Pressure Systems Safety Guidance for Skilled Persons

NHS Lothian

Contents

Version Control

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1.0 Summary

This document has been written to provide clarity and a uniform approach to the safe working procedures for working on Pressure Systems.

This document provides a system for:

- Controlling work on pressure systems (as defined below)
- Minimising the risks associated with pressure systems
- The appointment of certain key individuals to oversee and perform any such work
- The documentation for use in the application of these safety rules and procedures

It is an abridged version of the full Operating Procedures for Pressure Systems aimed specifically to provide clarity for the Skilled Persons to which they apply.

2.0 Introduction

These Safety Rules and Operating Procedures provide instruction on how work on Pressure Systems is to be managed on sites and in work situations which are under the control of NHS Lothian.

The prime basis for these instructions is L122, the Approved Code of Practice for the Pressure Systems Safety Regulations 2000 (aka PSSR), published by the Health and Safety Executive. PSSR is a statutory instrument; therefore, anyone who works on pressure systems is duty-bound to abide by it in order to remain within the law.

These Safety Rules and Operating Procedures have also been written to co-exist with, and enhance the aims of the NHS Lothian "Pressure Systems Management Policy" and SHTM 08-08 "Pressure Systems: Policies and Guidance", amongst others. (A more comprehensive list of associated legislation and HSE guidance can be found in Section 7 of the NHS Lothian Pressure Systems Management Policy.)

The Operating Procedures for Pressure Systems also apply to managers and other responsible persons and a more comprehensive document exists which relates to the overall concept of managing this discipline.

3.0 Scope and limitations

These Safety Rules and Operating Procedures apply to any NHS Lothian establishment as well as any other building or establishment not owned by the organisation, but where NHS Lothian employees carry out activities on equipment which is covered by these.

The application of these safety rules is not the sole responsibility of the Authorised Person for pressure systems (AP(PS)), but includes all those operating, maintaining, testing, inspecting or working on in any way.

These Safety Rules and Operating Procedures apply to:

- all pressure systems containing a relevant fluid (as defined by PSSR);
- Medical Gas Pipeline Systems (MGPS);

- Dental Air and Vacuum Systems (DAVS);

or any industrial gas, low temperature hot water system, LPG, boiler fuel, hydraulic system, (or other pressure system) as determined by the Authorising Engineer's site survey and Risk Assessment where a significant risk is identified.

4.0 Definitions - General

For the purpose of these Safety Rules and Operating Procedures:

a **"pressure system**" means:

- a system of one or more vessels of rigid construction, any associated pipework and protective devices;
- the pipework or manifold, with its protective devices to which a transportable pressure receptacle is, or intended to be, connected;

either of which is liable to contain a **relevant fluid**.

However, a pressure system does not include a transportable pressure receptacle (for example, a portable gas cylinder).

"**Protective devices**" are those devices and fittings designed to protect the pressure system against failure (for example, a safety or pressure relief valve, or a bursting disc), or those devices intended to give warning that a system failure might occur (for example, a pressure gauge or temperature gauge).

"**Relevant fluid**" means:

- Steam at any pressure above atmospheric pressure;
- A fluid above a pressure of 0.5 bar above atmospheric (except for steam).
- The fluid should be a gas, or mixture of gases under normal conditions within the system (compressed air, for example, or a gas which is stored as liquid above 0.5 bar, such as oxygen),
- or, a liquid which would turn into a gas if system failure occurred (for example, medium temperature hot water – which under working pressure would be at a temperature above 100˚C, but if released to atmosphere due to system failure, would flash-off as steam.)

"**Safe Operating Limits**" are the limits beyond which the system must not be taken, such as the design pressure and temperature.

They are usually stipulated by the manufacturer for vessels and appear on a data plate. However, for more complex systems, there is a need to consider the "weakest link in the chain", so to speak, to determine the likelihood of system failure. Hence, the possible need for pressure reducing valves and additional safety valves to be fitted to ensure all parts of a pressure system are adequately protected. The Safe Operating Limits may be determined by the Competent Person and stipulated within the Written Scheme, but ultimately the responsibility lies with the user for installed systems, to ensure that all components (especially replacement parts, for example) are suitably sized and rated for use within that system.

For an explanation of the terms "**user**", "**owner**", "**installed**" system and "**mobile**" system, see the separate document "**PSSR – Understanding the role between user and owner**", published on the NHS Lothian intranet.

5.0 Definitions and Summaries of Roles and Responsibilities

"**Authorising Engineer** (Pressure Systems)" – the AE(PS) is a designated person from an independent organisation who has been appointed by NHS Lothian, based upon their qualifications and experience, who will, amongst other duties:

- carry out audits on how we manage and implement safe working practices on pressure systems within the confines of the law and our own rules;
- publish the findings of each audit in a report;
- reports their findings and recommendations to the senior Estates management in person, including the Designated Person (this is usually the Head of Hard FM);
- assess suitable candidates for the role of Authorised Person (Pressure Systems) and make recommendations of their capacity in this role;
- provide guidance on best practice and compliance when consulted by an AP(PS)
- define the category of risk to each pressure system following a site audit.

"**Authorised Person** (Pressure Systems)" – the AP(PS) is usually a member of the Estates management who has been successfully assessed by the AE(PS) and has consequently been appointed by the Designated Person (PS). Based upon the conditions of their appointment, the AP(PS) will, amongst other duties:

- Take charge of the management of the day-to-day running of the pressure systems on site to ensure that all routines are carried out in a safe and compliant manner;
- Ensure, to the best of their ability, that the pressure systems policy and operating procedures are implemented and that all relevant staff and contractors are aware of their own roles;
- Oversee repairs, modifications and installations of pressure systems or associated equipment and determining the appropriate level of control;
- Raise and issue the relevant documents to implement a Safe System of Work for all maintenance tasks as and when required;
- Oversee and certify the isolation of pressure systems (for which they have been authorised by the AE(PS)) prior to issuing a permit-to-work;
- Liaise with the AE(PS), the Competent Person(PS) and with other managers as and when necessary to ensure that effective actions are implemented and managed, for example, statutory examinations of pressure systems, repairs or remedial actions due to non-compliances;
- Assess and appoint in writing mechanical tradespersons within the company as being competent to work on pressure systems, and to ensure that they also receive any necessary training, support or mentoring to supplement their competency;

- Determining who will be the Person-in-Charge of any working party.

There may be more than one AP(PS) with responsibility over any one site, in which case only one of these can assume the role of "duty AP(PS)" at any one time (to ensure the correct level of control over Safe Systems of Work).

"**Competent Person** (Pressure Systems)" – in this discipline, the context of Competent Person is as described within the Pressure Systems Safety Regulations 2000 (aka PSSR), and its associated ACOP. They are commonly referred to as the "Insurance Inspector", although this is a misnomer.

Broadly speaking, it is a third-party organisation who provide impartial examination of pressure systems as part of a statutory obligation, and consequently issue written reports of their findings. They have the ability to provide guidance to their clients on best practice or practicable solutions to certain problems in order for them to be able to comply with the law. They will, under the circumstances of finding particular plant safety defects, notify the HSE or Local Authority. However, they do not hold the powers of authority of the HSE and therefore cannot enforce changes, repairs or cessation of use.

"**Person-in-Charge**" – The role of the Person-in-Charge in the context of Pressure Systems - PiC(PS) – is to directly supervise, or carry out, work on a pressure system for which they are in receipt of a Permit-to-Work (for pressure systems) or a Standing Instruction (SI).

The PiC must be an appointed **Skilled Person** for the type of equipment or system for which the Permit-to-Work or Standing Instruction is to be issued, if they are NHS personnel. If the PiC is a contractor, then the AP(PS) issuing the relevant safety documents must satisfy themselves that the contractor is suitably trained and competent to carry out these duties.

An AP(PS) cannot act in the capacity of a PiC whilst working in the capacity of the duty AP(PS) for that system or location; i.e. an AP cannot issue a permit for themselves.

Duties of the PiC for Pressure Systems include:

- Ensuring that adequate emergency arrangements are in place before commencing the works;
- Ensuring that all necessary safety equipment is available and suitable for use prior to work;
- Preparing the Task Risk Assessment for the work to be carried out, submitting this to the AP(PS) **before** the relevant safety documentation is issued and ensuring that the contents of the Risk Assessment for the task are communicated to all members of the work team;
- Ensuring that all members of the work team are competent, fit and capable to carry out the work required;
- Ensuring that all members of the work team are aware of the method of work set out in the agreed Method Statement for the task, the means of communication, the emergency arrangements and the requirements of these Safety Rules and Operating Procedures;
- Being fully conversant with, and able to ensure compliance with the conditions set out in the pressure systems Permit-to-Work and the associated Safety Programme and Statement of Isolation;

- Signing the Statement of Isolation and relevant Permit-to-Work, or Standing Instruction, as appropriate, to accept responsibility as PiC(PS) for the task(s) described;
- Applying the PiC safety lock to the pressure systems LOTO key-box prior to work commencing and keeping the key safe upon their person;
- Ensuring that the only work carried out is that for which the Permit-to-Work or Standing Instruction is valid;
- Stopping work and withdrawing all personnel, tools, plant and equipment from the point-of-work if, for any reason, the conditions of the Safety Programme and Statement of Isolation or Permit-to-Work cannot be met;
- Reporting to the duty AP(PS) any incident, dangerous occurrence, defects found or other exceptional circumstance arising during the work carried out under the PTW or Standing Instruction (SI);
- Cancelling the appropriate PTW or SI if work is stopped for any valid reason;
- Closing the PTW or SI as complete once all tasks have been successfully concluded;
- The PiC must always be present at the work site whenever any work is being carried out.

"**Skilled Person**" – In the context of this discipline, a Skilled Person is someone who is deemed to have some level of competency for working on pressure systems, based upon their level of appointment. **Therefore, a Skilled Person must only work on the type of pressure system or equipment for which they have been appointed.**

However, in general, duties of the Skilled Person for Pressure Systems include:

- working in accordance with these Operating Procedures;
- taking reasonable care of the health and safety of themselves and of any other person who may be affected by their actions or omissions;
- only using equipment for which they have been trained and in the manner in which they have been trained;
- reporting to the Person in Charge any defects found in the tools, plant and equipment to be used in the works.

6.0 Pressure Systems Risk Categorisation

These Operating Procedures introduce the concept of two levels of risk for pressure systems. The purpose of these risk levels is to provide guidance on the ultimate level on control necessary for working on any particular pressure system.

The AE(PS) will conduct a Site Survey to assess each system and assign them with either a High Risk or Low Risk.

In all cases, the following systems are to be categorised as **High Risk**:

- Steam Systems

- High Temperature Hot Water Systems (where the shut-off temperature of the safety temperature limiter is >110^{O}C)
- High Pressure Compressed Gas Systems (>10 Bar g)

All other Systems are to be assessed and categorised by the AE(PS), however, examples of **Low Risk** Systems (under normal operating conditions) are:

- point of use air compressors
- Medical Gas Pipeline Systems (MGPS)
- Natural Gas and LPG Systems

The AE(PS) may determine that other systems may pose a hazard that requires control by the implementation of these Operating Procedures (e.g. hydraulic systems, LTHW systems, high-pressure systems not containing relevant fluids). Details of these additional Systems are to be documented and filed in the Pressure Systems Document Register.

7.0 Associated Materials

- Pressure Systems Risk Assessment Procedure
- Planning and Performing Suitable Isolations Procedure
- Management of Pressure Systems Safety Guidance
- The Pressure Systems PTW/SI Decision Tree
- Procedure for Pressure Systems work requiring a PTW
- Procedure for Pressure Systems work requiring a SI
- NHS National Services Scotland/Health Facilities Scotland: Scottish Health Technical Memorandum 08-08 Pressure Systems: Policies and Guidance
- NHS Lothian: Control of Contractors Policy
- NHS Lothian: Adverse Event Management Policy
- NHS Lothian: Adverse Event Management Procedure
- NHS Lothian: Pressure Systems Management Policy

8.0 References

Legislation:

The Health and Safety at Work, etc Act 1974 (HSW Act)

Pressure Systems Safety Regulations 2000 (S.I 2000 No.128) (PSSR)

Pressure Equipment Regulations 1999 (PER)

Management of Health and Safety at Work Regulations 1999 (MHSWR)

Provision and Use of Work Equipment Regulations 1998 (PUWER)

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR)

The Confined Spaces Regulations 1997

Construction (Design and Management) Regulations 2015 (CDM)

Health and Safety Executive Guidance and Procedures:

L122 – Safety of Pressure Systems: The Pressure Systems Safety Regulations 2000, Approved Code of Practice and Guidance

L153 – Managing health and safety in construction: CDM Regs 2015, Approved Code of Practice and Guidance

L21 – Management of Health and Safety at Work: Management of Health and Safety at Work Regulations 1999. Approved Code of Practice and Guidance.

L22 – Safe Use of Work Equipment: Provision and Use of Work Equipment Regulations 1998, Approved Code of Practice and Guidance

GS4 – Safety Requirements for Pressure Testing

INDG178 – Written Schemes of Examination

INDG261 – Pressure Systems – A brief guide to safety

INDG436 - Safe Management of Industrial Steam and Hot Water Boilers

PM60 – Steam Boiler Blowdown Systems

PM73 – Safety at Autoclaves

HSG39 – Compressed Air Safety

HSG65 – Managing for Health and Safety

HSG129 – Health and Safety in Engineering Workshops

HSG253 – The Safe Isolation of Plant and Equipment

Other references:

Turner PES: Pressure Systems Skilled Persons course notes