NHS National Services Scotland

Scottish Health Technical Memorandum 08-08

Pressure systems: policies and guidance

Health Facilities Scotland
Engineering and Environment

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Contents

1. Introduction

Overview

1.1 In the event of a failure of a pressure system, the result can be an uncontrolled release of stored energy which can result in serious injuries. The latest statistics confirm that a significant number of dangerous incidents arise every year concerning failure of pressure systems in the workplace.

1.2 NHS Scotland's sites have many examples of different pressure systems and some are set out below: (this is not an exhaustive list)

- boilers and steam heating systems;
- low / medium / high pressure hot water plant and piping in which hot water is contained above its boiling point and where the pressure is greater than 0.5 bar is generated;
- compressed air systems;
- natural gas / LPG installations;
- heat exchangers and refrigeration plant;
- steam traps and valves;
- pipework and hoses;
- pressure gauges and level indicators;
- decontamination equipment (autoclaves);
- medical gas pipeline systems.

1.3 Responsibilities for the design, construction, installation, inspection facilities, safe internal access and provision of protective devices are detailed in the statutory Pressure Systems Safety Regulations 2000 (PSSR) which have been drawn up to prevent failures as referred to in paragraph 1.1 above.

1.4 The procedures set out in this guidance are intended to allow NHS Boards to implement the PSSR requirements and procedures safely whether through their own staff, those employed by contractors or by leasing companies.

Aims and purpose of these procedures

1.5 This guidance is aimed at employers who are owners or users of pressure systems to support safe practices for

- controlling work with pressure systems as itemised above;
- minimising associated risks;
- appointing key individuals to manage, oversee and perform any such work;
- preparing associated documentation.

Note: In the Pressure Systems Safety Regulations 2000 the terminology "Competent Person" does not necessarily imply that this would be an NHS employee. The position is generally carried out by the NHS Board's independent engineering surveyor (possibly, insurance inspectors). PSSR 2000 defines a "Competent Person" as the "individual or organisation that certifies the Written Scheme of Examination and/or carries out the required examinations in accordance with PSSR".

Scope

1.6 This guidance applies to all staff within NHS Scotland, whether employed directly or via contracting or leasing companies.

Policy

1.7 The procedures set out are mandatory and apply to all persons working on design, construction, installation, operation, maintenance, examination and decommissioning of all pressure systems. The Authorised Person (Pressure Systems) shall cooperate as necessary with other parties (including the "Competent Person") to prevent danger. The Authorising Engineer (Pressure Systems) shall advise and draw up formal demarcation agreements and liaise with all parties involved. All parties require to liaise with the appropriate Authorised Person to ensure that, before commencement of examination or work, there is an agreed written procedure and documentation in place.

Definitions of roles and responsibilities

1.8 Key individuals will be appointed, as mandated by these Procedures to have specific responsibilities for the management and/or carrying out of work on Pressure Systems as summarised below:

- the **Chief Executive / Executive Manager** has the ultimate management responsibility for the Pressure Systems operating within the NHS Board sites. This includes the responsibility for the allocation of resources and the personnel involved in the use, installation and maintenance of the Pressure Systems. The appointment of the Authorised Person (Pressure Systems) must be in writing based on the recommendation of the Authorising Engineer (see below);
- the **Authorising Engineer (Pressure Systems) –** as with Authorising Engineers for other disciplines - should be independent of the NHS Board. The appointment would include responsibility for assessing competency of Authorised Persons (Pressure Systems) and implementing, administering, seeking evidence of proper training, auditing and monitoring the application of the procedures required by PSSR 2000 including record keeping and certification as appropriate. The AE will require to be formally qualified (e.g. CEng, IEng or holder of HND, be familiar with the pressure systems and with Permit-to-Work procedures encountered within NHS premises;
- the **Authorised Person (Pressure Systems)** will be appointed by the NHS Board on the recommendation of the Authorising Engineer and be drawn from the estates department to give authority to the Work Team to

undertake work on a Pressure System and collaborate with the "Competent Person" (as described below). The Authorised Person gives authority to work teams to undertake work and collaborate with the Competent Person;

- the **Competent Person (Pressure Systems):** uniquely for Pressure Systems this role can be undertaken by:
  - the NHS Board's own in-house estates representative;
  - an individual person (e.g. a self-employed person);
  - an organisation providing independent inspection services (possibly, the Insurance Company's inspector).
- who has authority to ensure that repairs and modifications are being carried out to ensure that safe operating limits are not compromised;
- A NHS skilled mechanical tradesperson becomes a competent person for a specific task or work when he/she is issued with a Permit to Work or formal documentation by an Authorise Person (AP pressure) and on signing the Permit to Work acknowledging He or She will work as specified in the control documentation and control the risk or danger.

Note: A Competent Person should have sufficient knowledge and experience to make recommendations or decisions that will ensure the equipment or process is operated and used safely. Any individual or organisation acting as a Competent Person should have sufficient practical and theoretical knowledge as well as experience of the actual systems involved with the ability to access any required specialist services, expertise and effective support either from within the NHS or through arrangements with external bodies.

HSE guidance 'Safe management of industrial steam and hot water boilers' sets out the roles and responsibilities of Competent Persons.

- **Mechanical Tradespersons:** specifically for Pressure Systems, this role will be undertaken by Craftspersons or Semi-skilled operatives who have received sufficient training to be able to carry out expected duties in the pressure systems they will encounter but should only carry out maintenance work for which they have been trained and are deemed to be competent. The level of competence required should be reviewed when a system is modified and should reflect the need to keep pace with developing technology, equipment and legislation.

1.9 In the event of any doubt in the interpretation or application of these Procedures, this should be referred to the Authorised Person (Pressure Systems) whereupon work will be stopped immediately and made safe until the issue is clarified. If necessary the advice of the Authorising Engineer / Competent Person should be sought for clarification and resolution.

2. The Pressure Systems Safety Regulations 2000

General

2.1 The definition of a Pressure System is provided in this section together with the duties of employers who are owners, users or lease pressure systems.

Definitions

2.2 The following definitions have been taken from PSSR 2000:

- **Owner:** the employer or self-employed person who owns the pressure system;
- **Pipeline:** a pipe or systems of pipes used for the conveyance of relevant fluid across the boundaries of the premises together with any apparatus for inducing or facilitating the flow of the relevant fluid through, or through part of, the pipe or system, and any valves, valve chambers, pumps, compressors and similar works which are annexed to, or incorporated in the course of, the pipe or system;
- **Pipework:** a pipe or system of pipes together with associated valves, pumps, compressors and other pressure containing components. It includes hoses, or bellows but does not mean a pipeline or any protective device;
- **Relevant fluid:** steam (at any pressure), any fluid or mixture of fluids, which are at a pressure greater than 0.5 bar above atmospheric pressure and which fluid or mixture of fluids is:
  - a gas;
  - a liquid which would have a vapour pressure greater than 0.5 bar above atmospheric pressure when in equilibrium with its vapour at either the actual temperature of the liquid or 17.5°C;
  - a gas dissolved under pressure in a solvent contained in a porous substance at ambient temperature and which could be released from the solvent without the application of heat. (e.g. acetylene).
- **User:** the employer who controls the operation of the pressure system. (This would include primary duty holders);
- **Pressure system:**
  - a system comprising one or more pressure vessels of rigid construction, any associated pipework and protective devices;
  - any system containing or liable to contain a relevant fluid and which comprises one or more vessels of rigid construction along with any associated pipework and protective devices, or;
  - any pipework installation and protective devices in which the relevant fluid is at a pressure above 2 bar gauge where the over-pressure is caused solely by the protective device;

- any pipework installation including protective devices intended to be connected to a transportable pressure receptacle (e.g. a medical gas or compressed air cylinder). The cylinder itself is excluded from PSSR 2000.

Duties of employers

2.3 In PSSR 2000 employers' duties are set out as follows to ensure that:

- pressure systems have been designed and constructed to ensure that they are fit for the purpose for which they are intended, complying with all applicable regulations;
- appropriate written information has been provided on the design, construction, examination, operating and maintenance of the pressure system;
- the PSSR 2000 required information has been marked on pressure vessels (e.g. safe working pressure) while ensuring that the installation has been carried out in such a way that does not cause danger;
- the safe operating limits for the pressure system have been determined and clearly marked on the system with a Written Scheme of Examination provided and certified by a Competent Person, while also ensuring that the parts of the system covered by the Written Scheme are being examined at intervals specified in PSSR 2000;
- any serious defects identified under the Written Scheme of Examination have been rectified and the system not used until this has been achieved;
- adequate and suitable instructions have been provided for the safe operation of the system including action to be taken should an emergency arise;
- the pressure system, including all components, has been maintained and, where necessary, repaired properly;
- any modifications or repairs that were necessary were carried out in such a way that did not impair the operation of any protective devices or inspection facilities;
- all records required under PSSR 2000 have been kept;
- the owner from whom transportable gas cylinders are rented has provided a written statement containing the information required under PSSR 2000;
- safe operating limits have been marked on vessels which must be periodically inspected.

Note: Employers' duties are modified in situations where pressure systems are supplied by way of lease, hire or other arrangements. In these circumstances responsibilities are passed to the owner of the installations or plant. Regulations 8(1) and (2), 9(1), 11(1), 12 and 14 refer. If any changes are implemented to installations connected to leased plant or equipment, the agreement of the owner must be asked for and agreement obtained in writing. The terms of the leasing agreement must legislate for such situations.

Written Scheme of Examination - Content

2.4 The contents of a typical Written Scheme of Examination would comprise:

- plant designation (e.g. plant number, location);
- those parts of the pressure system that are to be examined;
- the nature of the examination needed for those parts;
- any preparatory work required prior to the examination;
- the date by which the initial examination is to be completed (this would apply to newly installed systems);
- the maximum intervals allowed between examinations;
- any critical parts of installations which should be examined by the Competent Person after modification or repair before the system can be put back into use;
- the name of the Competent Person drawing up or certifying the scheme of examination.

Note: Schematic diagrams and drawings are not normally required and PSSR 2000 only requires that the parts of installations requiring examination should be identified. It would be helpful, however, if the Written Scheme cross-referred to 'As-fitted' drawings and schematics. Paragraph 3.25 also refers.

2.5 The Written Scheme will contain the nature and frequency of examinations. These could typically comprise visual examinations, non-destructive testing, pressure testing, radiographic or hammer testing, etc.) This would depend on the condition of the equipment and any defects or deterioration found. The Written Scheme would cover all protective devices, pressure vessels and pipework in which a defect could give rise to danger.

2.6 Written Schemes of Examination may be completed entirely by the Competent Person (Insurance Company representative) comprising collection of information, compilation and certification. Alternatively, an inventory could be undertaken by the NHS Board's own staff for verification by the Competent Person who would then incorporate the information, complete and certify the Scheme. It is not recommended that NHS Board estates staff produce and certify their own Scheme for comment by the Competent Person as total objectivity has to be demonstrated.

2.7 Maintenance of Written Schemes will be an ongoing process to reflect modifications and repairs to pressure systems. Over-arching this will be a review at three yearly intervals carried out by the Authorising Engineer (Pressure Systems).

Examination reports

2.8 Although there is currently no laid down format for the examination report due to variations in size and complexities of systems covered, the following includes

most of the issues that would be addressed:

- name and address of premises;
- whether the system is owned or part-leased or hired (e.g. including gas cylinders);
- identification of system or component parts examined;
- condition of system or component parts examined;
- trend logging – to determine if there are any trends that can be identified;
- parts not subjected to examination;
- any repairs required together with timescale for completion;
- any required changes in safe operating limits and date for implementation;
- any change to the Written Scheme of Examination;
- date when next examination must be completed;
- other observations;
- date of completed examination;
- name and address of Competent Person (from insurance company);
- date of report.

2.9 The Written Report of the Examination should be provided by the Competent Person within 28 days and should specify any repairs or modifications required. In the event of the condition of the system giving rise to an imminent danger, a written report must be given to the NHS Board immediately by the Competent Person with a report of the examination also sent to the Enforcing Authority within 14 days.

2.10 PSSR 2000 does permit the postponement of an examination when this will not give rise to danger. However, the NHS Board must agree with the Competent Person a new date by which the examination will be completed, then notify the Enforcing Authority in writing before the agreed date. Reports may be communicated in electronic form.

Note: A schedule of the individual regulations and issues referred to within PSSR 2000 appears in Appendix 2

3. Pressure Systems in use

General

3.1 NHS Boards have to ensure that the following points are being addressed:

- good standards of maintenance are practiced taking into account the fact that maintenance should be included to cover feed water condition, condition of coolants (where applicable) and other functions related to the safe operation of plant;
- all estates staff require to be properly trained and have a full understanding of procedures for start-up, normal and emergency shutdown of plant and equipment for which they are responsible;
- documentation related to training must be kept up to date and an audit trail maintained;
- a system should be in place whereby hired or leased equipment has a current certificate of examination and is supplied complete with operating and emergency procedures;
- recording and maintaining records of pressure systems plant must be satisfactorily maintained in accordance with PSSR 2000.

Installation

3.2 Pressure Systems shall be installed with all due care to prevent damage to their individual components. Due consideration shall be given to the location of protective devices and other design features intended to comply with the Regulations. (Regulation 6 of PSSR 2000 refers). Towards the end of the installation period the Competent Person shall inspect the pressure system to ensure compliance with the Regulations and may also use this visit as part of the procedure to commence the production of the Written Scheme of Examination. No new system shall be operated or pressurised until the Competent Person has checked and inspected it, confirming its compliance with the Regulations.

Commissioning

3.3 No installation shall be considered complete for commissioning until all operating and maintenance procedures have been handed over to the Authorising Engineer (Pressure Systems) or his representative (test certificates, etc.)

Maintenance

3.4 PSSR 2000 (Regulation 12) requires that the type and frequency of maintenance for a Pressure System should be assessed and a suitable maintenance programme planned taking account of these issues:

- the age of the system;
- the operating conditions;
- the working environment;
- the manufacturer's or supplier's instructions;
- any previous maintenance history;
- reports of examinations carried out under the Written Scheme of Examination by the Competent Person;
- the results of other relevant inspections such as for maintenance or operational purposes;
- repairs or modifications to the pressure system; and
- the risks to health and safety from failure or deterioration.

Operation

3.5 To comply with PSSR 2000 (Regulation11) instructions provided to operators should cover:

- all procedures and information needed so that the pressure system can be operated safely; and
- any special procedures to be followed in the event of an emergency.

Note: From time to time suppliers and manufacturers issue revised instructions and/or maintenance bulletins. It is essential that those responsible for maintenance of affected plant and equipment are circulated with this information and that it is readily accessible. Paragraph 3.7 also refers.

3.6 Where information has been provided by manufacturers or suppliers in the form of instruction sheets and operating manuals, these may form part or all of the instructions developed to meet the Regulations. In doing so, they require to be sufficiently comprehensive, covering the particular installation and its safe operation and be consistent with the site operating conditions.

3.7 NHS Board staff should be familiar with and have ready access to the instructions which should be displayed near to relevant part of the system. In addition attention should be directed to the instructions before being used for the first time.

3.8 Where a system or parts are hired or leased, the owner should provide all necessary instructions to the user to ensure that the system is only operated in accordance with the instructions.

Record Keeping

3.9 Up-to-date records will assist the Competent Person with examinations under the Written Scheme which enable an assessment as to whether the Pressure System is safe to continue in use and determine if any planned repairs or

modifications are capable of being safely carried out. (PSSR 2000 Regulation 14 refers).

3.10 All modifications and repairs to installations must be recorded.

3.11 Records require to be kept for the lifetime of the equipment to which they refer.

3.12 It is essential that records of inspections and repairs are examined regularly for evidence of a trend in deterioration rather than be filed away.

3.13 Competent Persons and Authorised Persons need access to information provided by manufacturers of equipment and assemblies (such as packaged boilerhouse installations) including the relevant initial Written Scheme of Examination.

3.14 All new equipment and assemblies should have “CE” marking.

3.15 The following documentation should be maintained and readily available:

- designers’ or manufacturers’ documents relating to parts of the Pressure System included in the Written Scheme;
- the most recent examination report produced by the Competent Person under the Written Scheme of Examination;
- any agreement or notification referring to postponement of the most recent examination under the Written Scheme; and
- all other reports containing information relevant to the assessment of matters of safety.

Note: In deciding if a report contains relevant information the NHS Board estates staff should take into account the content of the report, the complexity of the system to which it refers, the operating conditions, previous repair history and any significant modifications to the system.

3.16 Records of abnormal or particularly arduous operating conditions should be retained if they were of use to the Competent Person at the next examination. Where the NHS Board operators are unsure whether certain records are relevant, advice should be sought from the Competent Person.

3.17 Confusion will be avoided if records are kept in such a way that it is possible to identify the particular system or parts of it against those detailed in the Written Scheme of Examination.

Safety

3.18 Sufficient written information shall be supplied to enable the pressure system to be installed, operated, maintained and examined safely. Such information shall include data to enable the user to determine the safe operating limits and may include the following:

- maximum and minimum design pressure;

- maximum and minimum design temperature;
- maximum flow and minimum flow at design pressure and temperature;
- operating instructions;
- maintenance instructions;
- test certificates;
- system schematic (optional) or flowsheet;
- schedule of protective devices and their function.

The above information may be included in handover documentation and operating instructions supplied to the user.

3.19 Personnel involved in any way with the examination of pressure systems must follow the following guidelines:

- all personnel shall observe the Permit-to-Work system administered by the particular operational site;
- entry into vessels or other confined spaces shall be in accordance with the Confined Spaces Regulations 1997 and SHTM 08-07;
- all vessels' contents shall be disposed of by safe draining/venting and checks carried out to ensure atmospheric pressure is present prior to opening of any manway;
- before entry into a vessel it shall be physically isolated and locked off. A single closed valve would not be an acceptable means of isolation.

Written Scheme of Examination in Use

3.20 A pressure system shall not be operated without a Written Scheme of Examination for the following parts of the system.

- all primary protective devices;
- all vessels over 250 bar litre capacity and all pipelines in which a defect may give rise to danger;
- those parts of the pipework installation where a defect may give rise to danger.

3.21 The Written Scheme shall be certified by a Competent Person who must carry out the required examination and submit a report accordingly. A Written Report of the Examination would be provided by the Competent Person within 28 days specifying any repairs / modifications required. If an examination has to be postponed for any reason, it must be by prior written notification to the NHS Board's Authorised Person.

3.22 When the Competent Person, in the course of the examination, comes to the conclusion that the pressure system will give rise to imminent danger without modification, repair or change in operating conditions, the Competent Person must advise the NHS Board's Authorised Person and it must not be operated

until the required changes have been carried out.

Permits to work

3.23 These should be issued by Authorised Persons only as they are responsible for all statements made on the permit. Authorised Persons must be familiar with their responsibilities and have sufficient job knowledge to assess risks inherent in the task. If the work involves entry into confined spaces, the Authorised Person should be trained in respect of issuing permits for confined spaces entry.

3.24 Permits to work for pressure systems would be used in the following situations:

- all steam and condensate systems except self-generating autoclaves;
- all systems containing toxic or corrosive fluids, gases, or oxygen;
- all high temperature hot water systems as defined in paragraph 1.2;
- complex air systems where the fluid or gas is used to drive other component parts and therefore isolation and locking-off is essential to allow the work to be safely carried out;
- Medical Gas Pipeline Systems as described in SHTM 02-01.

Information to be provided

New Systems

3.25 The manufacturer, supplier of a pressure system must provide, as part of the commissioning procedure, test certificates, certificates of conformity and/or written information giving details of design, construction, operation and maintenance (including layout drawings and schematics) sufficient to prepare the written scheme of examination and to enable the system to be used in a safe manner and maintained in a safe working condition.

3.26 Where any existing pressure system has been modified or undergone a structural repair it will be necessary to modify the Written Scheme of Examination. It is the responsibility of the person initiating the work to ensure that sufficient written information is provided to enable the Regulations to be complied with. This responsibility extends to ensuring that this information is made available to the Authorising Engineer (Pressure Systems) and Competent Person for *them* to make any necessary changes to the Written Scheme of Examination and forward these changes to the NHS Board for modification as necessary. Where the integrity of the pressure system has been altered by a repair or modification, appropriate test certification should be made available to the Authorising Engineer and Competent Person and held with other records.

Note: Under no circumstances shall any pressure system be re-commissioned until authorised by the Competent Person.

Pressure Systems on Hire

3.27 Where a pressure system or component is on hire to or leased by an NHS Board it is the responsibility of the owner of the pressure system to ensure that the following information exists and is readily available for inspection:

- suitable instructions for the safe operation of the system;
- appropriate documentation;
- E.C. Declaration of Conformity.

4. Exemptions

4.1 The following are exempted from all of the PSSR 2000 Regulations:

- any pipeline and its protective devices in which the pressure does not exceed 2 bar above atmospheric pressure;
- refrigeration plant below 25kW installed power.

4.2 The following are exempted from certain of the PSSR 2000 Regulations:

- Regulations 5(1) do not apply to systems to which Medical Devices Regulations 1994 apply *(other than those which contain or are liable to contain steam)*;
- Regulations 5(4), 8-10 and 14 do not apply to a Pressure System containing a relevant fluid (other than steam) if the product of the pressure in bar and internal volume in litres of its pressure vessels is in each case less than 250 litres.

Note: There are no exemptions in the Regulations for steam installations.

5. Failure of Equipment

General

5.1 PSSR 2000 is issued under, and in addition to, the Health & Safety at Work etc Act 1974 and other statutory safety legislation. Conformity with the Regulations in no way relieves the NHS Board of responsibilities under other current legislation. Any person operating a pressure system or using a transportable gas container shall, in addition to duties under the Regulations, also comply with the requirements of the NHS Board safety policy and safe system of work including the use of all necessary appropriate safety equipment.

Accidental Pressurisation

5.2 In operating any pressure system every care shall be taken to prevent accidental pressurisation of non-pressure systems. All cross-connecting pipes, valves etc shall be clearly identified and valves locked in the appropriate position where required to prevent incorrect flow transfer during normal use. NHS Boards should seek advice from their Authorising Engineers (Pressure Systems) where any doubt exists as to the need for pressure relief devices and frequency for inspection and maintenance.

Dangerous Occurrences

5.3 In addition to any reporting procedures already operating within the NHS Board, the Authorising Engineer (Pressure Systems) and Competent Persons shall be immediately informed as to any incident involving damage to and/or over-pressurisation of a pressure system so that an investigation can take place to determine if the integrity of the system has been affected, and the steps necessary to return the system into service.

Note: The main criterion for reporting an incident is the possibility that a person could have been injured. Therefore, even if no person was injured or was present, the incident must be reported to the Authorising Engineer (Pressure Systems) and the NHS Board's safety officer using the appropriate accident and dangerous occurrences report form. A list of 'specific injuries that should be reported to HSE appears in 'Reporting of Injuries, Diseases, Dangerous Occurrences Regulations (RIDDOR) 2013, Regulation 4.

6. Training

Note: It is recommended that all NHS Board staff requiring to be trained MUST attend refresher relevant training at a frequency recommended by the Authorising Engineer (Pressure Systems).

The NHS Board

6.1 It is the NHS Board's responsibility, either as owner or user of pressure systems or equipment to ensure that an operator has received training appropriate to the intended use of any pressure systems and made aware of all operating instructions and safe systems of work before first operating a pressure system. This training would cover any procedures to be followed in the event of an emergency.

Authorising Engineer (Pressure Systems)

6.2 The Authorising Engineer (Pressure Systems) must have received relevant, formal and adequate training on the type of pressure systems operated by the NHS Board. This will include training with respect to issuing Permits to Work and a thorough understanding of this SHTM. In addition, the AE must be able to assess effectively the competence of the Authorised Persons and be trained to do so.

Authorised Person (Pressure Systems)

6.3 Authorised Persons must have received relevant, formal and adequate training on the types of pressure systems they will operate and maintain. This will include training in respect of issuing Permits to Work and a thorough understanding of this SHTM.

Operatives

6.4 No person shall operate a pressure system unless training in its use has been provided to the satisfaction of the person responsible for the operation of the system. Operatives must have received relevant, formal and adequate training on the type of pressure systems that they operate and maintain.

7. Operation

General

7.1 Suitable instructions for the safe operation of the system and the action to be taken in the event of an emergency shall be provided for every pressure system and be made available in the most appropriate way, such as a notice adjacent to the relevant part of the system. (PSSR 2000 Regulations, paragraph 163 refers – Schematics / Flow Diagrams).

Such instructions must also be included in any training programme on the operation of the whole plant containing the pressure system. (PSSR 2000 Regulation 11, ACoP11 refers).

The NHS Board is responsible for ensuring that the pressure system is operated in strict accordance with the written instructions. No other method of operation shall be utilised without prior authorisation from the Authorising Engineer (Pressure Systems).

Suitable guidance on the safe operation of steam and industrial hot water boilers is contained in the document 'Guidance on Safe Operation of Boilers', Ref:BG01 and in the HSE document 'Safe management of industrial steam and hot water boilers', INDG 436

Note: In some instances pressure systems shall not be operated until the operator has first obtained the appropriate permission, for example, permit to work, limitation of access. Examples of such situations are: work in the presence of flammable gas, work in confined spaces and work in HV plant rooms.

Contractors

7.2 Mobile pressure systems, including hoses and tools owned by, or on hire to contractors must conform to PSSR 2000 and the contractor shall, on reasonable request, produce documentation to verify conformity.

7.3 Contractor Competence Details

Name			
Detail qualifications (ONC, HNC etc.) (copies may be required)			
Indicate years experience with Pressure Systems			
Date of last CP course attended			
Expiry date			
Training provider			
Certificate number			
Date of last First Aid course attended			
Expiry date			
Training provider			
Certificate number			
Date of last Fire Awareness course attended			
Expiry date			
Training provider			
Certificate number			
CSCS Registration number			
CSCS Expiry date			

Appendix 1

Typical content of Outline Written Scheme of Examination

An Insurance Inspector would expect any Report of Examination to include:

name and address of owner;

address, location of system and name of user (if different from above);

whether subject to a leasing or hiring agreement (e.g. VIE plant).

Plant / equipment	Examination interval	Guidelines for Written Scheme of Examinations
Steam/ condensate	To be set by local operating conditions	Visual, external examination • Visual, external examination; • Check insulation for damage or water ingress; • NDT when specified by Competent Person; • Pressure test as required by the Competent Person; • Record all details of examination.
Relief valves steam	In line with examination of the associated equipment, subject to a maximum interval of 4 years.	• Visual, external examination including vent pipe supports. In-situ test with calibrated equipment. Attach tag with valve number, test pressure and test date. Record all details of examination; or • As appropriate complete “As found lift pressure” test and record result. Replace with new or refurbished valve. Attach tag with valve number, test pressure and test date. Record all details of examination; or • Visual, external examination including vent pipe supports. As found lift pressure” test and record result. Dismantle and remove all moving parts for damage, wear and freedom of movement. Re-assemble. Re-set valve to the required pressure. Attach tag with valve number, test pressure and test date. Record all details of examination.
Steam-raising plant: Economisers/ waste heat boilers/super-heaters	The first thorough and in-service examinations are required within 2 years of service. The Competent Person may then extend the period up to 4 years.	• Visual, external examination; • Visual, internal examination; • NDT when specified by Competent Person; • Confirm nameplate is attached and check that equipment is working within design limits; • Carry out function test on all controls; • Record all details of examinations.

Plant / equipment	Examination interval	Guidelines for Written Scheme of Examinations
Vessels – air receivers	See guidelines >	The first thorough examination if required within 2 years of service after which the Competent person may extend the period to 4 years maximum, except that, in appropriate cases, where there is not liable to be significant corrosion, or where there is no significant pressure cycling and the arrangements for maintaining the safety of the system are to a high standard, the period may be extended to 6 years. • Visual external examination; • Visual internal examination; • NDT when specified by the Competent Person; • Confirm nameplate is attached and check that equipment is working within design limits; • Carry out function test on all controls; • Record all details of examinations.
Vessels – Vacuum insulated	5 years 20 year revalidation	• Visual external examination including vessel foundations; • Confirm vessel nameplate is attached and check vessel operating within design limits; • Check if relief valve is in-test, if not replace with new or refurbished unit; • Record all details of examination. BCGA CP25 “Revalidation of Bulk Liquid Oxygen, Nitrogen, Argon and Hydrogen Cryogenic Storage Tanks” refers
Vessels – High Temperature	Maximum period 6 years	Competent Person to review failure mechanisms and determine scope of examination

Note: **‘**NDT’ refers to ‘Non-destructive testing’

‘BCGA’ refers to ‘British Compressed Gases Association’

Appendix 2

The following list comprises the 18 individual regulations set out in PSSR 2000 Regulations and the topics covered by them.

Part 1 – Introduction

1. Citation and commencement
2. Interpretation
3. Application and duties

Part 2 – General

4. Design and construction
5. Provision of information and marking
6. Installation
7. Safe operating limits
8. Written schemes of examination
9. Examination in accordance with the written scheme
10. Action case of imminent danger
11. Operation
12. Maintenance
13. Modification and repair
14. Keeping of records, etc.
15. Precautions to prevent pressurization of certain vessels

Part 3 – Miscellaneous

16. Defence
17. Power to grant exemptions
18. Repeals and revocations

References

The Pressure Systems Safety Regulations 2000. SI 128.

Health & Safety Executive Approved Code of Practice L122 'Safety of Pressure Systems'.

Guidance Note from the Health & Safety Executive, 'Safety in Pressure Testing' 1998.

The Confined Spaces Regulations 1997 SI 1713.

'Application of the Pressure Systems Safety Regulations 2000 to Industrial and Medical Pressure Systems installed at Consumer Premises' **BCGA Code of Practice CP23**.

'Application of the Pressure Systems Safety Regulations 2000 to operational process plant' **BCGA Code of Practice CP24**.

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