

# Safety Lines

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## Duty To Report Unsafe Equipment

Engineering Safety have received enquiries from equipment inspectors and others, about operation of the Health and Safety in Employment Act 1992 and Privacy Act 1993 in relation to the reporting of unsafe equipment. These enquiries are usually concerned about whether there is a duty to report unsafe equipment and, if unsafe equipment were to be reported, whether an offence would be committed under the Privacy Act.

We have sought advice on these matters and comment as follows.

1. There is no duty in the pending Pressure Equipment, Cranes and Passenger Ropeways Regulations for persons in the workplace to report unsafe equipment or practices to the regulatory authority.

**However, duties are clearly imposed on employers, controllers, self-employed people, principals and employees in Part 2 of the Health and Safety in Employment Act.**

In general, these duties require that no action or inaction on the part of these persons should cause harm to any other person.

Under the Health and Safety in Employment Act, an employee is any person employed for reward in any place of work. Hence, an equipment inspector is, for the purposes of the Act, an employee in a client's workplace and has a duty to take all practicable steps to ensure the safety of persons in that workplace.

The duties in Section 19 of the Health and Safety in Employment Act are typical of the duties placed on all parties noted above. Section 19 states:

**Duties of employees**—Every employee shall take all practicable steps to ensure—

- (a) The employee's safety while at work; and
- (b) That no action or inaction of the employee while at work causes harm to any other person.

These legal duties highlight the professional ethical responsibilities of persons in the workplace and make clear that these responsibilities cannot be overridden by commercial considerations.

**This means that if an equipment inspector cannot get unsafe equipment or practices corrected by other means, then professional ethical considerations must take precedence over any commercial concerns. Hence, when it is appropriate, taking 'all practicable steps' would include reporting unsafe equipment and practices to the regulatory authority.**

In practice, this process may start with the inspector drawing the controller's attention to the unsafe situation. If, as a result, the inspector was unable to get the controller to correct the problem, then the inspector would be obliged to take further action.

2. The Privacy Act is concerned with personal information about individuals. It is not concerned with information about limited liability companies or private bodies.

**The Act would not be breached if unsafe practice or equipment is reported to the relevant regulatory authority.**

Equipment inspectors should note that even if it were necessary to include personal information in reporting on unsafe practices or equipment then, it is arguable that:

- a) In the terms of privacy principle 11(a) disclosure of information about unsafe practices and equipment is a purpose for which it is collected.
- b) In the terms of privacy principle 11(f) disclosure is necessary to prevent or lessen a serious threat to public health or safety.

In other words, disclosure of personal information covered by these principles and, pertinent to reporting on unsafe practices or equipment, would not breach the Privacy Act.

## **Servicing, Maintenance, Testing and Inspection of Safety and Pressure Relief Valves**

Engineering Safety advises readers that safety and pressure relief valves come within the scope of the pending Pressure Equipment, Cranes and Passenger Ropeways Regulations.

Controllers responsible for safety and pressure relief valves must ensure that records for these valves are maintained in accordance with the requirements of AS/NZS: 3788 *Pressure equipment—In-service inspection*.

The servicing, maintenance, testing and inspection of these valves must be carried out by either a Telarc registered laboratory which has been specifically assessed for competency in these services or within a management system maintained by the controller. Such management systems must be approved by an inspection body and include the essential elements of a quality management system.

Where valves are maintained within an approved management system, they must be inspected, tested and issued with a certificate of inspection by an inspection body.

## **Re-Certification of Equipment Inspectors**

Engineering Safety reminds equipment inspectors that their CBIP certification is for a finite period and that many certificates are coming up for renewal in the next twelve months.

CBIP have advised that the renewal process will generally involve reviewing a work history, provided by the candidate, to ensure that the standard of proficiency required by CBIP has been maintained. Candidates must also have the physical capacity to perform inspection tasks relevant to their certification.

The work history is to cover a period of about two years preceding renewal. It must provide evidence that the candidate has maintained a satisfactory level of involvement in practical work and has kept abreast of technical developments in the category qualified. Where considered necessary the board may also conduct an oral interview or written examination. This would require the candidate to demonstrate a working knowledge of the codes, standards and work practices relevant to re-certification.

In summary, candidates for re-certification must:

1. Submit a documented work history;
2. Demonstrate they have kept up to date with technical developments; and
3. Have the physical capacity required to undertake inspection tasks.

In addition, they may be required to undertake an oral interview or written examination.

To ensure equipment inspectors are keeping up with technical advances, CBIP will be preparing and running refresher courses. These will be available prior to re-certification. They will cover topics such as changes to standards, new standards and other technical developments relevant to equipment inspection.

More information on re-certification may be obtained from the *Standard of Proficiency* booklets available from CBIP and from:

**Peter Hayward**  
**CBIP**  
**PO Box 76-134**  
**Manukau City**  
**Tel: 09 262 2885      Fax: 09 262 2856**

## Code of Practice for Passenger Ropeways

Engineering Safety wishes to advise readers of *Safety Lines* on progress with the *Code of Practice for Passenger Ropeways in New Zealand*.

Progress is as follows:

Drafting of the code is nearing its final stage with submissions at a committee meeting held in Christchurch in May, giving final shape to the draft document.

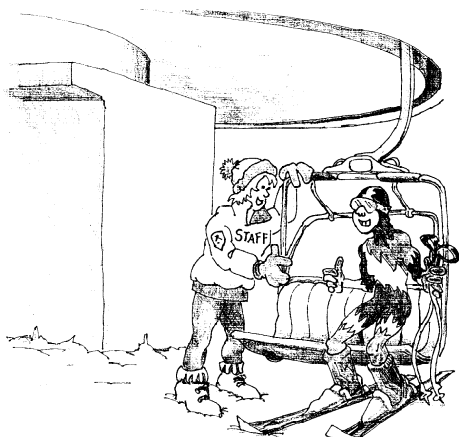
The draft is based on the 1991 edition of the *Code of Practice for Passenger Ropeways in New Zealand*. This in turn was modelled on the Canadian Standards Association's (CSA) National Standards CAN3Z98-M78, *Passenger Ropeways*.

Additions and amendments in subsequent editions of this CSA Standard have been incorporated into the draft. In particular, CAN/CSA-Z98-M91 provided the data used to update design, manufacturing and maintenance requirements. It also provided data on reversible aerial passenger ropeways which, following amendment to suit New Zealand conditions, has been included in the code.

Various amendments derived from the latest edition of CSA standard CAN/CSA-Z98-96, have also been included in the draft.

As well as the work on the technical content of the code it has been necessary to incorporate changes brought about by development of the Pressure Equipment, Cranes and Passenger Ropeways Regulations. This has resulted in a restructuring of the code to include a section 'Application of the PECPR Regulations'. This will be subject to amendment until such time as the Regulations come into effect.

A working draft of the code is almost complete and is expected to be circulated to the committee members for proofreading in the near future.



## SAFETY ALERT

The following article is reprinted from a *Health and Safety Alert* published by the Workplace Health and Safety Division of the Department of Training and Industrial Relations, Queensland, Australia.

It is unamended except for a section which covered Queensland's legislative requirements. This has been replaced by general comment on New Zealand's requirements.

### **Non-Rotating Hoist Wire Ropes Multi-fall Configurations**

#### *Purpose*

To alert owners, employers and users of hoisting equipment to the potential danger from using non-rotating ropes in multi-fall (two or more falls) configuration.

#### *Background*

Several accidents have occurred when non-rotating hoisting ropes were used on overhead travelling cranes in multi-fall configurations. As the rope passes over the drum and sheaves it is bent in opposite directions. When non-rotating ropes are bent, the outer layer of strands press onto the inner layer. Where the two layers touch, individual wires in the strands of each layer are damaged. Further bending increases the damage and can progressively cause wires to fatigue and break.

#### *Mobile Cranes*

Non-rotating ropes are used on mobile cranes where rotation of the load may cause handling difficulties. When using non-rotating ropes on mobile cranes there are normally several layers of rope on the drum. This results in layers rubbing against each other as the rope is wound and unwound on the drum. Broken wires on the surface of the rope caused by wear, scrubbing or pulling in from one layer to another begin to develop. As this damage is visible and progresses faster than the accumulation of internal wire damage, non-rotating ropes used on mobile cranes are usually replaced because of external damage, long before they can fail due to fatigue.

#### *Overhead Travelling Cranes*

On overhead travelling cranes, wire rope drums are generally single layer and spirally grooved. The rope passes over one and perhaps several sheaves. As there is no multi-layering involved, failure of the rope is usually by accumulated internal damage and fatigue rather than wear and damage to the external wires.

Tests results have indicated that non-rotating ropes have an inferior fatigue life when compared to standard ropes. Fatigue failure commences internally in areas where concentric layers of the wire strands are in contact with each other. Since deterioration of non-rotating rope is not easily detected, failure of the rope is often unexpected.

#### *Legislative Requirements*

**In New Zealand the Health and Safety in Employment Act 1992 and the draft Pressure Equipment Cranes and Passenger Ropeways Regulations place duties on employers, employees, principals, controllers, designers and manufacturers to ensure equipment is safe. Ed.**

#### *Recommendation*

Owners, employers and users of overhead travelling cranes should examine their equipment. If these cranes use single layer winding on the drum, non-rotating ropes should not be used.

Where non-rotating ropes are used on mobile cranes owners should ensure that inspection and maintenance programmes include a thorough inspection of these wire ropes.

J E HODGES  
Executive Director  
Division of Workplace Health and Safety

## Inspection Body

Engineering Safety has recognised New Zealand Inspection Services Ltd. as an inspection body pursuant to the draft Pressure Equipment, Cranes and Passenger Ropeways Regulations.

Enquires to New Zealand Inspection Services Ltd. should be made to:

Martin Beddows  
Manager, New Zealand Inspection Services Ltd.  
PO Box 58-134  
Greenmount, Auckland  
Tel: (09) 273 5221 Fax: (09) 273 5441  
Mob: (025) 355 123

The hard stamp used by New Zealand Inspection Ltd. to indicate that equipment has been inspected and approved and the soft stamp used for documents, are shown below.



Hard stamp



Soft stamp

## AS 3920.1 Part 1: Pressure Equipment Manufacture Type Rating of Steam

Engineering Safety has received many enquiries and comments from readers on the fluid-type rating of steam. These have generally been concerned that the classification of steam as a hazardous gas is too liberal for some pressure systems. ('Fluid type' being taken from Tubemakers reference paper *Fluid Types and Classes for Pressure Piping Systems*.)

**Our recommendation is, that where it is considered appropriate by the designer/design verifier, the fluid type for steam should be 'very hazardous gas'.**

This appears to be confirmed by a new standard being prepared by the Joint Standards Australia/Standards New Zealand Committee ME/1 on Pressure Equipment, titled *Pressure Equipment—Hazard*.

This draft standard incorporates the Tubemakers paper but has an overriding clause that requires gases or liquids at temperatures above 90 degrees C or below -30 degrees C to be classified 'very hazardous gas' or 'very hazardous liquid' respectively.

## OSH on the Internet

OSH has a home page on the Internet which gives access to a wide range of safety-related information and services, including:

1. Get in Touch with OSH
  - Find your nearest OSH branch.
  - Our people and how we can help.
  - What is notifiable work?
  - More about OSH.
  - Send us your comments.
2. Order Health and Safety Products
  - OSH publications.
  - How to subscribe to *Safeguard* magazine or *Safeguard Update*.
3. Learn About the Hazards of Your Work
  - Your local OSH branch office. They have people who can advise you on your problem.
  - OSH publications. Catalogue of OSH products by industry type including many in full text.
  - Other sources. Web pages from New Zealand and overseas.

#### 4. Training and Education Resources

- OSH education and training resources.
- Tertiary courses.
- *Safeguard Buyer's Guide*.

#### 5. Learn About Health and Safety Law

- Link to *The Knowledge Basket* site. This currently has all New Zealand Acts and will eventually contain all New Zealand Regulations.
- Summaries of prosecutions under the Health and Safety in Employment Act 1992.
- OSH publications on legislation.
- List of legislation administered by OSH.

#### 6. Report Work-Related Accidents

- Definition of serious harm.
- Notifiable occupational disease system (NODS).

- Accident and incident notification.
- Accident investigation.
- Asbestos exposure register.

#### 7. What's New

- OSH press releases.
- OSH safety initiatives.
- New publications.

The OSH home page address is [www.osh.dol.govt.nz](http://www.osh.dol.govt.nz).

If you have any queries or, want more information on this service, please contact:

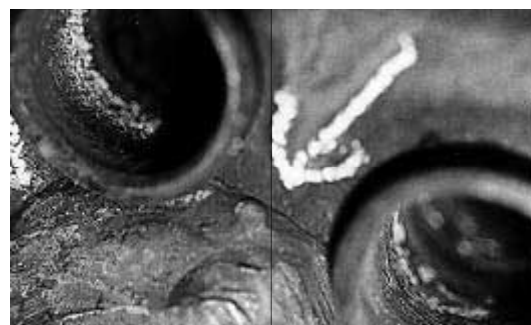
**Theresa Savory**  
**The Webmaster**  
**OSH, Dept of Labour**  
**PO Box 3705, Wellington**  
**Tel: (04) 915 4430 Fax: (04) 499 0891**

## Tube Plate Cracking—Fire Tube Boilers

A *Safety Lines* reader sent us these photographs showing tube plate cracks found during a recent survey of an oil-fired Scotch boiler.



Radial crack at fire tube.



Circumferential crack at welded stay tube.

These cracks were not apparent following cleaning of the fire side by wire brushing. However, because of the history of this boiler, further cleaning was carried out using a high pressure water blaster.

Eleven areas of cracking were then found in one side of the tube plate. This included circumferential cracking at the toes of stay tube welds and radial cracking adjacent to fire tubes.

Reports on file for this boiler indicated that cracks had been discovered during earlier inspections and repaired by tube removal and welding. At this time, incipient cracking in other parts of the tube plate was noted and a recommendation was made that the boiler be acid cleaned in an attempt to prevent further cracking. Regular monitoring of the boiler was also arranged.

The boiler has been taken out of service. It is over thirty years old and is expected to be scrapped.

These photographs show very clearly the tube plate cracking that can arise from:

1. Overheating as a result of poor heat transfer caused by boiler fouling. This is usually caused by unsatisfactory water treatment
2. Overheating from over firing. The boiler may have been run at greater than design capacity.
3. Overheating due to inadequate design data. This particularly applies to older boilers. Prior to the 1982 issue of BS 2790 backend temperatures were often underestimated. See *Safety Lines* No. 32.
4. Overheating as a result of a fuel change. Differing combustion characteristics, particularly when changing from oil to gas, may require higher backend temperatures for the same steam output.

5. Stress raisers set up during fabrication. Centre pop and machining marks that have not been blended out during manufacture may initiate cracking.

An interesting feature of this inspection was the use of water blasting to clean the fire side of the boiler. The equipment inspector commented that the usual wire brushing did not reveal the cracking that later became apparent. Deposits on the fire side which did not come off with wire brushing were completely removed by water blasting.

**Following water blasting, extensive cracking of the tube plate could be seen by the naked eye.**

This inspector is now a convert to water blasting. He says it will be considered for any future inspections where there is any concern about the effectiveness of the cleaning process.

## Validity Periods of Design Verification Certificates

Engineering Safety wishes to advise readers that design verification certificates have limits on validity. These are as follows.

1. A design verification certificate is valid from its date of issue.
2. A design verification certificate is not valid for a particular item of equipment if:

- a) The materials of construction or the design of pressure parts or structural parts of the equipment are modified.

Depending on the nature of any modification it may be necessary to reverify the affected components or the whole design.

- b) The standard on which verification was based is revised or withdrawn prior to commencing manufacture of the equipment.

The effective date of any such change shall be in accordance with the standard's requirements for implementation.

Equipment contracted for prior to a standard being revised may be manufactured to a design verified to the standard existing at the time of acceptance of tender. However, the parties to the contract may agree, that the equipment should incorporate any subsequent revisions to this standard.

Where appropriate, such revisions shall be subject to design verification by an inspection body.

- c) There is any change to the design operating parameters which would adversely affect the equipment e.g. Re-verification may be required if an operating pressure, temperature or fluid is changed.

- d) There is any change to the design operating environment which would adversely affect the equipment e.g. Re-verification may be required if the equipment is to be relocated to another seismic zone.

*Safety Lines* is a publication of the Engineering Safety Unit of the Occupational Safety and Health Service, Department of Labour, PO Box 3705, Wellington.

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