



# Safety Lines



ISSN 1171-9354

ENGINEERING SAFETY NEWSLETTER, OCCUPATIONAL SAFETY AND HEALTH SERVICE

No. 59, September 2003

## Pressure Piping Compliance Requirements

The following article outlines the functions of and requirements placed on designers, manufacturers, suppliers and inspection bodies in the HSE Act, PECPR Regulations and associated codes of practice and documents.

The associated codes of practice and documents include the *Approved Code of Practice for Pressure Equipment (Excluding Boilers) 2001* (ACoP), the ASME Codes B31.5 (as amended by 6.7.1 of the ACoP) and B31.3, AS4041 and BS 806. It should be noted that the PECPR regulations take precedent over the ACoP and both take precedence over the ASME code, and BS and AS standards.

Designers, manufacturers and suppliers assess the hazard level of the pipework in accordance with AS 4343 and, with reference to Appendix A (Conformity Assessment) of the ACoP to determine the design verification and fabrication inspection requirements.

In addition to the above, designers, manufacturers and suppliers of pressure vessels and pipework for refrigeration systems also need to refer to and comply with AS/NZS 1677 (Refrigerating Systems) including the determination of design parameters (i.e. pressure and temperature).

Inspection Bodies must ensure that the design verification and fabrication inspection are carried out as appropriate in accordance with the regulations, ACoP and standards. Specific reference must be made to the ACoP Appendix A, Clauses 5 and 6.

The following summary and information is offered as guidance:

To meet the requirements for certification, copies of the following documentation should be supplied to the Inspection Body (items 1-7 prior to any fabrication commencing):

1. The Inspection and Test Plan (ITP) covering the fabrication and any modifications (Refer to Appendix K of the ACoP).
2. All associated welding procedures.
3. The welder qualifications for all welders who will be engaged in the fabrication and modifications.
4. The design verification for the pipework.
5. The hazard level for the pipework.
6. The material certificates for the pipe and pipe fittings. To include impact properties where specified in the design.

*Continued ...*



7. Detailed drawings of the pipe supports, anchors and guides.
8. The foundation certificate(s) from a Registered Engineer for the items detailed in clause 7 above.

The ITP should include :

1. Reference to the isometric drawings, which will be used by the Inspection Body for the weld maps and the welder control sheets.
2. The NDT requirements.
3. Any specific requirements set out in the applicable standard (e.g. ASME 31.5, 31.3).
4. The hold points throughout the work (i.e. refer to the ACoP, Appendix A, clause 6).

After reviewing the ITP and associated documentation, the necessary inspections to be carried out during fabrication and the welds to be inspected by NDT can be agreed with the Inspection Body. Copies of the NDT reports should be

presented to the Inspection Body as the work progresses, but certainly before any pressure testing.

A marked up P & ID and/or isometric drawing(s), clearly defining the boundary limits of the test, should be provided to the inspector prior to the pressure test(s). Calibrated pressure gauges must also be used. Certificates for the calibration are to be available for review by the inspector prior to the test, and must be included in the final inspection package.

The final inspection package at completion of the work/installation, inclusive of the Manufacturer's Data Sheet, must then be reviewed by the Inspection Body and, if complete, be signed off.

PECPR regulation 8 requires Controllers to hold all information necessary in order to safely operate, maintain and repair pressure equipment under their control. Manufacturers and suppliers must ensure that such information is provided. This would include the inspection package noted above.

## Brittle Fracture of ASTM A 105 Flanges

Last year, the Belgian Institute for Welding Techniques concluded research following the failure at -12°C of a 102 mm thick 24 inch welded neck Class 600 (ANSI B16.5) flange made from ASTM A 105 grade steel, and their concern that ASME VIII division 1 permits the use of this steel to -29°C without provisions relating to resistance to brittle fracture.

Recommendations from this research are contained in a document (in English) titled *Recommendations for Pipe Flanges Made in Forged Steel*

*Complying With ASTM A 105* which is available on the Internet at:

<http://meta.fgov.be/pdf/pm/enm01.pdf>

The document recommends that critical pipe flanges (containing hazardous substances at temperatures below 0°C) should be subject to further precautions, and the failure consequences should be evaluated for existing ASTM A 105 pipe flanges where hazardous substances are involved. Recommendations are summarised in table I at pages 12 and 13 of the document. Additional recommendations are made for flanges to be ordered in the future.

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## Web is One

It has now been a year since we introduced the Engineering Safety website, and it has quickly become a dependable information resource. You can navigate to it from the main OSH site as was shown in 'Visit Us on the Web' in issue number 56, or just go directly to:



[www.osh.dol.govt.nz/touch/eng-safety](http://www.osh.dol.govt.nz/touch/eng-safety)

You could make this your home page (if you're really enthusiastic), put a short-cut on your desktop, or just add it to favourites (bookmarks).

The site has all-round relevance to the work of Engineering Safety and the PECPR Regulations, and on the home page there are nine navigation buttons (outlined in the above-mentioned article) leading to specific areas of interest. Four of those areas are worthy of a brief mention: *Inspection*, *Qualification*, *Articles* and *Documentation*.

Both *Inspection* and *Qualification* contain subdivided lists of recognised organisations, the former of inspection bodies, and the latter of qualification issuing agencies. These lists are promptly and regularly updated, so this information is comprehensive and reliable. These are not maintained against other master lists – they are the master lists!

*Articles* will eventually in its own right contain articles that meet the following criteria:

- Reasonably generic with respect to equipment type, and as broad in scope as the topic will allow.
- Up-to-date. If the article is taken from *Safety Lines*, it is likely to have been (and continue to be) 'refreshed'.
- Reasonably time-independent.

The main draw card of *Articles* at the present time is as a portal to issues, past and current, of *Safety Lines*. The Engineering Safety newsletter, *Safety Lines*, is in this way electronically available in its most recent issues (back to issue 31 which came out in April 1997). For the historically inclined, there are ways and means by which Engineering Safety can make available even earlier issues or articles, but it

should be realised that much of the content will have been superseded by the more recent regulations and codes of practice.

*Documentation* currently provides the following:

- On-line access to regulations via a link to the Public Access to Legislation Project, an interim website of New Zealand Legislation.
- Relevant approved codes of practice, which can be freely downloaded.
- Guidelines, which can also be freely downloaded.
- Contents of gazetted exemptions from the PECPR Regulations.
- Clarifications of elements of the PECPR Regulations and approved codes of practice (as and when they are produced, and if deemed sufficiently interesting for general publication).

Some organisations provide give-aways on occasions like this – but we are already providing everything for free. However, if you would like to give the web team a birthday present, there is one other part of the website we'd like to know you had visited. It's called *Registration!*

### Proposed Boiler Code Amendment

An amendment is proposed to the *Approved Code of Practice for the Design, Safe Operation, Maintenance and Servicing of Boilers, 2000*.

Changes are tabulated in the *Summary of Proposed Boiler Code Changes*, which is available on our Web site at the same location as the code (January 2000) and the draft code. Comments are requested by 31<sup>st</sup> October 2003 from interested persons, and should be restricted to the proposed amendment.

The code, draft, and summary are available at:

[www.osh.dol.govt.nz](http://www.osh.dol.govt.nz)

Select 'Health and safety Publications', then 'Drafts'. The documents are under the heading 'Draft Boiler Codes'.

## Platform Lift Accident

Sometimes something out of the ordinary comes across our desks at Engineering Safety, as was the case a couple of months back when we received a report on an accident involving a wheelchair platform lift. This happened in a place of work and was duly investigated by an OSH inspector. An OSH engineer also made recommendations to make the lift safe.

The hydraulically operated lift car had three sides that extended 1150 mm above its floor, the front being open for access. A number of projections, one a small recessed window, were accessible to persons travelling in the lift, which is designed to accommodate a person in a wheelchair and one other person. The accident occurred when a young boy got his head trapped by the window. The victim was seriously injured but fortunately made a reasonably good recovery.

AS 1735.15 gives guidance for lifts of this type, which include increasing the sides to 2000 mm where the clearance to the lift well is less than 75 mm (or less than 300 mm from a shearing hazard) and reducing projections to within certain limits. The standard also calls for light beams and the employment of certain types of control. The standard had not been followed and subsequent modifications had to be carried out.

Under the HSE Regulations 1995 the designer, manufacturer and supplier have responsibilities to identify hazards and take all practicable steps to remove the sources of harm to any person.

## HERA Courses and Seminars

HERA Training Centre is offering the following courses and seminars during the remainder of 2003:

| Course  | Dates          |
|---|----------------|
| Professional Development Seminar on Pressure Equipment Inspection, covering PECPR Regulations, Code of Practice for Pressure Equipment, AS/NZS 3788 Pressure equipment - In-service inspection, AS 4037 Pressure equipment - Examination and testing, AS/NZS 4481 Pressure equipment - Competencies of inspectors | 22 October     |
| Welding inspection  | 10-14 November |

The venue for the above courses is:

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

Note: Enrolment closes 7 days before start of course.

For further details contact:

**HERA Training Centre  
P O Box 76134  
Manukau City  
Phone: 09 262 2885  
Fax: 09 262 2856  
email: [admin@hera.org.nz](mailto:admin@hera.org.nz)**

## Identification of Roll Over Protective Structures

Engineering Safety has received information that some roll over protective structures (ROPS) on mobile plant (e.g. tractors, earth-moving equipment, etc.) do not bear the correct identification as specified in the *Approved Code of Practice for Operator Protective Structures*.

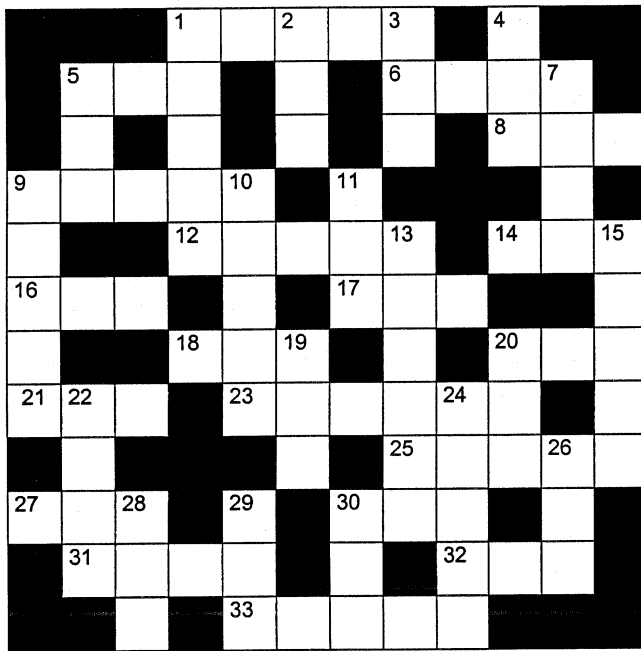
Part 8 of the code basically calls for permanent labelling to contain the following (see the code for exact wording):

- Maker's name and address;
- Structure's type and serial number (if any);
- Serial number, make and model of plant for which ROPS is designed;

- Maximum mass of plant for which ROPS is designed;
- Relevant standard; and
- Other appropriate information.

It is very important that ROPS can be correctly identified with the appropriate plant, and that they bear information relating to their correct use. OSH inspectors will be looking for this label when visiting sites where there are machines fitted with these structures.

## Puzzle Place



Answers include abbreviations and acronyms.

### ACROSS

- 1 Make law
- 5 As late as now
- 6 Rowing implements
- 8 Indefinite period
- 9 Unfastened
- 12 Small compartments
- 14 Resting place
- 16 Standards organisation
- 17 Regularly record details
- 18 Hint
- 20 Rod
- 21 Mineral spring
- 23 Lubricant
- 25 Shouts
- 27 Pressure unit
- 30 Jelly
- 31 Radiate
- 32 Vessel used in tanning
- 33 Happen afterwards

### DOWN

- 1 Set of moral principles
- 2 Question
- 3 Spinning top
- 4 Source of metal
- 5 Longing
- 7 Only
- 9 Individuals
- 10 Identify and remove defects
- 11 Whole amount
- 13 Comfort
- 15 Missiles
- 19 Sin
- 20 Sound unit
- 22 Tube
- 24 Ointment
- 26 Item in auction
- 28 Electrical unit – short form
- 29 Devoured
- 30 Freely expanding fluid

Answers can be obtained by email from:

[robin.bain@osh.dol.govt.nz](mailto:robin.bain@osh.dol.govt.nz)

## Announcements

The following organisation has been recognised under the PECPR Regulations as a qualification issuing agency for the issue of the National Certificate in Electricity Supply (Thermal Plant Operator) (Level 4) with strands in Thermal Operations, Combined Cycle Operations, and Co-generation Operations:

**Electricity Supply Industry  
Training Organisation Inc.  
PO Box 1245  
Hamilton**

A full list of recognised qualification issuing agencies and known contact details can be viewed at the Engineering Safety website:

[www.osh.dol.govt.nz/touch/eng-safety/index.shtml](http://www.osh.dol.govt.nz/touch/eng-safety/index.shtml)

See separate article on page 3 about a proposed amendment to the boiler code.

*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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## Contents

|   |   |
|---|---|
| Pressure Piping Compliance Requirements           | 1 |
| Brittle Fracture of ASTM A 105 Flanges            | 2 |
| Engineering Safety Staff Contact Details          | 2 |
| Web is One  | 3 |
| Proposed Boiler Code Amendment                    | 3 |
| Platform Lift Accident                            | 4 |
| Identification of Roll Over Protective Structures | 4 |
| HERA Courses and Seminars                         | 4 |
| Puzzle Place                                      | 5 |
| Announcements                                     | 5 |