HEALTH AND SAFETY IN EMPLOYMENT ACT 1992

Approved Code of Practice for

POWER-OPERATED ELEVATING WORK PLATFORMS

OSH
OCCUPATIONAL SAFETY & HEALTH SERVICE

DEPARTMENT OF LABOUR
TE TARI MAHI

ISSUED AND APPROVED BY THE MINISTER OF LABOUR MAY 1995

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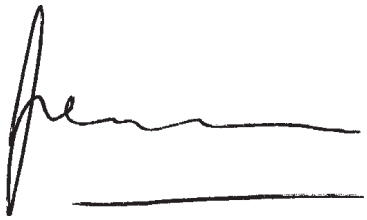
NOTICE OF ISSUE

I have issued this *Approved Code of Practice for Power-Operated Elevating Work Platforms*, being a statement of preferred work practices or arrangements for the purpose of ensuring the health and safety of persons to which this code applies and persons who may be affected by the activities covered by this code.



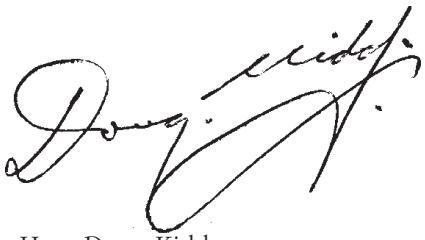
J. M. Chetwin

Secretary of Labour

May 1995

FOREWORD

I have approved this statement of preferred work practices, which is an *Approved Code of Practice for Power-Operated Elevating Work Platforms,* under section 20 of the Health and Safety in Employment Act 1992. When a code is approved, a Court may have regard to it in relation to compliance with the relevant sections of the Health and Safety in Employment Act. This means that if an employer in an industry or using a process to which an approved code applies can show compliance with that code in all matters it covers, a Court may consider this to be compliance with the provisions of the Act to which the code relates.



Hon. Doug Kidd
Minister of Labour
May 1995

A SUMMARY OF THE HEALTH AND SAFETY IN EMPLOYMENT ACT 1992

The principal object of the Health and Safety in Employment Act 1992 (HSE Act) is to prevent harm to employees at work. To do this, it imposes duties on employers, employees, principals and others, and promotes excellent health and safety management by employers. It also provides for the making of regulations and codes of practice.

REGULATIONS

Regulations are promulgated from time to time under the HSE Act. Regulations may impose duties on employers, employees, designers, manufacturers, and others relating to health and safety. These regulations may apply with respect to places of work, plant, processes or substances and may have been made to deal with particular problems that have arisen.

APPROVED CODES OF PRACTICE

"Approved Codes of Practice" are provided for in the HSE Act. They are statements of preferred work practice or arrangements, and may include procedures which could be taken into account when deciding on the practicable steps to be taken. Compliance with codes of practice is not mandatory. However, it may be used as evidence of good practice in court.

EMPLOYERS' DUTIES

Employers have the most duties to perform to ensure the health and safety of employees.

Employers have a general duty to take all practicable steps to ensure the safety of employees at work. In particular, they are required to take all practicable steps to:

(a) Provide and maintain a safe working environment;

(b) Provide and maintain facilities for the safety and health of employees at work;

(c) Ensure that machinery and equipment is safe for employees;

(d) Ensure that working arrangements are not hazardous to employees; and

(e) Provide procedures to deal with emergencies that may arise while employees are at work.

Taking "all practicable steps" means doing what is reasonably able to be done in the circumstances; taking into account:

(a) The severity of any injury or harm to health that may occur;

(b) The degree of risk or probability of that injury or harm occurring;

(c) How much is known about the hazard and the ways of eliminating, reducing or controlling it; and

(d) The availability, effectiveness and cost of the possible safeguards.

HAZARD MANAGEMENT

Employers must identify and regularly review hazards in the place of work (existing, new and potential), to determine whether they are significant hazards and require further action. If an accident or harm occurs that requires particulars to be recorded, employers are required to investigate it to determine if it was caused by or arose from a significant hazard.

"Significant hazard" means a hazard that is an actual or potential cause or source of:

(a) Serious harm; or

(b) Harm (being more than trivial) where the severity of effects on any person depends (entirely or among other things) on the extent or frequency of the person's exposure to the hazard; or

(c) Harm that does not usually occur, or usually is not easily detectable, until a significant time after exposure to the hazard.

Where the hazard is significant, the HSE Act sets out the steps employers must take:

(a) Where practicable, the hazard must be *eliminated.*

(b) If elimination is not practicable, the hazard must be *isolated.*

(c) If it is impracticable to eliminate or isolate the hazard completely, then employers must *minimise* the hazard to employees.

Where the hazard has not been eliminated or isolated, employers must, where appropriate:

(a) Ensure that protective clothing and equipment is provided, accessible and used;

(b) Monitor employee's exposure to the hazard;

(c) Seek the consent of employees to monitor their health; and

(d) With informed consent, monitor employee's health.

INFORMATION FOR EMPLOYEES

Before employees begin work; they must be informed by their employer of:

(a) Hazards employees may be exposed to while at work;

(b) Hazards employees may create which could harm other people;

(c) How to minimise the likelihood of these hazards becoming a source of harm to themselves and others;

(d) The location of safety equipment; and

(e) Emergency procedures.

Employers are also required to inform employees of the results of any health and safety monitoring. In doing so, the privacy of individual employees must be protected.

EMPLOYERS TO INVOLVE EMPLOYEES IN THE DEVELOPMENT OF HEALTH AND SAFETY PROCEDURES

Employers need to ensure that all employees have the opportunity to be fully involved in the development of procedures for the purpose of identifying hazards and dealing with significant hazards, or dealing with or reacting to emergencies and imminent dangers.

TRAINING OF EMPLOYEES

Employers must ensure employees are either sufficiently experienced to do their work safely or are supervised by an experienced person. In addition, employees must be adequately trained in the safe use of equipment in the place of work; including protective clothing and equipment.

SAFETY OF PEOPLE WHO ARE NOT EMPLOYEES

Employers are also responsible for the health and safety of people who are not employees. Employers must take all practicable steps to ensure that employees do not harm any other person while at work, including members of the public or visitors to the place of work.

EMPLOYEES AND SELF-EMPLOYED PERSONS' DUTIES

Employees and self-employed persons are responsible for their own safety and health while at work. They must also ensure that their actions do not harm anyone else. However, these responsibilities do not detract from the employer's or principal's responsibilities.

ACCIDENTS AND SERIOUS HARM (RECORDS AND NOTIFICATION)

The HSE Act requires employers to keep a register of work-related accidents and serious harm. This includes every accident that harmed (or might have harmed):

(a) Any employee at work;

(b) Any person in a place of work under the employer's control.

Employers are also required to investigate all accidents, harm and near-misses to determine whether they were caused by a significant hazard.

Employers are required to notify serious harm that occurs to employees while at work to the Secretary of Labour (in practice, the nearest OSH office), as soon as possible. In addition, the accident must also be reported on the prescribed form within 7 days. (Forms are included in the *Workplace Accident Register* available from OSH offices and selected stationers).

If a person suffers serious harm, the scene of the accident must not be disturbed unless to:

(a) Save life or prevent suffering;

(b) Maintain public access for essential services, e.g. electricity, gas;

(c) Prevent serious damage or loss of property.

The OSH office will advise whether it wishes to investigate the accident and what action may be taken in the meantime.

INTRODUCTION

The aim of the Health and Safety in Employment Act 1992 (HSE Act) is to make provision for the safety of employees and others affected by work activities. A summary of the HSE Act as it affects workplaces is included in this code of practice.

This code has been published to help promote safety by providing recommendations and guidelines for the design, safe use and proper maintenance of power-operated elevating work platforms.

It is intended that this code cover industries including, but not limited to:

- Building and construction,
- Sign writing and advertising,
- Film and video recording industry,
- Plant and machinery hire,
- Electrical supply and distribution,
- Telecommunications,
- Bush and forest industries,
- Railways.

2. SCOPE

The power-operated elevating work platforms to which this code applies are work platforms where the height of the platform may be adjusted by powered means using articulation, scissors mechanism, telescoping boom or tower, or any combination of these, and which are either vehicle-mounted, self-propelled, towed, or manually moved, to provide access to work above or below ground level. It includes personnel buckets temporarily or permanently attached to truck hoists.

This code is not intended to cover the following:

- Fork lift trucks with working platforms;
- Cages or platforms attached to crane hooks;
- Personnel buckets temporarily attached to a mobile crane;
- Suspended scaffolds;
- Building maintenance units.

3. DEFINITIONS

Arduous service Arduous service is when the boom of an elevating platform vehicle is subjected to multiple users, branches or cables falling on it or has a chainsaw used from the bucket or platform.

Critical weld One positioned where failure could affect the soundness of the structure and result in injury to an employee on the platform.

Direction controls All controls necessary to raise, lower, rotate, telescope, drive, or otherwise initiate the powered functions of the machine.

Employee Means a person employed by any other person to do any work (other than residential work) for hire or reward; and, in relation to any employer, means an employee of the employer.

Employer A person who or that employs any other person to do any work for hire or reward; and, in relation to any employee, means an employer of the employee.

Free descent Descent at an uncontrolled rate. Instability. The condition where the overturning moments exceed the restoring moments.

Operator A person who controls the movements of the work platform.

Outriggers (or stabilisers) Devices used to support the base and improve its stability. These may be used to level the machine.

Platform That portion of the equipment from which employees carry out their work.

Registered engineer An engineer registered under the Engineers Registration Act 1924.

Safe working load (SWL) The maximum weight the platform is designed to safely support under stated conditions.

Stability The condition when the total restoring moments exceed the overturning moments.

Toe-boards Vertical barriers placed at floor perimeters to prevent materials falling off.

Work platform The complete machine including the platform, lifting mechanism, chassis or vehicle as applicable.

4. RESPONSIBILITIES

4.1 MANUFACTURERS AND IMPORTERS

Manufacturers and importers must ensure that:

(a) The elevating work platform is designed in accordance with a reputable standard (see footnote 1 in part 5);

(b) They supply appropriate documentation to the owners of the machine (see parts 10 and clause 11.6);

(c) The platform is manufactured in accordance with the design;

(d) The platform is fully tested as required in the design standard; and

(e) Full operating and maintenance manuals are provided (in English) with each machine.

4.2 EMPLOYERS AND OWNERS

Employers and owners must ensure that:

(a) The work platform is operated by competent operators and is used in accordance with the operating instructions and this code;

(b) Appropriate documentation and records are maintained and that these are available for inspection on request of the Health and Safety Inspector;

(c) The machine is inspected regularly, repaired and maintained by those competent to carry out such work and that periodic testing is carried out in accordance with part 11 of this code; and

(d) Only work platforms meeting the requirements of part 10 of this code may be used.

4.3 THOSE WHO HIRE OUT ELEVATING WORK PLATFORMS

Those who hire out elevating work platforms must ensure that:

(a) Those who hire the machine are provided with appropriate training and information so that the machine can be operated safely;

(b) The machine is inspected regularly, repaired and maintained by those competent to carry out such work and that periodic testing is carried out in accordance with part 11 of this code;

(c) All safety features are in good sound condition, and that all operating instructions are clearly legible so that it is difficult to misinterpret the requirements; and

(d) Interlocks are of a type that cannot be readily over-ridden.

4.4 OPERATORS

Operators must:

(a) Operate the work platform safely and in accordance with the operating instructions and this code;

(b) Carry out daily maintenance checks (see part 11 of this code);

(c) Ensure the SWL of the work platform is not exceeded;

(d) Ensure that they do not operate the machine so as to cause harm to themselves or any other person; and

(e) Never approach within the minimum approach distance (see table 1) of overhead power lines without the written consent of the electricity distributor/operator. NOTE: This table has been extracted from NZECP 34:1993. The requirements in any future revision of that code should take precedence over the requirements of table 1.

TABLE 1: MINIMUM DISTANCE FROM ELECTRICAL CONDUCTORS FOR THE USE OF ELEVATING WORK PLATFORMS

Line Voltage (and Span)	**Minimum Distance (m)**
Not exceeding 66kV (maximum span 125m)	4.0m
Exceeding 66kV (maximum span 125m)	5.0m
Any voltage (span greater than 125m but less than 250m)	6.0m
Any voltage (span greater than 250m but less than 500m)	8.0m
Any voltage (span exceeding 500m)	As agreed with the owner of the line but not less than 8.0m

5. GENERAL REQUIREMENTS

5.1 GENERAL

All elevating work platforms must be designed in accordance with sound and accepted engineering practice, and must be manufactured using best methods and practices. Design, manufacture, testing and stability testing must be in accordance with reputable standards such as AS1418: part 10, or equivalent. Standards known to be acceptable are listed in footnote 1.

Components and connections are to be designed to avoid stress concentration.

Members subject to fluctuating loads must be designed in accordance with a standard that takes fatigue into account.

5.2 HYDRAULIC EQUIPMENT

(a) Hydraulic systems must be designed so that free descent cannot occur in the event of a hose or fitting failure. The platform descent velocity in the event of hose failure should not exceed normal lowering velocity by more than 50 percent.

(b) Hydraulically positioned outriggers or stabilisers must not retract in the event of hydraulic line failure.

(c) Hydraulic systems are to be built for fail-safe conditions.

FOOTNOTE 1: Where a work platform has been designed and manufactured in accordance with a reputable overseas standard or code, the Secretary of Labour may accept it for use without further testing. Overseas standards known to have acceptable requirements are listed below. Machines that comply with an earlier version of these standards will also be acceptable, provided they have been properly maintained.

ANS1/S1A: 92.2-1990	*American National Standard for vehicle mounted elevating and rotating aerial devices.*
ANS1/S1A: 92.3-1990	*Amerlcan National Standard for manually propelled elevating work platforms.*
ANSD1: A92.5-1980	*American National Standard for boom-supported elevating work platforms.*
ANS1/S1A: 92.6-1990	*American National Standard for self-propelled elevating work platforms.*
BS 6299: Part 1 1982	*Code of Practice for mobile scissor-operated work platforms.*
BS 7171:1989	*British Standard Specification for mobile elevating work platforms.*
AS 1418.10-1987	*SAA Crane Code, Part 10: Elevating Work Platforms.*

5.3 WELDING

For machines manufactured in New Zealand, or where machines require welding while being repaired or maintained, the welding should be carried out in accordance with NZS 4701:1981 *Metal-arc welding of steel structures* by welders qualified to NZS 4711:1984 *Qualification tests for manual metal-arc welding*. Welding specifications must be detailed on all manufacturing drawings.

5.4 FUEL AND EXHAUST SYSTEMS

(a) Fuel lines of internal combustion engines must be protected from engine and exhaust heat. Note that some industries may have additional requirements such as spark arrestors, external fuel cut-offs.

(b) Exhaust systems must include mufflers and be positioned so as to exhaust engine fumes away from operators.

5.5 PLATFORMS AND GUARDRAILS

(a) The platform is to be fitted with side walls, or guardrails with midrails and toe-boards, or guardrails with any other suitable barrier such as expanded metal or chain mesh. The side walls or guardrails should be of a minimum height of 1 metre and be able to withstand, without obvious deflection, a horizontal force of 440 Newtons or a vertical force of 690 Newtons applied separately at any position.

(b) The floor of the platform must be slip-resistant and free-draining. Electrically insulated platforms need not be free-draining, but can be fitted with an insulated insert complying with ANSI 92.2. Insulated buckets should be dried using sponge and bucket before use.

(c) Platform gates, where fitted, must be able to be secured in position and open inwards or slide sideways and be self-closing.

(d) A safe means of access to the platform must be provided. If access is by means of steps or a fixed ladder, the rise of steps or rungs must be uniform and must not exceed 300 mm. The steps or rungs must be slip-resistant.

(e) Machines designed for specific activities may have different platform and guardrail layouts, provided an equivalent level of safety is afforded operators.

6. MACHINE CONTROLS

(a) Machines must be fitted with two sets of controls, which are positioned:

(i) on the platform itself; and

(ii) at ground or chassis level.

The ground level controls must be able to override the platform controls so that in the event of an emergency, the platform can be lowered to the ground safely.

(b) All controls must be of the "deadman" type which automatically return to neutral or the off position when released, or alternatively all controls may be overridden by a single deadman control.

(c) The direction of all movements of the elevating work platforms should be indicated by arrows on or beside the control device. Controls should be positioned for logical operation.

(d) All controls must be clearly marked to show their function in permanent legible letters or symbols. Any words should be in English.

(e) Controls must be positioned and protected to prevent accidental operation or damage. They must be of robust construction and waterproof.

(f) An emergency stop control which will cut off power to all systems must be provided at each control position. It must be in a prominent position and be coloured red.

(g) An interlock should be provided on each self-propelled work platform to make it impossible to raise or lower the platform while the work platform is being moved unless the machines has been specifically designed for such a purpose. Machines that are specifically designed to allow movement while in a raised condition must only be operated in accordance with the design specification. In general, such machines must be fitted with out-of-level devices and low-speed interlocks.

(h) The slewing mechanism should be provided with effective means of controlling the slewing superstructure of the work platform over the range of slew, either at a series of positions, or at infinitely variable positions. The power-operated slewing mechanism should be provided with a service brake or equivalent. A device should be provided for positive locking of the slewing superstructure in the travelling mode.

7. SAFETY FEATURES

(a) Self-propelled work platforms must be fitted with an alarm or other audible device that will warn the operator when the machine's base is a nominal 2°55' (range 2°40' to 3°15' or 5 per cent) out of level (when the lifting mechanism is raised) and shall, through an interlocking system, disable the units drive and lift functions, thereby allowing the operator to restore the unit to a safe condition. Machines that are not self-propelled are to be fitted with an accurate chassis level indicator.

(b) Self-propelled machines must be equipped with a horn or audible warning device which can be used to signal that the machine is about to be, or is being, driven forwards or backwards.

(c) Rotating shafts, gears, sprockets and any other dangerous part must be guarded so that persons using the machine or are nearby are not endangered by the operation of the machinery.

(d) Work platforms should be fitted with an effective lock-on brake or other means to hold the unit on the maximum slope it is designed for while loaded with its SWL.

(e) Scissors-actuated machines must include a captive chock within the scissors mechanism in order to prevent trapping of persons doing maintenance work. Placement or removal of the chock must be possible without hazard.

(f) Where the stability is dependent on the correct use of outriggers, the hoisting mechanisms must be interlocked to the outriggers.

(g) Clauses 7(a) and (b) may be relaxed for machines designed for specific activities where an equivalent level of safety is provided for operators.

8. MARKINGS AND DOCUMENTATION

(a) The following information must be displayed in clearly visible permanent lettering on all power-operated mobile work platforms:

- Make, model, serial number and manufacturer's name and address;
- Safe working load (SWL) in kilograms and the number of people;
- Maximum platform height;
- For electrically insulated machines, the working voltage;
- Any special warnings, cautions or restrictions necessary for safe operation, e.g. where a work platform has a variation of capacity for varying platform outreach or outrigger settings, the SWL for each location must be shown;
- The instruction: "Read manual for operating and servicing details".

(b) Manufacturers, importers or agents for imported machines, which are either new or second-hand, must provide a comprehensive operating and maintenance manual, in English, to customers or clients. The following is to be included in the manual:

- Comprehensive operating instructions;
- Lubrication schedule;
- Routine checks;
- Restrictions on the use of the machine;
- Advice on any matter that could affect the safe use of the machine.

(c) Where the work platform is to be made available for hire, essential operating and maintenance instructions must be permanently displayed on the work platform or be issued with the machine when it is hired.

(d) *Log Book, Certificates and Maintenance Records.* Owners must keep and maintain a full record of the machine, including all acceptance, modification and maintenance certificates (see clause 11.6). The Safety and Health Inspector may from time to time inspect these records.

9. STABILITY TESTS

Where machines have been designed and manufactured in accordance with a particular standard, prototype stability tests in accordance with the test requirements of that standard must be undertaken.

Typically such tests require that the machines remain stable when supporting a vertical static load of 1.5 times its SWL, or when being loaded with a static horizontal load of 15% of its SWL applied at the platform level. Usually, these tests should be carried out with the platform at its least stable position and with the platform on a 5 degree slope. These loads will vary depending on the make, type and intended service, as well as the standard used in design.

Where the machine has been designed for use in a certain wind speed, the horizontal test load applied at the bucket needs to take into account the wind forces on the components including the effect on persons in the bucket.

For elevating work platforms intended to be used under "rough terrain" conditions, a rigorous prototype testing will be required, intended to emulate the conditions under which the machine may operate. Such tests could include the requirement for the machine to remain stable while an applied test load of 1.3 times SWL is applied through its entire range of operation.

10. ACCEPTANCE OF WORK PLATFORMS

10.1 ACCEPTANCE OF NEW MACHINES

In order to obtain acceptance of a model for use, it is necessary to provide a certificate from either:

(a) A registered engineer stating that the work platform complies with a particular standard and with the requirements of this code, is capable of safely elevating, sustaining, lowering and where applicable slewing or transporting its designated SWL; or

(b) The provision of a satisfactory test report from a recognised testing authority, stating that the work platform complies with a particular standard and with the requirements of this code, is capable of safely elevating, sustaining, lowering and, where applicable, slewing or transporting its designated SWL.

The certificates and test reports are to be kept with the log book or file record (see clause 11.6) about the machine by the machine owner and should be available for inspection by the Health and Safety Inspector.

10.2 ACCEPTANCE OF SECOND-HAND MACHINES

The machine must comply with one of the design specifications listed in footnote 1 of part 5. In order to obtain acceptance of "used or second-hand machines" imported into New Zealand, it will be necessary to subject the machine to a complete major examination, (see clause 11.5), unless the work platform is less than 10 years old and already carries an Australian DLI reference number. Operating and maintenance manuals, in English, must be provided with the machine.

A certificate must be provided by a registered engineer stating that the work platform has had the major examination, that stability tests have been carried out, and that it is safe for use. Where the machine has had a complete major examination prior to being imported, a certificate from a reputable body may be accepted as proof that it complies with this code.

The certificates and test reports are to be kept with the log book or file record (see clause 11.6) about the machine by the machine owner and should be available for inspection on request by the Health and Safety Inspector.

10.3 MODIFICATION OF WORK PLATFORMS

If, subsequent to acceptance, a work platform is significantly altered or modified, the owner must obtain a certificate signed by a registered engineer, or a report from a competent testing authority, confirming that the platform still meets the requirements of this code. The certificate is to be kept by the owner to allow subsequent inspection on request of the Health and Safety Inspector.

11. WORK PLATFORM MAINTENANCE

11.1 DAILY CHECKS BY THE OPERATOR:

Operators should check on a daily basis:

(a) Tyre pressure, if pneumatic tyres are fitted, and that tyres are undamaged;

(b) That all brakes are working efficiently and the brake fluid level is checked;

(c) Fuel, water and oil levels in work platforms;

(d) That the batteries are charged (in battery-operated units);

(e) Hydraulic lines for leaks and damage;

(f) That the supporting structure is sound and free from distortion or cracking;

(g) That the powered mechanism for operating the platform is working properly;

(h) That any communication system between the platform and the ground functions correctly;

(i) That emergency controls function correctly and any safety equipment (e.g. safety harness) is in good condition;

(j) If electrically insulated, the insulated section is not bridged by any residue.

Operators should also carry out other such checks as specified in the manufacturer's instructions.

The operator must bring any faults to the employer's notice, to ensure that these are fixed before the work platform is used again.

11.2 PERIODIC GENERAL CHECK

Work platforms should be checked at least once a month, and in the case of a hired machine provided without an operator, at the termination of each hire. The procedure should include:

(a) All the daily checks listed above;

(b) An operational check of the work platform;

(c) A check of the condition of the chassis, support structure, powered mechanism and the platform;

(d) Lubrication;

(e) Other such checks as specified in the manufacturer's instructions;

(f) Where a machine is electrically insulated, a check that all fibreglass components, together with any hydraulic leads and communication cables contained within, are clean.

Any faults discovered must be corrected or the working platform withdrawn from service.

11.3 SIX-MONTHLY TESTING

(A) OPERATIONAL TEST AND CHECK

The work platform must be thoroughly examined and load tested after an accident, major repair or modification, or otherwise at least once every six months by a competent person experienced in the maintenance and repair of elevating work platforms. A competent person in terms of these requirements means a person who specialises in, or has extensive experience with, elevating work platforms, and could be a certified motor mechanic, a registered mechanical engineer or a trained fitter. The competent person must have access to the full workshop manual of each platform being certified. It is preferable that the competent person be employed by an independent organisation.

(B) TEST PROCEDURE

The load for the test procedure should be the designated maximum SWL for the work platform. It should be hoisted and moved through the full operating range and the functions of all operating devices should be checked in accordance with the manufacturer's instructions.

Any faults discovered during the examination and test must be corrected before the work platform is used again.

A certificate should be attached to the work platform in a transparent weather-proof envelope, which states:

I certify that this work platform has been load tested and thoroughly examined by me and it is in good working order and can be used through its full operating range with a load of ..... kg.

Type of Test .....

Make ..... Date .....

Model ..... Expiry Date .....

Serial No .....

Name ..... Position .....

Company ..... Phone No .....

Signed .....

(C) ELECTRICAL TEST

Where a platform is designated as electrically insulated, electrical insulation tests should be carried out in order to validate the working voltage at intervals of not less than six months. If the test is not satisfactory, the unit must not be used as an insulating work platform and work must not be carried out from the platform on conductors that are live or that can become live during the period that the employee is on the platform. A record of all tests should be kept and be available for inspection.

11.4 TWO-YEARLY TESTING OF FIBREGLASS BOOM SECTIONS

In addition to the six-monthly testing programme of clause 11.3, all machines fitted with a fibreglass or FRP boom are to be tested, at periods not exceeding 24 months, using acoustic emission test equipment in accordance with ASTM A914-85 or in accordance with an approved equivalent procedure. Testing may only be carried out by companies competent to carry out acoustic emission testing. Results of this test are to be displayed in a similar manner to that required by clause 12.3.

In addition, the test reports are to be retained by the owner of the machine:

(a) To allow inspection on request of the Health and Safety Inspector;

(b) So that the history of a boom may be compiled to determine the extent of any deterioration.

It is recommended that booms used in arduous service are tested every 12 months using acoustic emission test equipment.

Should the machine be involved in an accident or be misused to make the boom potentially unsafe, the boom is to be retested, even if the test period is not up.

Should the FRP boom fail the acoustic emission test, then the machine is not to be reused until the boom is replaced or repaired to enable it to pass the test and become safe to use.

11.5 MAJOR EXAMINATIONS: TEN-YEARLY CHECKUP

In addition to the previous tests, machines are to be thoroughly examined at an interval not exceeding ten years from new and thereafter every five years. Such testing must be in accordance with the requirements of clause 10.4 of AS 2550.10: 1994 *Cranes Safe Use Part 10: Elevating work platforms* or equivalent. The thorough examination should include the disassembly and removal of paint, grease, corrosion from critical components to allow a complete and thorough inspection, the detailed visual inspection and tolerance checking of all wear components, and non-destructive testing of all critical areas for evidence of cracking, fatigue and excessive stress.

11.6 LOG BOOKS OR FILE RECORDS

Log books or file records are to be kept by the owner of the machine showing details of certification, repairs, modifications, inspections and examinations.

12. MACHINE OPERATION

12.1 GENERAL

Any work at height is hazardous, and falls remain one of the leading causes of injuries and fatalities at work. Elevating work platforms are specialised machines designed to provide safe access to high work places. It is important that the machines are used in accordance with the manufacturer's recommendations, and that the machines are not used outside the intended specification. Proper and thorough maintenance is absolutely essential.

Owners and potential users of machines that may be used under strong wind conditions (i.e. for emergency electrical line maintenance) must be aware of the design wind speed of the machine and operate within the design limitations. Some standards require a design wind speed of 12.5m/sec (Beaufort wind force of 6). Where owners require use of the machines in high wind conditions, they may need to specify a higher design wind speed when purchasing the machines. Most manufacturers will be able to modify the machine to allow it to remain stable under most wind conditions.

The following examples of misuse reveal practices that should not be allowed under any circumstance:

(a) Machines designed for indoor work should not be used outside where even moderate wind forces could overload and overturn the machines.

(b) Machines used for supporting lighting for film or television recording may have electrical cables hanging from the bucket. The weight of such cables should be calculated when determining the load the machine can handle. These cables are not "jungle vines", and "horse play" must be discouraged.

(c) Machines which are designed only for lifting personnel and their hand tools are not cranes, and must not be used as such.

(d) Scissors hoists designed for flat smooth surfaces must not be used on rough non-level surfaces.

12.2 SETTING UP

(a) Before use, ensure that the work platform is set up with stabilisers or outriggers fully extended and levelled as specified by the manufacturer, and any stabilisers actuated. Where necessary, use suitable metal or timber spreaders to provide a firm base.

The stated SWL of the work platform assumes that the machine is set up on firm ground and that the chassis of the machine has been levelled. It may overturn at a lesser load if these conditions are not met. Don't take chances with soft ground and an unlevelled machine!

(b) When parking the machine, apply the parking brake. Use the brake lock where this is provided.

(c) Where the working area is in a public place, ensure that the work platform cannot be hit by other vehicles and is protected by barricades and warning signs. Also ensure that pedestrians do not have to walk under the platform. Exclude the public from the working area by the use of barriers where necessary. Where the machine is to be working at night time, lights must be used to adequately illuminate the workplace and also to warn the travelling public.

(d) Where the work area is close to fixed obstructions, the operator should check that outrigger settings are appropriate for the load to be carried, that clearances are adequate, and that there is no danger of any part of the work platform coming into contact with live electrical conductors or other obstructions.

12.3 OPERATION

(a) Never exceed the SWL — the machine could overturn or the machine's components could be overstressed.

(b) Never position the machine over persons or allow employees to go under the working platform unless it is essential to the operation, and on these occasions take special safety precautions. Don't start moving it unless the way is clear and will remain clear.

(c) A safety harness should always be worn with its lanyard attached to the platform. The safety harness should meet the requirements of NZS 5811:1981 or an equivalent standard.

(d) Safety devices such as pressure relief valves should not be adjusted or altered except by a competent person.

(e) The platform must not be used as a prop, tie or crane.

(f) Never move the platform closer to overhead electric lines than listed in table 1 (see section 4.2c) unless the electricity distributor/operator has permitted a closer approach in writing.

(g) If any fault in the control system is suspected, operations must cease until the suspected fault is rectified.

(h) Vehicles fitted with internal combustion engines should not be used in a confined or enclosed space unless adequate ventilation is provided.

(i) If an uninsulated work platform comes into contact with live electrical lines or equipment, persons in the personnel bucket at the time should remain there and warn any other persons in the vicinity to stay clear. The safest course of action is to do nothing until the line is de-energised or help arrives. Only as a last resort should they attempt to jump clear.

If they decide to jump clear they should:

(i) If it is safe to do so, operate the controls to break contact;

(ii) Warn all other persons to keep clear and call for assistance to de-energise the lines; or

(iii) If contact cannot be broken, and assistance is unavailable, as a last resort, leave the platform thus:

- Switch off the motor and, if not already applied, apply brakes.
- Remove any loose clothing.
- Climb to a point about a metre above ground from where you can safely jump to the ground.
- JUMP so that you clear the platform BEFORE any part of you touches the ground.
- Fall away from the machine and not towards it.
- DO NOT retouch the machine until the lines are de-energised.

12.4 TRAVEL

A manually-propelled work platform must never be moved while the platform is elevated. It must be lowered to the cradle position before it is moved.

Where it is proposed to move a self-propelled or vehicle-mounted work platform while the machine is elevated, ensure that the route chosen is firm and level before starting travel. During travel keep a safe distance from changes in slope, depressions, debris, buildings, overhead power lines and other obstacles. Employees on the platform should wear safety harnesses fixed to the platform. The operator must always have a clear view of the ground.

13. ELECTRICAL SUPPLY AUTHORITIES' GUIDE

Any user who follows the operating and maintenance instructions of the Electrical Supply Authorities Engineers' Association of NZ Inc guide: *Guide for the Operation and Maintenance of Elevating Platform Vehicles* is also deemed to comply with this code of practice.

Personnel buckets which are temporarily fitted to truck-mounted hydraulic lifting appliances owned and operated by an electricity distributor/operator, and which conform with the above guide, need not have controls fitted on the platform itself, notwithstanding part 6 above, provided that:

(a) The operator of the truck-mounted lifting appliance has had adequate training and is competent to operate the lifting appliance and that he or she remains at the controls for the whole time the platform is occupied;

(b) There is clear communication between the operator and the person in the platform or bucket, either by two-way radio, or through the use of standard crane hand signals.

BIBLIOGRAPHY

(1) ANSI/SIA: 92.2-1990 *American National Standard for vehicle-mounted elevating and rotating aerial devices.*

(2) ANSI/SIA: 92.3-1990 *American National Standard for manually propelled elevating work platforms.*

(3) ANSI: A92.5-1980 *American National Standard for boom-supported elevating work platforms.*

(4) ANSI/SIA: 92.6-1990 *American National Standard for self-propelled elevating work platforms.*

(5) BS 6289: Part 1,1982 *Code of Practice for mobile scissor-operated work platforms.*

(6) BS 7171:1989 *British Standard Specification for mobile elevating work platforms.*

(7) AS 1418.10-1987 *SAA Crane Code, Part 10: Elevating Work Platforms.*

(8) AS 2550.10-1994 *Safe Use of Cranes: Elevating Work Platforms.*

(9) Electrical Supply Authority Engineers' Institute of New Zealand Inc. *Guide for the Operation and Maintenance of Elevating Work Platforms.*

(10) Ministry of Commerce. *Code of Practice for Live Line Hot Stick Work.*

(11) Elevating Work Platform Association of Australia. *Safe Work Practice for Elevating Work Platforms.*