



# Safety Lines



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## Safety Valves – A Message for Controllers

The safety valves shown in the photograph were removed from a large storage vessel. They were shipped to Total Automation Ltd., New Plymouth where they were tested prior to stripping.

Neither valve would 'pop' under test.

The photograph shows corrosion around the top of the valve spindle. The sectional sketch indicates the condition of the spindle within the adjusting screw.

Extensive corrosion of the spindles in the area adjacent to the valve adjusting screws had caused them to 'seize' with the result that the valves no longer provided over pressure protection for the vessels. The technician servicing the valves reported that 'heavy hammering' was necessary to force the spindles from the adjusting screw!

The corrosion appears to have been the result of localised galvanic action; other carbon steel components such as the spring carriers and spring, which had little contact with the brass adjusting screw, were in good condition.

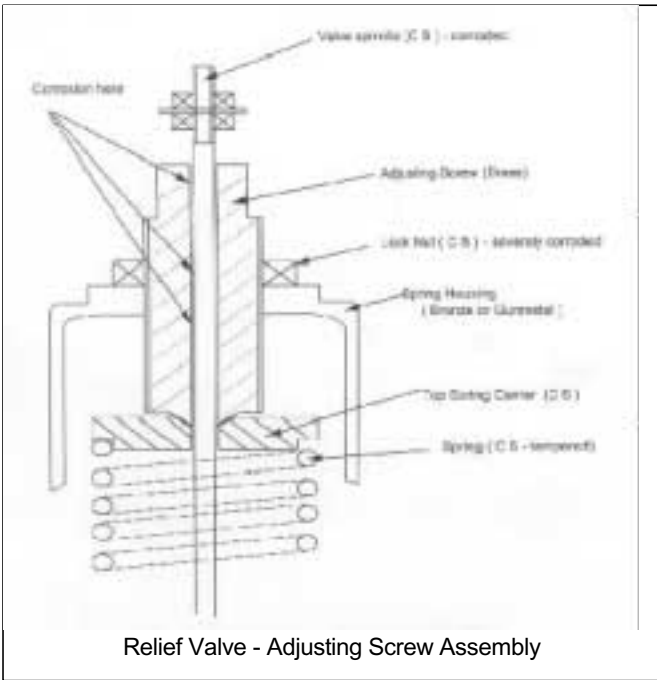
These valves, along with the vessels they protected, were installed approximately 10 years ago but, because of concerns about the process plant served, had not been regularly inspected or serviced during this period.



Engineering Safety's message is that safety and pressure relief valves and other over pressure protection devices must be regularly serviced and inspected in accordance with the requirements of the draft code of practice for pressure equipment and AS/NZS 3788. This requires these devices to be periodically serviced in accordance with a management plan, which satisfies the requirements of the draft code and standard.

**It is not acceptable for servicing of over pressure protection devices to be deferred to suit other process requirements.**





- A competent person must carry out in-service visual inspection at least annually. Easing gear must be operated where practicable.
- Valves must be removed for testing and maintenance at periods not exceeding the internal inspection periods of the vessels they are protecting or, every five years, whichever is the less. Where the internal inspection period is greater than five years and the service is clean, non-sticking and non-corrosive, the testing and maintenance period may equal the internal inspection period of the vessel provided the valve is adequately protected against the weather and ingress of foreign matter.

The state of the above valves suggests very strongly that:

- There had not been adequate in-service inspection.
- The materials of construction, operating environment and/or the external protection of the valves should be examined.

*Total Automation Ltd. and M&I Safety Inspection Services Ltd., New Plymouth, provided the photographs and technical data for this article. Ed.*

The code and standard permit considerable flexibility in the servicing and maintenance of pressure relief devices but certain fundamental requirements must be satisfied. These are:

- There must be a management plan for the equipment.

## Engineering Safety Staff Contact Details

Contact details for Engineering Safety staff are as follows:

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Postal and delivery details are:



Occupational Safety and Health Service  
 Department of Labour  
 4th floor  
 Unisys House  
 62 The Terrace  
 PO Box 3705  
 Wellington



## New Zealand Standards: Bits and Pieces

### Changes

There are two main kinds of changes which can occur in the life of a standard: amendments and revisions.

An amendment is intended to preserve the integrity of a standard in the light of better understood technical factors or changed external circumstances. An amendment can also be employed to correct errors or inaccuracies. It tends to be focused on specific details and is not designed to advance the technological state of the standard in a general way. Amendments are usually numbered consecutively – i.e. Amendment 1, Amendment 2, etc. New Zealand amendments to adopted standards are given a letter suffix to the original standard's amendment number – e.g. 1A. When a standard is amended it does not change its date.

A revision is a complete rewrite of the standard and its purpose is to bring the standard up to date with respect to changed scope requirements, new technology, or modified practices. A revised standard may be vastly different from the original. A revised standard generally keeps its number but is given a new date.

### Interim standards

Sometimes when the technology being addressed has not matured, an interim standard is produced. This type of standard has a limited life (usually 2 years) during which users are encouraged to comment on it to Standards

New Zealand. Near the end of this period, the standard is revised into a full standard or else it is withdrawn. Occasionally an interim standard may be given a 1 year extension. Interim standards are clearly marked 'Interim standard' and may be used and referenced in the normal way.

### Parts

Many standards, due to the extensive nature of the subject covered, are published as parts. This is also often the case where many test methods are involved, thus permitting selective purchase of relevant material.

Because parts are usually produced over a period of time, it is the practice for the date of standards which are split into parts to be catalogued with the dates following the parts – e.g. NZS 4223 Part 3:1999. The short form of this type of reference replaces the word 'Part' with a decimal point – e.g. NZS 4223.3:1999.

### Other nomenclature

Due to the long history of national and international standards and the complexity of situations which have to be met, a form of standards identifier may be encountered which is not obvious from reading this article or the previous one (Refer to *Safety Lines*, no. 47, New Zealand Standards: Designation). Where any doubt exists about how to reference a standard, it is advisable to return to the Standards Catalogue, visit the Internet shop at [www.standards.co.nz](http://www.standards.co.nz), or phone the Standards New Zealand Information Centre on 0900 50 550.

## Safety Valves Retrofitted to Boilers

Engineering Safety has been asked to clarify the intent of clause 1.14.2, of the *Approved Code of Practice for the Design, Safe Operation, Maintenance and Servicing of Boilers*. This relates to the upgrade of safety valves where an existing boiler is to operate as an unattended or limited attendance boiler or is to be relocated.

Safety valve upgrade is necessary where an existing boiler:

- Exceeds 2.3 MW output
- Has only one safety valve, and
- Is being converted to limited attendance or unattended operation or is being relocated.

The intent of the code of practice is that where an additional safety valve is required then this valve should

be sized to provide approximately 50% of the total relief capacity required at the boiler drum.

The reason for this is that two safety valves, sized as noted above, will ensure a reasonable level of backup in the event of one valve failing. Also, multiple valves may provide better control when relieving pressure.

An upgraded boiler fitted with a second safety valve may not have an adequate level of backup pressure relief, if the additional valve does not satisfy the above requirements. In particular, fitting a nominal second safety valve of the minimum size permitted by the relevant design standard, would not satisfy the intent of the boiler code of practice, if the valve does not conform with the above capacity requirements.



## Is It a Pressure Vessel?

**Question:** Is a vessel of:

Volume	750 litres
Working pressure	90 kPa (13 F si)
Safety valve set pressure	104 kPa (15 psi)
Contents	Water and bitumen emulsion

a pressure vessel under the Pressure Equipment, Cranes and Passenger Ropeways Regulations 1999 (PECPR) and, if so, what are the requirements for conformity assessment during manufacture and for in-service inspection?

**Answer:**

1. Yes, it is a pressure vessel under the PECPR Regulations. These regulations apply to vessels containing fluids at a pressure exceeding 50 kPa. It must be designed and manufactured to a recognised standard using appropriate materials, welding procedures and qualified welders.
2. Apply AS 4343-1999 *Pressure equipment – hazard levels* to determine hazard level. Taking the

contained fluid to be a non-harmful liquid, this vessel is rated hazard level E.

3. Apply AS 3920.1 1993 *Assurance of product quality Part 1: Pressure equipment manufacture* (or Table A of the draft code of practice for pressure equipment), to determine design verification and fabrication inspection requirements. Hazard level E equipment does not require design verification or fabrication inspection by an inspection body.
4. Apply AS/NZS 3788 *Pressure equipment – In-service inspection* and the draft code of practice for pressure equipment to determine in-service inspection requirements. Hazard level E equipment does not require in-service inspection by an inspection body.

This vessel must be designed and manufactured to a recognised standard.

Because it has a low hazard rating, it does not require:

- Conformity assessment during manufacture, or
- In-service inspection

by an inspection body.

## Guidelines for the Prevention of Falls

OSH has prepared a publication entitled *Guidelines for the Prevention of Falls*. It is primarily aimed at the construction industry and will assist users to meet their obligations under the Health and Safety in Employment Act 1992 and Health and Safety in Employment Regulations 1995. (Regulation 21 of the Health and Safety in Employment Regulations requires that fall protection shall be supplied and used in any place where an employee is at risk of a fall of 3 metres or more.) It will also have application to other work situations where falls are possible.

The guidelines are not intended to replace other OSH publications dealing with related matters. Rescue techniques for civil emergency services are not covered.

The *Guidelines for the Prevention of Falls* promotes good work practice. It sets out standards for the prevention of injuries from falls at work and provides a basis for workplace programmes and codes controlling hazards associated with working at heights.

Where appropriate the guidelines make reference to other industry standards.

Other OSH publications, which may be read in conjunction with the above guidelines, include:

- *A Guide to Managing Health and Safety to Meet the Requirements of the Health and Safety in Employment Act 1992.*
- *Approved Code of Practice for Power-Operated Elevating Work Platforms*
- *Approved Code of Practice for the Safe Erection and Use of Scaffolding*
- *Approved Code of Practice for Training Operators and Instructors of Powered Lift Trucks (Forklifts)*
- *Building Maintenance Units and Powered Swinging Stages*
- *Guidelines for the Provision of Facilities and General Safety and Health in the Construction Industry*
- *Safeguard Buyers Guide for Workplace Health and Safety Products and Services*
- *Safe Working in Confined Spaces*

These publications may be obtained from your local OSH office or, by contacting:

**Julie Watterson**  
**Occupational Safety and Health Service**  
**PO Box 3705, Wellington**  
**Phone (04) 915 4317 Fax (04) 915 4640**



## Safety Alert - Crane Accident

The accident happened when connecting bolts sheared and the crane cabin fell to the ground. The detached cabin is shown in the photograph.

Ten bolts used for attaching the cabin to the crane were recovered from the accident site. An examination of these bolts showed that some had been loose in their mounting and had been subject to wear and impact. The cores of two bolts had cracking and signs of corrosion.

An examination of the cabin revealed long-term impact damage on the side adjacent to the crane grab. The investigator reported that, in his opinion, this was due to the grab impacting the side of the cabin during grabbing operations.

The investigator also reported that damage to the attachment bolts indicated that they had been loose for some time and that they had been affected by the grab hitting the cabin.

The condition of the bolts and apparent impact damage to the cab has led the investigator to the conclusion that in-service inspection and maintenance of the crane had not been effective. His recommendations were:

1. The cabin should be relocated so that it will not be impacted by the grab.
2. In-service inspection and maintenance must ensure that all connections and bolts are kept tight and secure.



3. Other parts of the crane, which could have been affected by the grabbing operation or this incident, should be checked.
4. An alert should be issued, drawing the attention of controllers to the need for regular in-service inspection and maintenance, which includes the connections and fastenings of cranes.

This article summarises a report prepared by OSH engineer Weng Low. Further information on this incident can be obtained by contacting Weng at:

Manukau City Branch  
Occupational Safety and Health Service  
Department of Labour  
Phone: 09 262 5300 Fax: 09 262 5301

## Inspection Bodies

Engineering Safety is pleased to advise readers that two more inspection bodies have been recognised by the Secretary, Department of Labour.

New Zealand inspection body:

**Advanced Testing Computed (Hamilton) Ltd.**  
Unit 1, 87 Higgins Road  
Frankton  
Hamilton  
Technical Manager: Harold Templar  
Telephone: 07 8466 366 Fax: 07 8466 362  
Email: atcatc@xtra.co.nz

ATC is accredited to ISO 17020 by International Accreditation New Zealand.

Overseas inspection body:

**SGS Engineering Inspection Company (Pty) Ltd.**  
PO Box 21151  
Bluff 4036  
South Africa  
Division Head: Danny Bageloo  
Divisional Secretary: Debbie Kriedeman  
Telephone: + 27 31 4661804 Fax: + 27 31 466 3694  
Email: danny\_bageloo@sgsgroup.com

SGS is certified by the South African Government and listed by the South African Bureau of Standards as an inspection authority.



## Crane Safety Manual

A new issue of the Power Crane Association of New Zealand (Inc.) *Crane Safety Manual* has been published.

This manual is jointly promoted by the Power Crane Association and Occupational Safety and Health and was first published in 1978.

This latest update includes a wider range of crane types and operating procedures. The publication now reflects the latest technology and highlights relevant new regulations and codes of practice.

The new manual is available to PCA members for \$20 (incl. GST) plus postage/courier and to non-members for \$30 (incl. GST) plus postage/courier. Copies may be obtained by contacting:

**Ian Grooby**  
**Chief Executive**  
**Power Crane Association of New Zealand (Inc.)**  
**PO Box 30 074**  
**Lower Hutt**  
**Phone: 04 569 9799 Fax: 04 569 6969**  
**Email: [pca@xtra.co.nz](mailto:pca@xtra.co.nz)**

## ISO Standards On-Line

ISO standards, technical, and other information about the International Organization for Standardization are available at [www.iso.ch](http://www.iso.ch).

The "ISO Catalogue" section contains the International Standards. You can search by standard number or title and can order from the site. These will be emailed to you within 24 hours.

For technical information, the "ISO Technical Work" section lists the technical committees, their programmes and progress on the development of new standards.

Help is provided by the hyperlink, "Notes on accessing the ISO On-line database".

*The above article was reproduced from "Focal Points" the newsletter of International Accreditation New Zealand. Ed.*



## New Safety Engineer

Engineering Safety welcomes Robin Bain to its team.

Robin, who joined on the 28th August, has a mechanical engineering degree and a wide range of experience. He has worked most recently for Standards New Zealand and prior to that the New Zealand Army, DesignPower and the Electricity Corporation of New Zealand.

We wish Robin success in his career with Engineering Safety.

## Merry Christmas!

*We wish all our readers a merry Christmas and a happy New Year.*



*OSH offices will be closed between 23rd December and 3rd January inclusive.*

*The next issue of Safety Lines will be published late March 2001.*

*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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