane

To the forest world of Tane.

Whaia te huarahi,

Pursue the path,

o te Aka Matua,

of the climbing vine,

i runga, i te poutama

on the stairway,

o te mātauranga.

of learning.

Kia rongo ai koe

So that you will feel,

te mahana o te rangimārie.

the inner warmth of peace.

Ka kaha ai koe,

Then you will be able,

ki te tū whakaiti,

to stand humbler,

ki te tū whakahī.

Yet stand proud.

Kia Kaha, kia manawānui

Be strong, be steadfast.

Tena koutou katoa.

First edition November 2000

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This Best Practice Guideline is to be used as a guide to log loading. It does not supersede legislation in any jurisdiction or the recommendations of equipment manufacturers.

FITEC believes that the information in the guideline is accurate and reliable; however, FITEC notes that conditions vary greatly from one geographical area to another; that a greater variety of equipment and techniques are currently in use; and other (or additional) measures may be appropriate in a given situation.

Other Best Practice Guidelines included in the series:

- Cable Logging
- Chainsaw Use
- Fire Fighting and Controlled Burnoffs
- Ground-based Logging
- Land Preparation
- Maintenance Inspections of Yarder Towers
- Manual Log-making
- Mechanised Harvesting and Processing
- Mobile Plant
- Personal Protective Equipment
- Road and Landing Construction
- Silvicultural Pruning
- Transport
- Tree Felling
- Tree Planting
- Working with Helicopters

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Best Practice Guidelines for Loading

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Introduction

Purpose of these guidelines

The Best Practice Guidelines for Loading have been developed by FITEC to improve worker safety and performance. They combine industry training standards and best practice information to provide a valuable reference manual for people involved in loading.

These guidelines should be read in conjunction with the Approved Code of Practice Safety and Health in Forest Operations. In particular, these guidelines provide direct support for Part 3 - Section 19 (Loading) of the code.

They are a valuable reference document for the following Unit Standards registered on the NZQA framework:

- Unit 6926 – Demonstrate knowledge of the log loading process
- Unit 6927 – Load logs using a vehicle-mounted hydraulic loader in a forestry situation
- Unit 6928 – Operate a Bell machine in a forestry or log yard situation
- Unit 6929 – Operate a knuckle-boom loader in a forestry situation
- Unit 6930 – Operate a forked loader in a forestry or log yard situation
- Unit 6932 – Load a logging truck
- Unit 6933 – Operate a loader in a forestry production situation

How to use these guidelines

These guidelines have been arranged in two main sections:

- **Loading Basics** identifies the modes of loading commonly used in the forestry industry, the legal requirements, and the hazards involved with each.
- **Loading Procedures** outlines procedures relating to loading and unloading trucks and rail wagons.

The **Glossary of Terms** gives the meaning of terms used throughout these guidelines.

The **Index to Unit Standards** allows the reader to locate information specific to each of the Unit Standards listed.

FITEC acknowledges the assistance of the Occupational Safety and Health Service, Liro Forestry Solutions, TGM Services Limited, Commercial Driver Training School, and numerous forest industry trainers, forestry contractors, and forest company staff in the development of this Best Practice Guideline.

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About best practice training material

FITEC has developed the material in this publication. It has been reviewed by representatives of the forest industry. At the time of publication, FITEC considers the practices and approaches in this publication to exceed accepted industry standards with regard to production and business management. In addition, the practices recommended in the publication exceed all the New Zealand regulatory standards, in particular those related to health and safety, environmental management, and human resources / employment as applicable.

This material is reviewed and reprinted regularly by FITEC.

Loading basics

Use of loaders

Loaders are used in a number of forestry operations. These include:

- Clearing the chute in cable operations
- Loading logs, stems, or roundwood on to trucks, trailers, and rail wagons, and working within ships' holds.
- Unloading log trailers
- Fleeting, sorting, stacking logs, and clearing slash on the skid

In addition to carrying out these tasks, the loader operator may be required to ensure that:

- Logs which are loaded are within specification (quality and branding)
- Load dockets are completed
- Log stocks on the skid are monitored.

Types of loaders

There is a range of loaders used in the forest industry. The most common of these are:

- Tracked knuckle-boom loader
- Truck-mounted hydraulic loader
- Bell logger
- Wheeled hydraulic loader
- Rubber tyred front-end loader
- Self-loading truck.



Tracked knuckle-boom loader



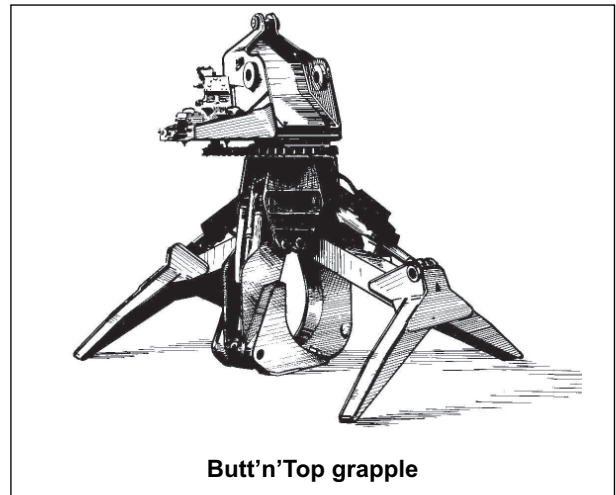
Fixed heel

Tracked knuckle-boom loader

- Tracked knuckle-boom loaders have become the dominant machines used for fleeting, sorting, and loading logs in commercial forestry operations in New Zealand.
- They range in size from 10- to 25-tonne base machines working on skids, to 40-tonne base machines used for loading full stems.
- They are suited to small working areas and poor running surfaces.
- They can move wood through 360° without the machine having to be moved.
- They are suited to fleeting and sorting operations as they can reach over other logs to select specific log types.
- Their slow travel speeds can be a disadvantage when stacking. This can be overcome by placing stacks in a semi-circle around the processing area.
- Knuckle-boom loaders may be fitted with a fixed heel or live heel. This allows logs or stems to be picked up from nearer their ends. They can then be swung around in an arc to be placed elsewhere.
- An alternative is the Butt'n'Top grapple. This grapple allows logs or stems to be rotated for positioning.



Live heel



Butt'n'Top grapple

Wheeled hydraulic loader

- Wheeled hydraulic loaders move on a wheeled base.
- The boom is able to rotate though 360° like the tracked version. However, the base is unable to slew. This reduces the manoeuvrability of the loader.
- Wheeled hydraulic loaders are suited to working on a firm running surface, such as in a log yard. Where there is adequate room, they are able to travel faster than a tracked loader. This can make them more versatile in stacking situations.
- Their stability is less than that of the tracked loader because of the smaller base area and less low-down weight. They should be fitted with outriggers to increase stability during loading.
- Wheeled loaders are typically in the 6- to 12-tonne load range.



Wheeled hydraulic loader

Truck-mounted hydraulic loader

- Truck-mounted loaders are similar to wheeled hydraulic loaders.
- Their manoeuvrability is more restricted than tracked loaders. They are best suited to loading operations where they can position themselves at a stack.
- They are required to be fitted with outriggers and stabilisers that firmly stabilise the vehicle while loading or unloading.
- They can be effectively used in cold-deck situations where an independent contractor is responsible for loading at a number of logging sites.
- Typical machine sizes range from 20 to 30 tonnes.



Truck-mounted hydraulic loader

Rubber-tyred front end loader (RTFEL)

- These machines work best on good running surfaces and relatively large landings. They are not very manoeuvrable.
- They also work well in multi-skid environments.
- Safety concerns relate to limited rear vision.
- RTFELs can lift and carry large loads, and have fast travel speeds. This makes them efficient fleetting machines. They are, however, not efficient sorting machines owing to poor visibility and the nature of the forks used.
- They tend to be used in high volume, multiple log sort operations.
- RTFELs range in size from 6- to 12-tonne machines typically used in clearfell operations, to the large 30-tonne machines used to unload entire truck or trailer loads. Large stackers at log yards and ports are capable of lifting 65-tonne loads.



Rubber-tyred front end loader



Large stacker



Bell loader

Bell loaders

- The 3-wheeled Bell loader is a fast, manoeuvrable, and relatively cheap loading machine.
- It can be used to fleet and sort logs.
- Bells are used in cable operations to clear the chute and load stems on bearers.
- Bells are less effective as stacking machines. Travel speeds are not high compared with a RTFEL and much smaller loads are carried. However, they are well suited to stacking piles for a RTFEL to fleet.
- Bells can be good in multi-skid operations where travel between skids is necessary.
- Bells need designated workspaces, as operator rear vision is limited. Other skid workers need to be wary.
- Bells can be used to load trucks and trailers in small piece-size operations (e.g., production-thinning operations).

Self-loading trucks

- Self-loading units are most often used to service low production logging crews or clean-up operations.
- Self-loaders require outriggers and stabilisers. These stabilise the unit while loading. They must be used unless the stability of the empty truck safely exceeds the maximum tipping movement the crane can apply.
- A safe and adequate means of getting on to and off the loading crane workstation is to be provided.
- Positive means is to be provided to prevent a free fall of the boom in the event of a malfunction.
- Each set of controls for the operation of the self-loading unit is to be of the deadman operation type.
- Operators of self-loading units often work on their own. This means that the operator must have a means of emergency communication. The operator should have a contact schedule with someone who can render help in an emergency.



Loader safety features

Protective Structures

Loader machines operated in a forest, log yard, or port situation must have protective structures that comply with OPS and FOPS requirements. In addition, loaders that operate on unstable or uneven terrain must comply with ROPS requirements.

Seat Belts

Where a seat belt or other safety restraint is fitted, loader operators should wear the restraint device whenever the machine is being operated.

Reverse Warnings

Reversing warning alarms fitted on loaders should not be disabled. These provide a level of protection for manual workers in the loading area. This is particularly important when working on an active skid.

Personal protective equipment

When you, as a loader operator, are outside your loader it is important that you use the correct Protective Equipment.

- Hi-vis helmet
- Hi-vis shirt, vest, or coat. If working during the hours of darkness, the hi-vis garment shall have at least 150 cm² of reflective strips on the front and back
- Protective eyewear, unless it creates a greater hazard
- Safety footwear providing ankle support
- Gloves to protect hands when working on loader equipment.
- Hearing protection if operating or exterior noise levels are high.

Loader maintenance

Daily inspections

Daily inspections should be completed at the beginning of each driver's shift.

Operational Checks	Walk Around Inspections
<ul style="list-style-type: none">• Gauges• Lights• Horn• Wipers/washers• Air con/heater• Steering system• Braking system• RT/CB• Engine oil level• Fire extinguisher• Exhaust system (fire season)	<ul style="list-style-type: none">• Tyres/tracks• Engine oil leaks• Coolant leaks• Trans/diff leaks• Air cleaner• Grapple (cracks or loose pins)• Air leaks/drain tank• Loose bolts/damage• Hub oil leaks• Hoses

Weekly inspections

Check Fluid Levels	General Checks
<ul style="list-style-type: none">• Engine coolant• Transmission oil• Diff oils• Power steering oil	<ul style="list-style-type: none">• Clean and check batteries• Grease• Fire extinguisher• Tool box/shovel• Brake linings• Worn hoses

Defective rigging or fittings shall be repaired or replaced before the loader continues operating.

Loading regulations

There is a range of regulations relating to load positioning and load height which the loader operator must comply with.

Height limits for log loads

The outside logs of a truck or trailer load shall not be loaded above the top of the stanchion or the stanchion extension.

Logs loaded in the middle of the load shall not have more than $\frac{1}{3}$ of the diameter of the logs above the top of the stanchions or the stanchion extensions where fitted.

The top of the load shall be evenly crowned so that the load-securing device will contact as many logs as possible.

Load height limits for log trucks

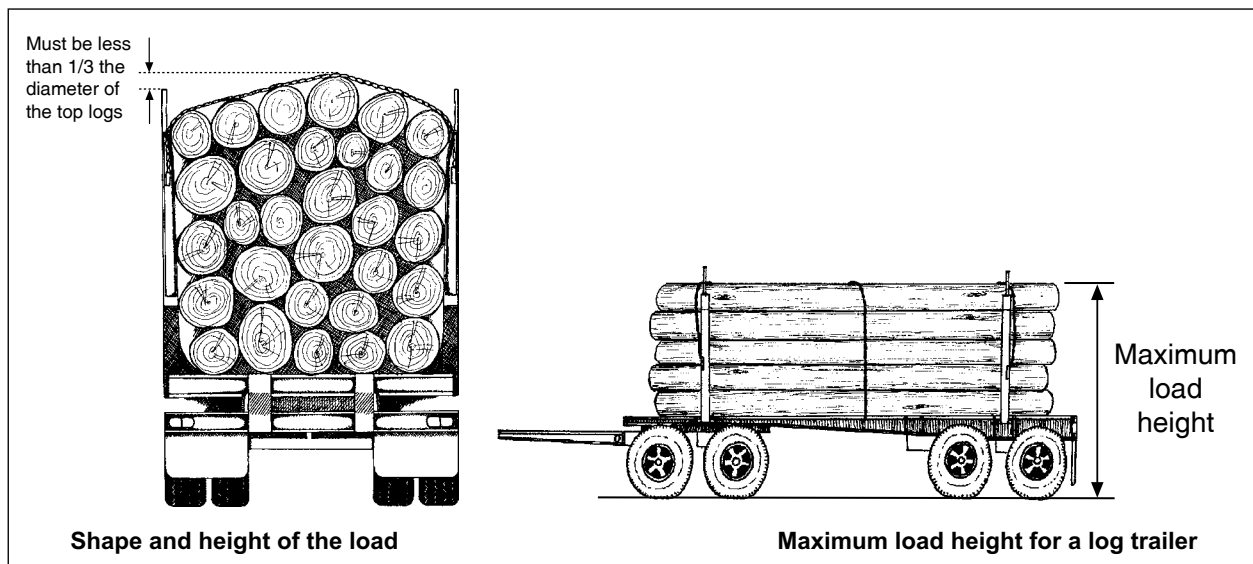
The maximum legal load height for a truck is 4.25 m.

Load height limits for log trailers

Load heights are set according to the number of axles on the trailer.

The load height measurement is taken from the ground to the top of the log that is resting against the stanchion (not the stanchion or pin extension).

Trailer type	Maximum load height (m)
Two- and three-axle	3.5
Four-axle	3.8



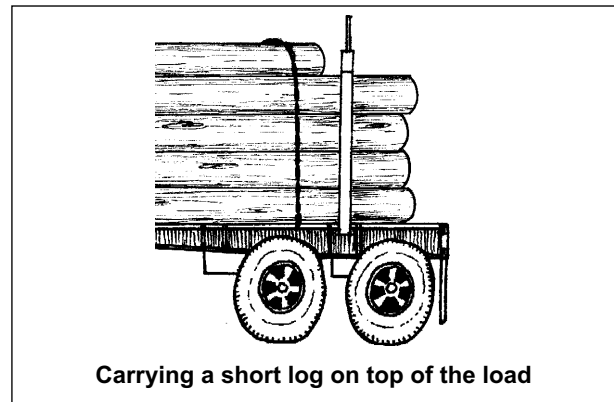
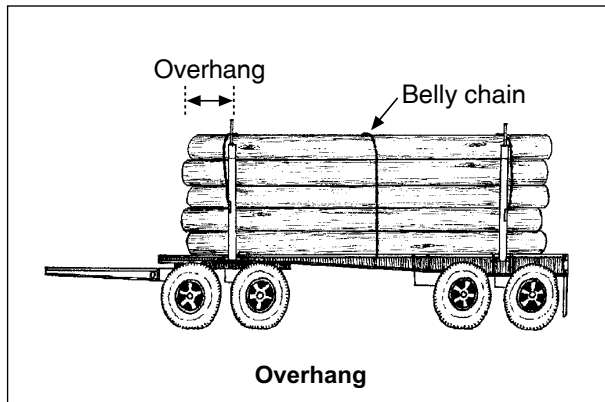
Overhang on trailers

Logs shall be loaded so that lower and outside logs overhang the bolster and side-arm edges by 300 mm.

Exception:

The minimum overhang may be reduced to 150 mm provided:

- Logs are less than 4.6 m long and of uniform length
- There is a fixed chassis or frame between the bolsters
- A belly chain is used.



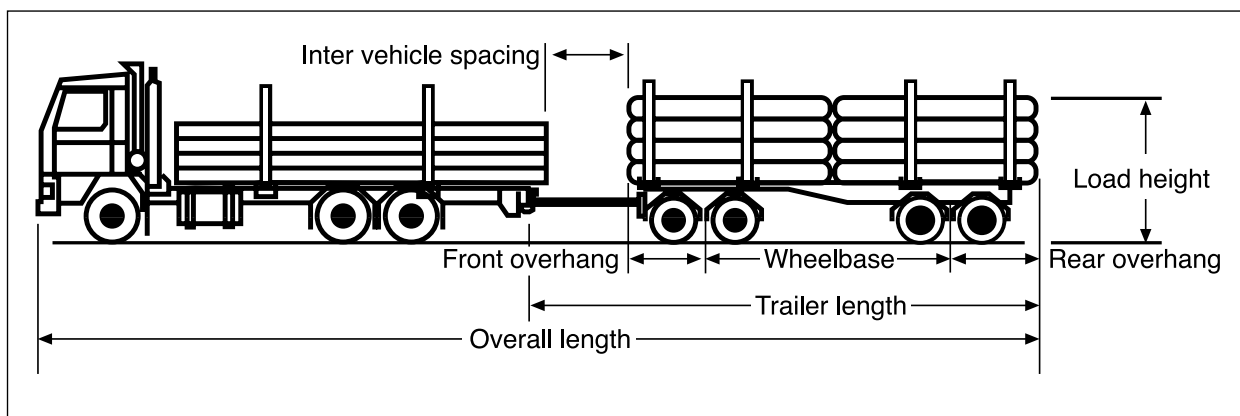
Logs that are shorter than the distance between the stanchions shall be nestled between the outer logs and secured with a belly chain.

A short log may be placed on top of the load provided the truck driver uses a belly chain and secures the log end not supported by a stanchion.

22 Metre log trucks

From 20th June 2002, new regulations were introduced allowing for the maximum overall length of the loaded truck and trailer to be extended from 20 metres to 22 metres, subject to specific conditions. The provisions effectively lower the centre of gravity of the load, making the loaded truck more stable on the road.

(Note: Summary only, for more information refer to the Land Transport Rule 41001 (Vehicle Dimensions and Mass) and exemption notice)



Dimension limits *(only applies when trailer laden with 2 or more packets of logs)*

- Overall length must not exceed 22.0 metres
- Trailer length must not exceed 13.5 metres
- Trailer wheelbase must be at least 4.9 metres
- Inter-vehicle spacing (including the load but excluding the drawbar and front dolly assembly) must be at least 1/2 load width, usually 1.1 metres
- Front overhang when measured across the full width of the load must not exceed 2.0 metres
- Rear overhang if registered before 1st July 2002 must be less than the smaller of 65% of the trailer wheelbase or 4.0 metres
- The maximum load height of any part of the load on the trailer must be less than 3.2 metres

Note: If bolster side arms are higher than 3.2m they must have a clearly identifiable painted strip that extends from 3.1m to 3.2m above the ground to show the maximum allowable load height

Operating conditions

- Must not enter an intersection or railway crossing without adequate clearance to complete crossing before train or other vehicle arrives.
- Must pull over clear of moving traffic in fog, heavy rain, hail or other factors that restrict visibility to less than 500 metres.
- Where available must use routes designated for use by over dimension vehicles.
- Must display a LTSC spec. 0800 LOG TRUCK sign
- Must pull over to allow other traffic to pass when safe to do so.
- Operator responsible for any property and roadside furniture damage due to over dimension load.

Day time

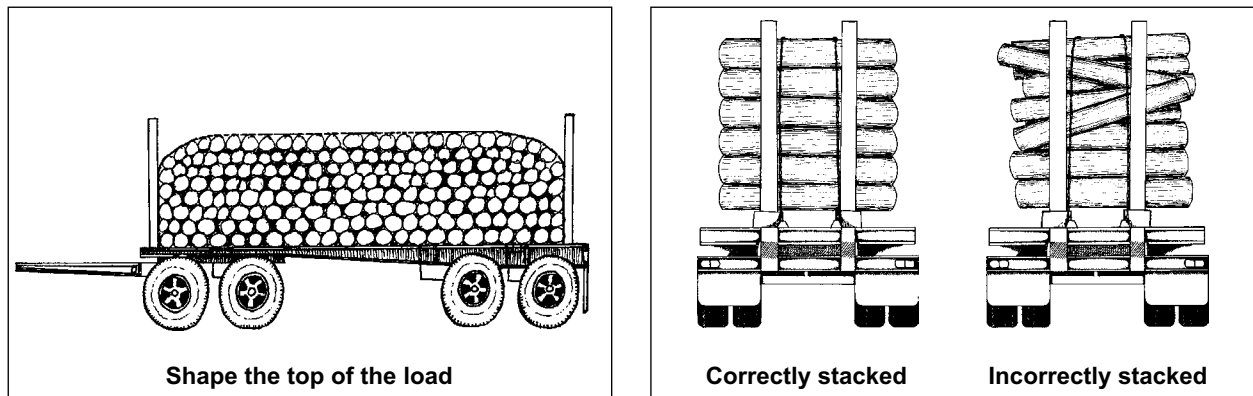
- Headlights on low beam
- Fluorescent yellow green flags or hazard panels each side of the rear of the load displayed only when greater than 20 metres.

Darkness *(lights visible from 200m)*

- Revolving amber light on cab roof
- Red or amber lights at each side at rear of load. These can be trailer lamps if positioned at rear of load e.g. by telescopic pole system (lights must be at least 50cm²)
- Side marker lights approx. 3 metres apart. (Amber front facing, red or amber rear facing)

Roundwood loading

Roundwood needs to be stacked evenly. The top of the load needs to be slightly rounded so that the binder chains make contact with as much of the load as possible.



Woodflow Management

Loader operators are often responsible for managing the woodflow through and off the landing.

They may:

- Plan the layout of the processing, storage, and loading areas
- Estimate log stocks on the landing for transport scheduling
- Request uplift from dispatch
- Ensure that logs being loaded out are in specification (quality, branding)
- Complete load delivery dockets for each load, ensuring their legibility and accuracy.

A well-managed loading operation will help ensure that the right logs go the right destination. This may include export logs to a port, domestic sawlogs to a sawmill, and pulp and oversized logs to a pulp mill or MDF plant.

Loading planning

Loader operators should plan their work areas and stacks before commencing work. In defining a functional layout, consider the following:

- Type(s) of machine being used (manoeuvrability)
- Location of the stacks
- Access by log trucks
- Truck and loader position during loading (location and suitability of landing surface)
- Interference from other landing activities.

A well-planned loading area will ensure all tasks are completed efficiently and safely, with minimum interference with other activities.

Check the crew's cutting instructions to determine what are likely to be the fastest moving (higher volume) products. These should be stacked close to loading area to reduce handling time and increase efficiency. Any double handling of product is unproductive work. Adequate space will be required if there are high volume products.

Stack the slower moving products in areas that will not cause congestion to the operation.

Operators on RTFELs need to allow for a bigger working circle than operators on tracked knuckle-boom loaders.

Plan your stacks carefully if an independent loader (on separate contract or nightshift) completes load-out. Mixed log grades can be difficult to pick up on a night-shift operation. At the end of the day you should ensure there is plenty of room for the loader driver and trucks to operate safely. Also make sure the landing is clear of all debris.

Dockets

A Load Delivery Docket (LDD) should accompany all loads. The purpose of the LDD is to provide the truck driver, forest owner, and customer with a record of the load delivery.

Forest owners or managers require this information to:

- Calculate forest yield
- Charge customers for product received
- Use as proof of delivery
- Pay logging, loading, and transport contractors for handling the product
- Pay royalties to any third party.

Carter Holt Harvey Forests PO Box 648, Tokoroa New Zealand

Load Delivery Docket

Date: 1/2/98 Time: 10:30 Docket No.: 5491964

Haulage Supplier: J Bloggs Truck: 123 Trailer: 1230

Product: PR Length: 50 Oldest Felling Date: 24/4/98

P. Radiata: ☒ Other Species: No. of Logs: 25

Customer: CHH Forests Delivery Pt.: Kinleith

Logging Supplier: F. Citizen Crew No.: 17

Forest/Landing: Kinleith

Loader Supplier: B. Happy Loader: 147

Other Supplier: F.W.B Carriers No.: 13 Process:

Comment: Volume:

Signature Loader Driver: B. Happy W/Bridge: Gross Weight:

Signature Truck Driver: W. Dewit Backload: Tare Weight:

Signature of Customer on Receipt: V. Reynolds Nett Weight:

Safe Logging Makes Cents
Original: Carter Holt Harvey Forests Copy

An example of a LDD

Law enforcement officers use the information off the LDD to match with the truck driver's logbook. The basic information required on a LDD is:

- Docket number
- Date and time load was completed.
- Carrier's name and truck/trailer identification. For example, truck 8 and trailer 12
- Logging crew's name which also may have a crew number
- Location where load came from (road name/ forest/landing number)
- Destination of the load, including the name of the customer receiving the product
- Type/grade of logs loaded, random saw logs or roundwood
- Truck driver's signature
- Loader operator's signature.

In most cases there are four copies of an LDD — one each for the customer receiving the product, transport operator, forest owner/manager, and the final copy for the logging/loader operator.

Quality

As is the case with other parts of the harvesting operation, maintaining log quality is the responsibility of every individual concerned.

The loader operator is usually the last person in a crew to handle logs before they are transported to the customer. As they are being loaded, the loader operator should look for defects that may penalise the contractor or forest owner. These defects may include:

- Incorrectly branded logs
- Logs requiring further delimbing
- Logs which exhibit features which do not meet the specification for that log grade.



Branded logs

Log branding

Logs are branded according to log type/grade before they leave the landing. This allows the forest owner and customer to identify visually the source of the logs, the grade, and possibly the crew.

Generally, it is only the higher value peeler and saw logs which are branded. Export pulp logs may also require branding. Domestic pulp logs are often left unbranded.

Branding requirements may be located in the log specification booklet or on the crew's cutting instructions. Cutting instructions are issued on a regular basis by the forest owner/managers, and include:

- Log type/grade required including branding instructions
- Number of loads or pieces required
- Timing and any special delivery instructions.

Log quality

If the loader operator sees any defects while loading, the affected logs or stems should be placed to one side. The skiddies should then be informed that there is further work to be done on them before they are loaded out.

In addition to the final quality-control check, the loader operator should be minimising any machine damage on the logs. If used incorrectly, the loader grapple or forks can cause bark loss, crushing, or splitting damage to the logs. Such damage may mean that a log is no longer in spec for the log grade.

Training and supervision

Training and supervision are very important factors in ensuring high performance standards for loading operations.

The Approved Code of Practice for Safety and Health in Forest Operations requires that before any worker begins operating loading equipment, the employer must place them under the close (constant and one on one) supervision of a competent person. That person must continue to supervise the worker until the worker can operate safely and is not likely to harm themselves or anyone else.

Extra attention must be given to the training and supervision of new or inexperienced operators. This is because most serious injuries occur to operators with less than 6 months' experience.

All operators must be under a documented training programme and should be aiming to pass the relevant NZQA Units that apply to loading.

Workers involved in loading need to be fit, active, alert, properly trained or supervised, and appropriately equipped.

Knowledge of hazards

As part of the supervision and training programme, operators need to be shown the hazards they will face on the job, and the controls to avoid being harmed by those hazards.

Before starting any new operation, machine operators must be involved in identifying any significant hazards. Control measures must then be identified. There must be documented evidence on site listing the hazards and controls, and showing that all operators have been familiarised with those hazards and controls.

A safe area for skiddies for fuelling or sharpening chainsaws must also be identified before work commences on any landing.

Whenever you, as a professional operator, identify a potential hazard you should prepare yourself to be in the best position to deal with the hazard. For example, communicate with all visitors/workers to your work site to ascertain their intentions. This is very important when visitors and auditors who need to measure your logs may encroach into your operating area.

The two main hazard categories are **Health Hazards** and **Operational Hazards**.

Health hazards

Loader operators often work long hours, which can contribute to cumulative fatigue. To maintain peak performance and prevent accidents, loader operators must take special care of their bodies, including their physical fitness, diet, water intake, personal hygiene, sleep and also how they treat their bodies away from work.

Health hazards

Hazard	Control
Lack of rest/sleep	<ul style="list-style-type: none"> • Build short frequent rest breaks into your work routine. • Take at least two evenly spaced 30-minute rest break during the working day.
Early starts	<ul style="list-style-type: none"> • Ensure each night you replace the sleep you lose in the morning. If you get up earlier go to bed earlier. • Once early starts have finished allow time for your body to recover.
Alcohol abuse	<ul style="list-style-type: none"> • Avoid drinking alcohol for at least 24 hours before carrying out any hard physical work.
Poor nutrition	<ul style="list-style-type: none"> • Start each day with a high-carbohydrate breakfast like porridge, cereal, toast, bananas, pasta, or potatoes. • Eat high-protein foods like lean meat, chicken, eggs, milk and cheese at night. • Eat at the start of a break and rest to allow digestion. • Always eat a high carbohydrate snack straight after work.
Exposure to sun	<ul style="list-style-type: none"> • Wear sun block. • Wear light shirts on hot days. • Wear a hat. • Carry out regular health checks.
Drugs	<ul style="list-style-type: none"> • Avoid all non-prescription drugs as they seriously affect both your mental and physical ability to work. • Inform the boss if you are on any medication that may affect your work. Stay home if necessary. • Before receiving any medication, tell your doctor what you do for a living. • If you are on long-term medication for a serious health complaint, inform the boss or crew of your condition in case you are involved in an emergency at work.
Early over-exertion/sprains and strains	<ul style="list-style-type: none"> • Start each day with a 10- to 15-minute warm-up and then a few stretches. • Start day slowly until muscles are warmed up properly. • If starting a new job, allow time for the body to get used to it before working flat out. • Do some stretches at the end of the day. • Take particular care when starting back at work after the holidays.

Health hazards (cont...)

Hazard	Control
Hypothermia/chills	<ul style="list-style-type: none">• Polypropylene clothing (thermal underwear) is excellent for cold, wet weather.• If necessary also wear warm hats, rainwear, or chaps.• Put a hat and warm clothes on when you stop for a break.• Bring spare dry clothing even on fine days. The weather can turn bad very quickly.
Lack of hygiene/infection	<ul style="list-style-type: none">• Clean and dress any cuts or scratches received on the job as soon as possible and keep them covered.• Make sure the first aid kit is kept fully stocked.• Carry water and soap on the job to wash hands before smokes.• Bath or shower every night.• Eat a balanced diet to keep your body healthy.• Wear clean clothes against the skin every day.
Occupational Overuse Syndrome (OOS)	<ul style="list-style-type: none">• Use correct techniques• Have regular medical examinations.• Use pre-work warm up and stretching techniques throughout the day.
Dehydration/heat exhaustion	<ul style="list-style-type: none">• Regularly drink fluids at a rate of 0.5 litres per hour, and up to 1 litre per hour in hot conditions.• Drink before you feel thirsty.• Do not drink fluids like soft drinks and cordials that have more than 8% carbohydrate content.• Drink high-carbohydrate drinks after work to replace energy levels.• Drink plenty of water at night to recharge the body.• Drink a couple of glasses of water before leaving for work.

Operational hazards

Operational hazards relate to the equipment being used and the work environment.

The hazard list below is not an exhaustive list, but includes some that you could encounter during your working day. You must take time to recognise operational hazards in your own operation each day

Operational hazards

Hazard	Control
Ineffective personal protective equipment (PPE)	<ul style="list-style-type: none"> • Do not perform any operation if protective equipment is ineffective. • Clean dirty hi-vis garments. • Replace any worn, damaged, or expired protective equipment. • Routinely check the condition of your protective equipment.
Skid workers and other machines on the landing	<ul style="list-style-type: none"> • Plan the loading areas to avoid other workers and machines. • Be aware of others at all times. • Do not swing logs over workers or other machines. • Ensure you have established an easy communication system for immediate attention.
Truck driver out of truck	<ul style="list-style-type: none"> • Ensure drivers are in view of loader driver at all times. • Do not load or unload until the driver is standing in a safe position. • Instruct truck drivers not to start chaining up until truck and trailer loading has been completed.
Loss of control of trailer during loading/unloading	<ul style="list-style-type: none"> • Ensure the loader is on clear flat ground. • Make any movements slowly and precisely • Be aware of truck driver's hands in relation to moving parts. • Always have truck driver stand on the opposite side of drawbar while hooking on.
Tree felling	<ul style="list-style-type: none"> • Obey traffic signs. • Only travel into a felling zone when signalled by the faller.
Fall from loader	<ul style="list-style-type: none"> • Always climb down backwards from loader — do not jump. • Climb down on to firm ground where possible. • Take extra care if it is wet or icy.
Use of mobile phones	<ul style="list-style-type: none"> • Machine operators are encouraged not to use phones while operating a loader.
Overhead lines/wires	<ul style="list-style-type: none"> • Operators must ensure they know where the lines are in relation to their operation. Have the appropriate signage displayed.
Loading/unloading of loading machines	<ul style="list-style-type: none"> • Only to be undertaken by an experienced person, or be done under supervision of an experienced operator.

Operational hazards (cont...)

Hazard	Control
Driving on forest roads	<ul style="list-style-type: none"> Put lights on when walking loader up or down the road. Keep left as far as is safe. Broadcast your intentions. Wear a seatbelt.
Slippery or processed logs	<ul style="list-style-type: none"> Avoid loading or unloading on slopes.
Working at night	<ul style="list-style-type: none"> Wear a hi-vis garment with reflectorised strips. Ensure loading machine has adequate lighting to perform the job safely. Have additional lights focused towards the rear of the loader so you can back safely. Regularly check, clean, and maintain lights so they always work effectively. Do not start loading a truck until the driver is standing in front of the truck, clearly visible in the truck lights.
Working alone	<ul style="list-style-type: none"> Ensure you have a means of getting help in an emergency (such as a radio or mobile phone). Arrange for regular contact (hourly) with someone who can provide help in an emergency (such as dispatcher, other member of crew). Ensure that person knows where you are and your intended travel route.
Terrain	<ul style="list-style-type: none"> Ensure loading operations are carried out on a flat running surface. Stay clear of the outer edge of landings on slopes (if necessary place a stem/log near the edge to warn you when backing).
Unstable ground	<ul style="list-style-type: none"> Ensure loading operations are carried out on stable ground (not fillslopes or waste piles). If run-off and mud make loading hazardous, cease loading unless you can load from a more stable location.
Spilt fuel	<ul style="list-style-type: none"> Isolate spillage and notify appropriate authorities.
Other vehicles or pedestrians	<ul style="list-style-type: none"> Be aware of hunters as well as cyclists or runners, especially when travelling to and from work.

Professional operating hints

The professional loader driver has certain responsibilities that are important to his employment. They are:

- Know the vehicle you operate.
- Maintain your loader to a high operating standard and a high level of appearance.
- Apply the highest possible standards of safety in all operations.

Six steps to be a successful professional operator:

- (1) Always put safety first.
- (2) Accept full responsibility for the safety of yourself, your loader and all others.
- (3) Regularly revise your safety training.
- (4) Apply your training and the rules of safety to each and every move you make with your loader.
- (5) Allow for the probability of less safety awareness on the part of others, and any hazard they may represent.
- (6) Act with professional courtesy and always promote safety to others.

Loading procedures

The following procedures can be applied to the range of loading machines (wheeled or tracked, knuckle-boom or forked loaders).

Unloading a log trailer

The following steps should be followed when unloading a log trailer.

- (1) The loader operator signals to the truck driver where to position the truck.
- (2) The loader operator directs the truck driver to place the lifting chain on the loader forks or the lifting hook on the loader forks, grapple, or gantry.
- (3) The loader then applies a slow upward lift on the chain lifting the trailer.
- (4) When the loader has the full weight of the trailer, the operator should lift only to a height necessary to lift the trailer off the truck safely. Depending on the situation, either the loader will swing the trailer away from the truck or the truck will drive forward from beneath the trailer. The driver should be signalled to drive forward (the signal must be acknowledged).

Note that if loading with a RTFEL it is necessary to crowd the forks back before lifting. This is to counteract the tilting forward of the forks, which will occur while lifting the trailer, thus allowing the lifting stop to slide forward and off the forks.

- (5) If necessary, hold the trailer no higher than 300 mm above the ground so the truck driver (standing on the ground) can swing the turntable around under the trailer.

The truck driver must stand on the opposite side of the drawbar from the loader while the trailer is being hooked up. The loader driver must ensure he has the truck driver in plain view at all times.

- (6) Once the turntable has been positioned correctly, the trailer can be lowered to the ground.
- (7) The truck driver will then uncouple the trailer-lifting chain and set up the bolsters, including the installation of extension pins.
- (8) If necessary, the loader operator will instruct the truck driver where to position the truck to allow loading to commence.



Lifting the trailer off the truck



Setting up bolsters and fitting pins

Loading a log trailer

Loading a log trailer is the reverse of the steps above. In addition, the following steps should be completed before the operation commences.

- Before commencing the truck driver will:
 - ☐ remove extension pins and lower the bolsters
 - ☐ disconnect any hoses and cables
 - ☐ remove any loose bark etc from chassis rails and bolster beds
 - ☐ uncouple the trailer.

Loading stems or logs on to a log truck or trailer

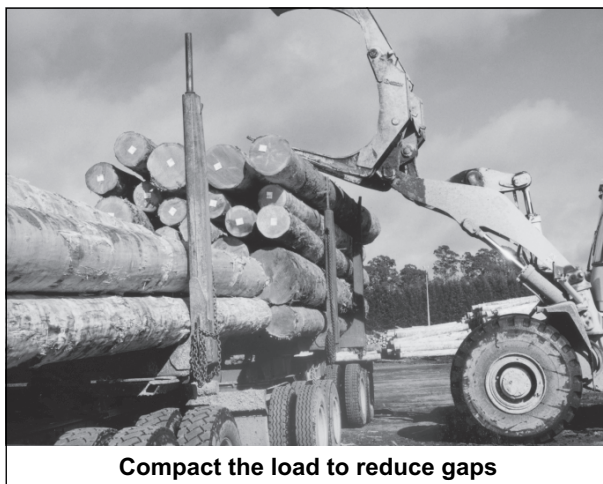
The truck driver has final responsibility for ensuring that the vehicle is loaded securely to the correct length, weight, and height.

Loading may commence only after the following have been completed:

- bolsters have been raised
- extension pins have been fitted
- the driver is in a safe position (normally forward of the cab in full view of the loader operator at all times).

The following steps should be followed when loading stems or logs

- (1) Communicate with the truck driver to tell him/her where you want the truck positioned.
- (2) Grab stem or logs as near as possible to their centre of balance.
- (3) Place the first stem or grab of logs on the truck, ensuring their position complies with legal requirements. On the log truck, load against the cab guard if the log length allows.
- (4) Load successive stems or logs according to the position of the first, ensuring they sit straight within the bolsters. Use the grapple or forks to position stems or logs to reduce gaps in the load.
- (5) If out-of-specification logs are identified, these should be placed to one side for further processing or branding.
- (6) As the required load height is reached, crown the top of the load, ensuring the crowning is even across the load.



Compact the load to reduce gaps



Position the top logs to crown the load

Loading logs on to rail wagons

All loads must be crowned and meet the following requirements:

- Outside logs must not protrude above the height of the cradle tips, or outside the bolsters.
- The centre of the crowned logs must be higher than that of the outside logs but must not exceed 200 mm above them.

Loading roundwood on to a truck or trailer

- When loading roundwood on to a conventional log truck and trailer, follow the steps outlined above.
- When loading roundwood on to a flat deck using a RTFEL, loading should be from the back of the truck or trailer.
- Use one packet or bundle to push the load forward along the deck as you load.
- With any other type of loader, loading can be done from the side of the truck or trailer.

Unloading stems or logs

Before unloading can commence, the loader operator must ensure the following steps are followed.

- Truck drivers or rail workers are required to remove all load-securing chains or strops.
- Truck drivers shall remain in clear view of the loader driver and in a safe position while unloading is taking place. The truck driver can remain in the cab except when:
 - ☐ debarked logs are being loaded or unloaded
 - ☐ there is a risk of short logs falling out when they are being unloaded
 - ☐ loading/unloading is being carried out by the open sling method.

If the loader cannot unload with one lift, use several lifts rather than overloading your machine. Be careful not to damage any logs with the loader forks. Also, avoid damaging equipment on the truck or trailer when unloading.



Be careful not to spill the load while unloading

Completing load delivery dockets

The loader operator is responsible for completing a load delivery docket (LDD) for each load.

Once completed, the LDD is handed to the truck driver.

The basic information required on a LDD is:

- Docket number
- Date and time load was completed
- Carrier's name and truck/trailer identification
- Logging crew's name, which may also have a crew number
- Location where load came from (road name/ forest/landing number)
- Destination of the load including the name of the customer receiving the product
- Type/grade of logs loaded, random saw logs or round wood
- Truck driver's signature
- Loader operator's signature.



Completing the LDD

Glossary of terms

Belly chain	Wire rope or chain that is placed around the load at any position(s) in a complete circle and is attached to it and tensioned using a “load binder”.
Binder chain	Any chain used for holding a load on a truck. Various types include throw-over chains, belly chain, or longitudinal chain.
Bolster	Frame member that is mounted on to the bolster bed and which supports the log load.
Branding	Company, crew and/or log grade identification stencilled, sprayed, or written on to the ends of logs.
Cradle	An assembly on to which logs may be loaded for later cartage.
Crowned	The rounding of a load to allow binder chains to contact as much of the upper surface as possible.
Docket	see Load Delivery Docket.
Extension pin	Uppermost section of the stanchion upright.
Fibre	Fibre can be sawmill chip, shavings, bark, or other wood waste.
Fleeting	Positioning logs by machine in preparation for subsequent operation.
FOPS	Falling Object Protective Structure designed to protect the machine operator from falling objects that hit the cab.
Gantry	Rigid frames, incorporating a means of lifting, often used to load or unload trailers.
Grapple	Hydraulically-operated hinged jaws which can be opened and closed. Common on tracked fleeting and loading machines.
High visibility (hi-vis)	High-visibility clothing and helmets, usually a bright fluorescent colour.
In spec (specification)	Meets the size and quality requirements of a particular log grade or type.
Landing (or skid)	Skid site where trees are cut into logs.
Load binder (twitch)	A tensioning device consisting of two hooks and a lever mounted on an eccentric cam and rotating bracket, which is used to tension a loop of chain around a load.
OPS	Operator Protective Structure designed to protect the machine operator from objects entering the cab.
Roundwood	Wood in the form of logs, typically used for posts and poles.
ROPS	Roll Over Protective Structure designed to protect machine operators of wheeled and tracked machines in the event of a roll over
RTFEL	Rubber-tyred front end loader.
Side arms	see Stanchion.
Sorting	Separating logs into different log grades.

Glossary of terms (cont...)

Stacking	Placing sorted logs in storage piles before being loaded-out.
Stanchion	<p>The upright(s) attached to the bolster or bunk ends, which constrain the load within the width limits of the vehicle. There are three types:</p> <p>Fixed: The stanchion is attached to the bolster or bunk ends in a fixed permanent position (usually welded) and cannot move relative to the bolster or bunk ends.</p> <p>Drop: The stanchion is pinned to the bolster or bunk end and can be swung down to release the load. It is held in place by a “wrap-around strop”.</p> <p>Drop-in: The stanchion is held in position by two pins. To facilitate piggyback loading of the trailer, one pin may be removed and the stanchion swung inwards, rotating around the other hinge pin.</p>
Throw over strop/chain	Wire rope or chain that passes across the top of the load, through guides, and is attached to the bolster or bunk end on both sides.

Index to unit standards

The following provides an index to NZQA Unit Standards directly linked to the content of these Best Practice Guidelines.

Unit	
6926	Demonstrate knowledge of the log loading process
6927	Load logs using a vehicle-mounted hydraulic loader in a forestry situation
6928	Operate a Bell machine in a forestry or log yard situation
6929	Operate a knuckle-boom loader in a forestry situation
6930	Operate a forked loader in a forestry or log yard situation
6932	Load a logging truck
6933	Operate a loader in a forestry production situation

Poroporoaki

Whaia te huarahi
o te mātauranga

*Pursue the path
of learning.*

Ka piki ake koe,
ka whānui atu nga pae.

*The higher you climb,
the wider the horizons.*

Rapuhia nga pae
i roto, i tōu nei ngakau.

*Seek also the horizons
within your self.*

E tipu, e awhi, e tū.

Grow, embrace, stand tall.

Vision, knowledge, performance