



Procedure: Pressure equipment safety

Purpose

The purpose of this procedure is to define the method for safe operation and inspection of pressure equipment and the collection and recording of associated data and documentation at the Australian National University (University) to ensure compliance with the *Work Health and Safety Act 2011 (Cth)*, the *Work Health and Safety Regulations 2011 (Cth)* (WHS Regulations) and the University's Work Health & Safety (WHS) Management System. This procedure is linked to the Australian National University's Work health and safety policy and is one of the Safe Work Procedures within the WHS Management System.

Definitions

Boiler refers to a steam generating device including associated pressure parts, controls and pipework that is designed to AS/NZS (Australian Standard/New Zealand Standard) 1228:2006 Pressure equipment – Boilers.

Design registration is where the *WHS Regulations 2011 (Cth)* requires the design of certain classes of pressure equipment to be registered with Comcare.

High risk licence holder is person licensed to work on boiler equipment.

In-service inspector is an independent party (accredited with Comcare) who is able to inspect pressure equipment and provide an inspection report in line with AS/NZS 4343:2014 Pressure equipment – hazard levels.

Local area means a College, Research School or Service Division of the University.

NDT means non-destructive testing.

Pressure equipment is an enclosed vessel (boiler, pressure vessel, pressure piping and ANSI / API 620 or equivalent storage tank) that is not open to atmosphere and is designed to AS 2971:2007 Serially produced pressure vessels.

WHS Regulations means the *Work Health and Safety Regulations 2011 (Cth)*.

Procedure

Scope

1. This procedure applies to all types of Pressure defined in AS/NZS 1200:2015 Pressure equipment owned and operated by the University. For a complete list of pressure equipment types refer to AS/NZS 1200:2015 Pressure equipment. Examples of pressure equipment in use at the University include:

- * boilers;
- * clarifiers;
- * air receivers;
- * steam drums;
- * compressors;
- * steam pipes;
- * compressed air lines;
- * pressure relief valves; and
- * safety valves.

Responsibilities

Local area

2. Local areas must maintain records of all registered pressure equipment in their respective areas detailing:

- * registration certificates;
- * inspection reports;
- * maintenance work;
- * correspondence; and
- * hazard assessments.

3. Local areas must ensure the safe monitoring and inspection of pressure equipment in their area in accordance with AS/NZS 3788:2006 Pressure equipment - In-service inspection.

4. Local areas must ensure that any boilers and pressure vessels which have a hazard rating of A, B or C per the criteria in AS 4343:2014 Pressure equipment — Hazard is registered with Comcare.

5. Local areas must ensure all pressure equipment is registered in the University's MAXIMO maintenance system with all relevant information recorded.
6. Local areas must ensure that all Comcare registered pressure equipment within their area of responsibility is inspected by a competent in-service inspector in accordance with the established inspection programme.
7. Local areas must ensure that any new pressure equipment installed that has a hazard rating of A or B for piping and pressure relief devices is inspected in accordance with AS/NZS 3788:2006 (Pressure equipment - In-service inspection).
8. Local areas must ensure that Comcare is notified when registered pressure vessels are sold or removed from service. (The registration certificate and maintenance records must accompany the pressure vessel if it is sold).
9. Local areas must arrange maintenance when pressure equipment is due for service. As a condition of plant registration, the local area must notify Comcare that the item of plant is being maintained in a safe condition and is safe to operate. The notification must be submitted to Comcare every 12 months during the five year registration period. Refer Notification of Schedule Maintenance form ([Comcare form WHS-PIR002](#)).
10. Local areas must ensure the safe use of pressure equipment at all times in their area in accordance with AS/NZS 3788:2006 Pressure equipment - In-service inspection.
11. Local areas must ensure all unregistered pressure equipment is inspected on a regular basis by either University in-house maintenance personnel or a contracted in-service inspector.

In-service inspector:

12. The in-service inspector will:
 - * maintain and update a database of all registered pressure vessels in the respective plants in consultation with the local area;
 - * complete the in-service inspection in accordance with the requirements of AS/NZS 3788:2006; and
 - * submit inspection reports and recommendations to the local area.

Duration of registration

13. A registration for an item of plant is valid for five years.
14. Before the term expires, Comcare will send a reminder that the registration is due to expire. The local area is responsible for renewing the item registration. An application for renewal of the item must be submitted to Comcare before the existing registration expires.

Purchasing of pressure equipment

15. All documentation required by legislation will be included in the purchasing package. The pressure equipment supplier is responsible for the relevant design registration certificate and support documentation. If the equipment supplier is unable to obtain design registration on behalf of the University (i.e. if the equipment was sourced from overseas), the local area representative must obtain this registration prior to equipment commissioning.

Installation

16. The pressure equipment will be transported, installed and commissioned in accordance with the manufacturer's recommendations to avoid damage to the equipment.

17. A registered inspector must make a statutory acceptance inspection to ensure that the pressure vessel or boiler is fit for operation once installed. The inspection report must be submitted to Comcare to obtain a plant item registration number.

18. Inspection of pressure piping will be carried out by a competent person..

Commissioning

19. Commissioning of the pressure equipment must be in line with the manufacturer's recommendations. Prior to being placed into service, an inspection must be carried out. This inspection is required to ensure that work has been properly executed, all necessary documentation has been completed and the pressure equipment is safe to operate.

Plant item registration

20. New pressure equipment must be [registered as plant with Comcare](#) when it is first installed. Local areas will record the plant item registration number from Comcare in the local area pressure equipment register.

21. The following information is required from the equipment supplier:

- * type of pressure equipment (pressure vessel, boiler, pressure pipe);
- * plant item (or pressure equipment) design registration number and support documentation;
- * design pressure;
- * design temperature;
- * volume (or capacity);
- * contents;
- * hazard levels;

- * certificate of inspection from a registered boiler or pressure vessel inspector; and
- * manufacturer's model number, serial number, and year of manufacture.

Inspection and testing

22. A commissioning inspection by a high risk licence holder ([refer to Licensing of high risk work procedure](#)) must be conducted prior to the equipment's first operation.
23. The scope of the inspection will be as per AS/NZS 3788:2006 Pressure equipment – In-service inspection.

Commissioning documentation

24. The pressure equipment commissioning documentation will include a complete project close-out check sheet and nominated pressure equipment documentation, inspection, and testing records as specified above in AS/NZS 3788:2006 Pressure equipment – In-service inspection.

Record keeping

25. Comcare requires comprehensive records to be maintained for all registrable pressure equipment installed on the University. The records must be retained and stored by the local area until the asset is decommissioned and removed.
26. Records should also be retained for pressure equipment that does not require design registration.
27. The list of documentation required to be maintained includes:
- * drawings;
 - * design calculations;
 - * design evidence (pipe stressing, installation notes, design and installation codes);
 - * design and plant item registration;
 - * equipment data sheets;
 - * final signoff copies of the relevant inspections test plans; and.
 - * final quality assurance package, including items such as material test certificates, weld procedures, qualifications, heat treatment, and hold points in the process.
28. The local area must keep vessel registration certificates and inspection summary reports as proof of current inspection.

Equipment lifespan

29. The serviceable life of pressure equipment is generally limited to 25 years. A remaining life assessment is required to be undertaken prior to the conclusion of the year for the equipment to remain in a safe operating condition and fit for service.

30. A remaining life assessment can also be performed at any stage over the life of the pressure equipment if the equipment's fitness for service is questioned due to defects found during the equipment, planned inspections, or incident investigation event inspections.

First yearly inspections

31. Some pressure equipment requires an additional inspection one year after commissioning. This requirement is dependent on equipment type and Hazard Level.

32. The scope of the inspection or actions that could be taken to defer the first year's inspection are stipulated in AS/NZS 3788:2006 Clause. A work order will be developed to identify the inspection scope for each pressure equipment.

33. These inspections will be conducted by a high risk licence holder. All nominated non-destructive testing (NDT) shall be carried out by a certified NDT inspector.

Periodic inspections

34. The scope of the inspection is stipulated in AS/NZS 3788:2006. A work order will be developed to identify the inspection scope for each item of pressure equipment. The document shall be reviewed and approved by the inspector as an offline service.

35. These inspections will be conducted by a high risk licence holder.

Remaining life and integrity assessment

36. The scope of the inspection is stipulated in AS/NZS 3788:2006.

37. A work order shall be developed to identify the inspection scope for each piece of pressure equipment. The document will be reviewed and approved by the inspector.

38. A remaining life assessment can also be performed at any stage over the life of a piece of pressure equipment, should the fit for service inspection of the equipment be questioned due to a defect found during equipment (internal or external) inspection or incident investigation.

39. The maximum interval between pressure equipment remaining life assessment inspections and evaluation should be set to the design life of the equipment, which is typically 25 years.

Pressure equipment repairs

40. Repairs to pressure equipment are made to rectify defects and to maintain the unit in a safe operating condition at its existing design capacity.

41. The repairs and repair assessment inspections must comply with AS/NZS 3788:2006 Pressure equipment – In-service inspection and pressure equipment design standards and the [Isolation and danger tagging procedure](#).

42. The high risk licence holder and/or inspector will provide guidance on required post-repair testing:

- * visual;
- * non-destructive; and
- * hydrostatic.

Pressure equipment incidents

43. All workers must report incidents, injuries and hazard associated with pressure equipment at the University immediately to their supervisor and via the Workplace online safety incident and hazard reporting tool, as per the [WHS Incident management procedure](#).

Sources

Legal and other requirements
<i>Work Health and Safety Act 2011 (Cth)</i>
<i>Work Health and Safety Regulations 2011 (Cth)</i>
AS/NZS 1200:2015 Pressure equipment
AS/NZS 1228:2006 Pressure equipment - boilers
AS/NZS 2971:2007 Serially produced pressure vessels
AS/NZS 3788:2006 Pressure equipment – In-service inspection
AS/NZS 4343:2014 Pressure equipment – hazard levels
Comcare Guide for Applicants WHS014 — Plant registration
Safe Work Australia Guide to High Risk Work Licences

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