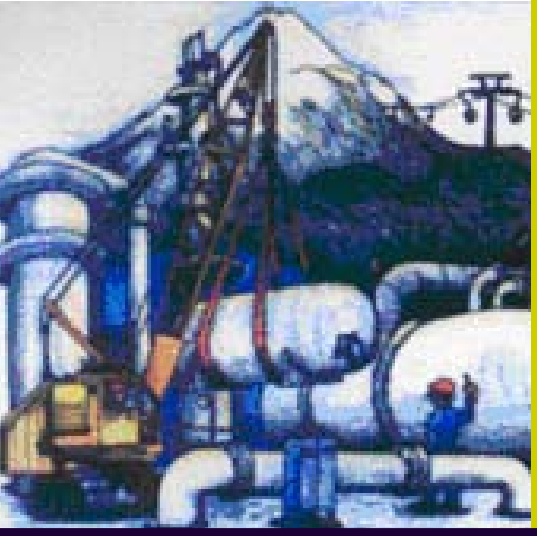

Department of Labour
TE TARI MAHI

Safety Lines

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ENTERING NEW WAR ZONES

In the March issue of *Safety Lines*, we highlighted a couple of interesting amusement devices – a large Ferris wheel and a vintage merry-go-round, both from Britain. Recent amusement device registrations have revealed another interesting operation to arrive from overseas, this having a distinctive military flavour.

Jonathan and Wendy Lahy-Neary imported into New Zealand a collection of decommissioned military vehicles from Britain and Australia. This mainly consists of tracked personnel carriers of various makes and models dating from post-WW2 to 1987.

Centurion tank being put through its paces

Also in the fleet is a genuine Centurion tank, from the 1950s era, which is fully operational (except for the firing mechanism, of course!). A V12 Merlin aircraft engine powers the tank, and fuel consumption is not calculated in miles per gallon, but literally in gallons per mile! (For the record, the tank weighs 52 tons dry and 53 tons fully fuelled.)

The Lahy-Nearys secured the use of Environment Canterbury land on McLean's Island, west of Christchurch Airport, and set up a dedicated area to operate *Tanks for Everything*, where members of the public can learn how to drive the vehicles or be taken on a fun ride for what can only be considered a 'very different' form of entertainment.

Each vehicle used for passenger rides was issued with a certificate of examination. This does not include the Centurion itself, which is far too expensive to run in such a way and can only fit three passengers. However, it is available for driving tuition, and for special demonstrations, for example, at specially arranged corporate 'team-building' type functions, where it is apparently extremely effective at crushing cars!

The Department of Labour has many vehicle-type activities on the amusement device register, but this particular operation certainly brings a new dimension to the leisure industry.

HEALTH AND SAFETY IN EMPLOYMENT ACT 1992 – PRINCIPALS AND CONTRACTORS

This article is based on section 4.3 of *A Guide to the Health and Safety in Employment Act 1992*, which is free to download from the Department of Labour's website at **www.osh.dol.govt.nz**. Much of the text and the diagram are taken directly from the guide, which is more extensive in its treatment of the subject and is recommended reading for those concerned.

The Health and Safety in Employment Act 1992 (the HSE Act) places a duty on a principal* to a contract to take all practicable steps (see 'All Practicable Steps' article on page 4) to ensure that contractors, subcontractors and their employees, are not harmed while undertaking any work under the contract. This duty is set out in section 18 of the Act.

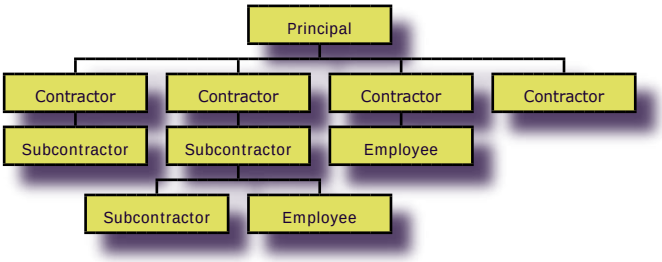
A principal or contractor may also be an employer, a self-employed person, or a person who controls a place of work.

A principal's duty under the Act is limited to matters that can reasonably be expected to be under the principal's control. There are situations where control of a place of work may be shared by the principal and by contractors.

For any given contract, the nature and extent of the principal's duty of care (to take all practicable steps to prevent harm) depends on:

- the size and nature of the contract
- the type of work the contractor was engaged to do
- the contractor's and the principal's respective knowledge of the work being undertaken
- the nature of hazards in the place of work.

The duties of employer and principal will often be interrelated. When there is a step which would be practicable for the principal to take in the circumstances, that step is required to be taken irrespective of what steps might be required of the employer. The diagram below illustrates some of the typical relationships that can arise in the course of a significant project.



A principal's responsibilities for a contractor's employees in a place of work are not diminished simply because the employer is more directly related to, and responsible for, the employees carrying out the work. Also a principal or contractor cannot 'contract out' of liability under section 18 of the Act.

The 'all practicable steps' requirements for the principal may be broadly discussed under the following headings:

* "Principal" means a person who or that engages any person (otherwise than as an employee) to do any work for gain or reward – The Health and Safety in Employment Act 1992.

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Contractor selection and negotiation of terms

In selecting a contractor, the principal must be satisfied about the contractor's competence to do the work. The principal must make clear the safety standards to be observed. The contractor should be required to submit an adequate health and safety plan for any significant project. Such a plan should be appropriate to the hazards and circumstances of the contract, and should at least include:

- the identification of hazards and control measures to be taken
- emergency procedures
- relevant employee training, experience and qualification details
- accident/incident reporting and recording procedures
- lines of accountability, and responsibilities for supervision.

Information sharing

Effective information is critical and the principal should have discussions and share information with the contractor about the work and the area the work is to be carried out in. This information should include the following:

- reporting arrangements:
  - the nomination of contact persons for both the principal and contractor, the representatives having an appropriate level of knowledge for the role, and sufficient authority to be effective
  - the planning and running of regular joint meetings
  - procedures for reporting hazards
  - responsibilities where work is notifiable to the Department of Labour. Notifiable work includes certain work involving asbestos, commercial logging or tree felling, and certain construction work
  - the method for reporting accidents and incidents to the principal.
- information to be given by the principal about the workplace and procedures which may cover:
  - known hazards
  - restricted areas
  - work permit procedures
  - company rules
  - emergency procedures and first-aid facilities
  - specific job instructions and work methods.
- information to be given by the contractor about the workplace and procedures which may cover:
  - hazards brought on to or created on the site
  - safety provisions for third parties
  - necessary safety equipment
  - necessary means of access
  - restricted areas.

Monitoring contractors

The principal has a positive duty to monitor the performance of contractors and subcontractors in relation to health and safety. This is not a duty to constantly check for hazards, but at least to bring to the attention of the contractor any unsafe practices or conditions.

A principal is specifically required to monitor a contractor's performance in relation to employee's exposure to hazards. This is in addition to the contractor's responsibilities

to its employees. What is practicable for the principal will often differ from that expected of the contractor/employer in any particular circumstances.

In a few situations, simply appointing a competent contractor is all that is required. The following measures are therefore recommended to monitor contract work, and identify problems before an accident or incident occurs:

- raising safety issues that need the contractor's attention
- regular inspections
- investigating accidents and incidents
- effective management of the principal/ contractor relationship
- overall control and coordination of the contract by the principal
- post-contract evaluation of performance.

If any discrepancy is found between this article and *A Guide to the Health and Safety in Employment Act 1992*, the latter should be relied upon.

ALL PRACTICABLE STEPS

The following quotation is an extract from section 1.5 of *A Guide to the Health and Safety in Employment Act 1992*:

'Many of the duties in the Health and Safety in Employment Act are qualified by the words "take all practicable steps".

This phrase applies to the general duties that must be carried out by employers, employees, self-employed people, people who control places of work, and 'principals', who are people who engage contractors to carry out work for them.

The Act specifies that a person is required to take those steps only in respect of circumstances that the person knows or ought reasonably to know about.

Where the circumstances are known, or ought reasonably to be known about, the dutyholder is required to take all steps that are **reasonably** practicable. A step is practicable if it is possible or capable of being done. Whether a step is also reasonable takes into account:

- the nature and severity of any injury or harm that may occur;
- the degree of risk or probability of injury or harm occurring;
- how much is known about the hazard and the ways of eliminating, isolating or minimising the hazard; and
- the availability and cost of safeguards.

The degree of risk and severity of potential injury or harm must be balanced against the cost and feasibility of the safeguard. The cost of providing safeguards has to be measured against the consequences of failing to do so. It is not simply a measure of whether the person can afford to provide the necessary safeguards. Where there is a risk of serious, or frequent injury or harm, a greater cost in the provision of safeguards may be reasonable.

Any judgement of whether a safeguard was 'reasonably practicable' is to be made taking common practice and knowledge throughout the industry into account.

INDEX UPDATE

The *Safety Lines* index has been updated to cover issues 1-70. The index is available in Microsoft Word and pdf formats.

It can be accessed from the Engineering Safety web page **www.osh.dol.govt.nz/ services/eng-safety** via 'Safety Lines' on the menu at the left of the page.

Alternatively it can be reached from **www. osh.dol.govt.nz** via 'Publications', 'Series/ Bulletins etc', and 'Safety Lines (series)'.

HOT WATER BOILER – OR NOT?

The PECPR Regulations recognise hot water boilers as such where water pressure exceeds 200 kPa and temperature exceeds 100ºC. Part 8 of the *Approved Code of Practice for the Design, Safe Operation, Maintenance and Servicing of Boilers* reflects those limits, and provides the appropriate standards and conformity assessment requirements for plant operating above them.

Currently the code of practice allows that hot water boilers not exceeding 1.5 MW output do not require a certificate of inspection, but need instead the appointment of a responsible person. (This provision will be reviewed during the forthcoming amendment.) These hot water boilers do require a certificate of design verification.

What about hot water 'boilers' that do not exceed 200 kPa and 100ºC?

If these items of equipment operate at over 50 kPa they are still pressure equipment subject to the regulations. In such cases the *Approved Code of Practice for Pressure Equipment (Excluding Boilers)* applies, as it does for electric 'boilers', which are also not boilers by definition of the regulations. Therefore, it is this latter code of practice that provides the appropriate standards and conformity assessment requirements. Generally such equipment will need a certificate of design verification and a certificate of inspection.

HERA COURSES AND SEMINARS

HERA Training Centre is offering the following courses and seminars over the remainder of 2006:

Activity	**Dates**
Management Appreciation in NDT and Quality Control	25 October
Surface Methods of Inspection	21 – 25 August
Pressure Equipment Inspection	4 – 8 September
Welding Inspection	11 – 15 September
Refresher Course in Welding Inspection	21 – 22 September
Welding Defects – Causes, Remedies and Inspection	26 October

The venue for the above courses and seminars is:

HERA House
17-19 Gladding Place
MANUKAU CITY (South Auckland)

Note: Enrolment closes 7 days before start of course.

To enrol contact:

HERA Training Centre
PO Box 76134
Manukau City
Phone: 09 262 2885
Fax: 09 262 2856
Email: admin@hera.org.nz

For further information about courses and seminars visit **www.hera.org.nz** or contact:

Peter Hayward
Phone: 09 262 4847
Email: peter.hayward@hera.org.nz

AVOIDANCE OF GALVANIC CORROSION BETWEEN STAINLESS STEEL BOLTS AND ALUMINIUM MEMBERS

This article is reprinted with permission from the New Zealand Heavy Engineering Research Association (July 2006)

There are a growing number of applications where stainless steel bolts are being specified to support aluminium members.

The combination of these two metals in a connection will lead to galvanic corrosion issues and subsequent poor performance unless the potential for this is realised and suppressed through suitable isolation of the contact surfaces.

When these two metals are in direct contact in the presence of oxygen and water, galvanic corrosion will occur between the two metals. The aluminium forms the anode (i.e. the surface from which material is lost) and the stainless steel forms the cathode.

In the case of stainless steel bolts through aluminium plies, this galvanic action causes loss of material from the aluminium surfaces around the bolt hole, with the subsequent enlargement of the bolt hole over time and the potential for the structural integrity of the connection to be compromised.

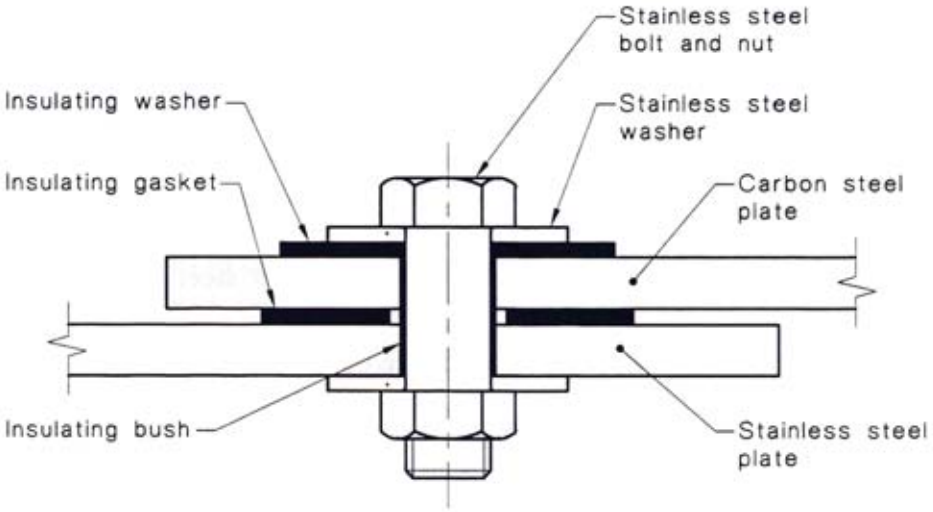
The rate of corrosion depends on the external environment. Given that these materials are typically specified for aggressive external environments, the effect can be severe.

Fortunately the potential for galvanic corrosion can be suppressed by electrically isolating the two materials through placing an insulating material between the two surfaces.

A suitable detail to use around the bolts is shown in Figure C5 of the Cold-Formed Stainless Steel Structures Standard, AS/NZS 4673:2001 (see this page).

Further guidance, written for use of stainless steel with carbon steel but also applicable in this instance, is given in HERA Report R4-111, *Notes Prepared for a Seminar on Designing Stainless Steel Structures*, 2002.

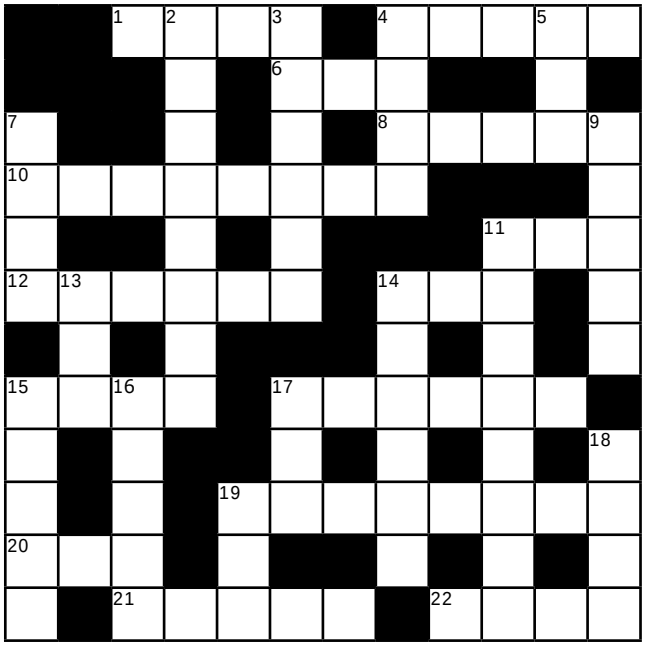
The insulating material must be sufficiently hard not to be squeezed out from between the contact surfaces in service. Suitable materials can be a silicone rubber or polymer material, applied as a washer between the contact plies and as a sleeve between the bolt shank and the edges of the bolt hole. The bolt hole size and the bolt length must be sufficient to accommodate the thickness of this insulating material.



NOTE: The insulating material chosen for the washer, bush and gasket should be structurally adequate to carry the design loads and should be non-porous.

FIGURE C5 DESIGN DETAILS TO AVOID GALVANIC CORROSION AT BOLTED CONNECTIONS

PUZZLE PLACE



Answers include abbreviations and acronyms.

	ACROSS		DOWN
1	Stout cord	2	Gloomy
4	Volumetric unit	3	Envelop
6	Modern, as in classical	4	Mislay
8	Struck	5	Rodent
10	Always	7	Research association
11	Computer-aided design	9	Senior
12	On (ship, etc)	11	Elongated container
14	Bashful	13	Rod
15	Ill-behaved little one	14	Pulley
17	Like vinegar	15	Hurtful remarks
19	Permeates	16	Mature
20	Unit (e.g. sound)	17	Beer
21	Portable dwellings	18	Island
22	Impel	19	Cooking vessel

Answers can be obtained by email from: **robin.bain@dol.govt.nz**.

Answers to *Safety Lines* Issue 69 Crossword

	ACROSS		DOWN
1	Ordering	1	Owes
6	X-ray	2	Data
8	Eat	3	Redo
9	Dope	4	Nip
12	Atop	5	Proxy
14	Vex	7	Yawn
15	Tie	10	Opt
16	Yen	11	Eventide
18	QMS	13	Tamper
20	Apt	17	Envy
21	psi	18	QA
22	Dye	19	St
25	Tree	21	Pea
27	Due	22	Depot
28	ISO	23	Ease
29	Late	24	LIFO
31	Hope	25	Tore
32	Oversees	26	Elks
		30	Toe

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