EMAP 31 – Pressure Systems (PSSR)

Issue: E
Date: 27th January 2017

Document Prepared By:
James Martin
Campus Maintenance Manager
Estates and Facilities
(Infrastructure & Maintenance)

Document Reviewed By:
Paul Lambert
Compliance Manager
Estates and Facilities

Steven Carter
H & S Manager
Health & Safety Directorate

Document Approved By:
Mark Vinter
Assistant Director
Estates and Facilities
(Infrastructure & Maintenance)
<table>
<thead>
<tr>
<th>Section</th>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Scope</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Legislation and Guidance</td>
<td>4/5</td>
</tr>
<tr>
<td>4</td>
<td>Responsibilities</td>
<td>5</td>
</tr>
<tr>
<td>4.1</td>
<td>Director of Estates &amp; Facilities</td>
<td>5/6</td>
</tr>
<tr>
<td>4.2</td>
<td>Assistant Directors of Estates &amp; Facilities (Infrastructure &amp; Maintenance)</td>
<td>6</td>
</tr>
<tr>
<td>4.3</td>
<td>Campus Maintenance Managers</td>
<td>6/7</td>
</tr>
<tr>
<td>4.4</td>
<td>Compliance Manager (Infrastructure &amp; Maintenance)</td>
<td>7</td>
</tr>
<tr>
<td>4.5</td>
<td>QMUL Health &amp; Safety Directorate</td>
<td>7</td>
</tr>
<tr>
<td>4.6</td>
<td>QMUL Insurers</td>
<td>7</td>
</tr>
<tr>
<td>4.7</td>
<td>QMUL Service Contractors</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>Management of PSSR</td>
<td>8/9</td>
</tr>
<tr>
<td>6</td>
<td>Pressure System Hazards</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Pressure System Risks</td>
<td>9/10</td>
</tr>
<tr>
<td>8</td>
<td>Safe Systems of Work</td>
<td>10/11</td>
</tr>
<tr>
<td>9</td>
<td>Definitions</td>
<td>11</td>
</tr>
</tbody>
</table>

**Appendices**

| A       | Written Scheme of Examination (Example)                                    | 12   |
| B       | Examination Report (Example)                                              | 13/14|
| C       | Asset List Recording Template (Example)                                   | 15   |
| D       | Log Book Inspection Record (Example)                                      | 16   |
| E       | Application of Regulations                                                | 17   |
| F       | Pressure System Categories                                                | 18   |
| G       | Process for Insurance Inspection Visits (Flow Chart)                      | 19   |
**Amendments**
Please use this table to make a note of any amendments issued

<table>
<thead>
<tr>
<th>Amendments</th>
<th>Issue</th>
<th>Date</th>
<th>Amended by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial draft sent for comment to Steven Carter</td>
<td>A</td>
<td>30/9/16</td>
<td>JM</td>
</tr>
<tr>
<td>Draft amended following feedback</td>
<td>B</td>
<td>18/19/16</td>
<td>JM</td>
</tr>
<tr>
<td>Significant changes made to EMAP, sent out for full review</td>
<td>C</td>
<td>02/11/16</td>
<td>PL</td>
</tr>
<tr>
<td>Minor amends made following MV comments</td>
<td>D</td>
<td>18/01/17</td>
<td>PL</td>
</tr>
<tr>
<td>Minor amends to text and flow chart following feedback from Steve Carter</td>
<td>E</td>
<td>27/1/17</td>
<td>PL</td>
</tr>
</tbody>
</table>
EMAP 31 – Pressure Systems (PSSR)

1 Introduction

1.1 The aim of this EMAP is to ensure that serious injury from the release of stored energy as the result of a pressure system, or one of its components failing, is prevented.

1.2 A pressure system is one that contains or is likely to contain a relevant fluid under pressure. [http://www.hse.gov.uk/pressure-systems/law.htm](http://www.hse.gov.uk/pressure-systems/law.htm)

1.3 This EMAP provides a mechanism for the Estates & Facilities Directorate (E & F) to fulfil their duty in ensuring that installation, maintenance, inspection and testing is undertaken without risk to QMUL employees, contractors, students or visitors.

1.4 There are three categories of pressure systems; minor, intermediate and major. Further details can be found in Appendix (F)

2 Scope

2.1 This EMAP applies to all tasks and activities, directly managed by E & F, involving the installation, maintenance, inspection, examination and use of equipment or systems which contain a liquid or gas under pressure

2.2 This EMAP does not apply to such equipment or systems where the installation, maintenance, inspection and testing is not the responsibility of the Estates and Facilities Directorate.

2.3 Pressure systems constructed or adapted by QMUL staff or students will also be required to comply with legislation and in the case of being an asset managed by E & F, comply with this EMAP in its entirety.

   Note – This EMAP should be deemed the minimum standard for installation, maintenance, testing and inspection of all equipment identified under legislation regardless of ownership or responsibility.

3 Legislation and Guidance

3.1 The Health and Safety at Work etc. Act 1974 places a duty on QMUL, so far as is reasonably practicable, to ensure the health, safety and welfare of its employees and others

3.2 The HSE have produced a number of documents that give guidance and legal requirements on pressure systems or equipment; although the list below is not exhaustive it is intended to detail the key documents for reference;

- Pressure Equipment Regulations 1999
- Pressure Systems Safety Regulations 2000
• Safety requirements for pressure testing. General Guidance Note; GS4 2012
• Pressure systems: A brief guide to safety. Leaflet INDG261 (rev2)
• Written schemes of examination: Pressure Systems Safety Regulations 2000 Leaflet INDG178 (rev2) 2012
• Pressure Systems Safety and You INDG261 (rev2) 2012
• Compressed Air Safety HSG39 1998

Further information can be downloaded from;

www.hse.gov.uk/pubns/indg261.htm

3.3 A significant volume of guidance has been produced by the British Standards Institute and the Safety Assessment Federation (SAFed) and the Combustion Engineering Association (CEA) on the subject of pressure systems, these include;

• BS EN ISO/IEC 17020:2012 Conformity assessment. Requirements for the operation of various types of bodies performing inspection British Standards Institution
• Periodicity of examinations Pressure Systems Guidelines 1 SAFed 2003
• Production of written schemes of examination and examination of pressure vessels incorporating openings to facilitate ready internal access pressure systems Guidelines 4 SAFed 2003
• Guidance on safe operation of boilers – Edition 1 – Ref BG01, SAFed October 2011

4 Responsibilities

4.1 Director of Estates and Facilities

4.1.1 The Director is the delegated senior member of the Directorate in regard to compliance with health and safety legislation and agreed best practice.

4.1.2 The Director ensures that adequate resources are in place to allow suitable and sufficient management of PSSR as per legislative requirements.
4.1.4 The management of PSSR shall be discussed during monthly Estates Senior Management Team meetings

4.2 **Assistant Director of Estates and Facilities (Infrastructure & Maintenance)**

4.2.1 Ensures that EMAP 31 is adhered to for the management arrangements of all pressure systems and equipment that are the responsibility of E & F to inspect, examine or maintain

4.2.2 Allocates sufficient competent resources to enable the management of PSSR to be delivered

4.2.3 Ensures that PSSR is a standing agenda item on all monthly maintenance team meetings

4.2.4 Ensure that all those identified with responsibilities for the implementation of this EMAP have received adequate training, information and instruction to fulfil their duties. Undertaking an annual review of the training plan.

4.2.5 Ensure this EMAP is reviewed and updated following any incidents, accidents, legislation changes or significant changes to management arrangements

4.2.6 Ensure that the centralised register is current and valid through annual review

4.3 **Campus Maintenance Managers (CMM’s)**

4.3.1 Shall produce a centralised register of E & F managed assets, updating Crimson as required, which is updated and maintained (example shown in Appendix (C))

4.3.2 Shall ensure maintenance, examinations and inspections are conducted in compliance with legislative requirements

4.3.3 Shall ensure immediate action in response to inspection visits highlighting serious defects

4.3.4 In the event of a system or equipment being identified as having serious defects, make safe (e.g. safely release any stored energy), isolating supplies immediately to prevent use. Apply appropriate OUT of ORDER or DO NOT USE notices for any items reported as defective and also update all or any repairs undertaken as a result of inspection reports conducted and reported by QMUL insurers, ZURICH, via their electronic system (CRIMSON)
4.3.5 Items that are either not available or have missed their insurance inspection should be isolated and labelled DO NOT USE and a new date agreed with insurance inspector to attend to complete the inspection (see flow chart in Appendix (G))

4.3.6 Insurers must be kept informed of any Items no longer used, transferred or disposed of. Notification of the above would usually be via the insurance inspector who performs the inspections for that particular asset and the inspector will update the asset register on CRIMSON. Local asset lists are to be updated accordingly.

4.3.7 Arrange for risk assessments to be undertaken for any previously unidentified systems or equipment.

4.3.8 Provide relevant information, pertaining to individual Campuses, to the E & F (Infrastructure and Maintenance) Compliance Manager to enable him to update the E&F Statutory Compliance Report.

4.3.9 Written Schemes of Examination (Appendix A) shall be held locally and readily available for the purpose of maintenance, inspection and testing.

4.3.10 Communicate by the most appropriate and effective means to those under their line management, information on the risks and control measures being implemented related to pressure systems.

**4.4 Estates and Facilities (Infrastructure & Maintenance) Compliance Manager**

4.4.1 Shall support Campus Maintenance Managers in all aspects of PSSR management.

4.4.2 Shall produce an annual action plan for management of PSSR.

4.4.3 Shall audit PSSR management arrangements during maintenance audit visits.

**4.5 QMUL Health and Safety Directorate**

4.5.1 Providing advice and guidance on legislative changes and best practice, and where necessary, provide expert advice to the Estates and Facilities Directorate.

4.5.2 Determining the adequacy of the Estates and Facilities management of PSSR arrangements.

4.5.3 Giving competent advice on the suitability and sufficiency of the management of PSSR.

4.5.4 Providing training on the management of PSSR where requested by Estates and Facilities Managers.
4.6 QMUL Insurers

(At present Zurich are engaged as the QMUL Insurers and fulfil the role of the competent person as required within legislation)

4.6.1 Provide inspection and certification for all equipment that falls under the PSSR

4.6.2 Provide written inspection reports (appendix B) detailing any issues and or defects and make available via their electronic system (CRIMSON)

4.6.3 Provide written schemes; and guidance and assistance with statutory inspections in line with all current regulations

4.6.4 Provide dates and list of assets to be inspected to ensure availability of said assets

4.6.5 Inform the respective CMM immediately in the event of a serious defect being identified during the insurance inspection visit

4.7 QMUL Service Contractors

4.7.1 To carry out installation, service and maintenance in accordance with all statutory regulations

4.7.2 To conduct all repairs as instructed

4.7.3 To conduct all repairs within scope of contract as reported by the college insurers and provide quotations for any repairs that fall outside of said contract

4.7.4 To immediately report any defects discovered during PPM visits to the Campus Maintenance Manager

5. PSSR Management. (Refer to Appendix (E) to determine if legislation applies)

5.1 The Estates and Facilities Directorate are totally committed to comply in full with the requirements of PSSR.

In doing so the Directorate adopts the following procedures;

- Training of supervisors and line managers as responsible persons in terms of their obligations relating to PSSR via toolbox talks and team meeting presentations by competent persons and or external trainers.
EMAP 31 – Pressure Systems (PSSR)

- Identify and record all work equipment that falls under the regulations into a site asset logbook or folder and apply unique numbering system to each item of equipment
- Undertake regular inspections of all work equipment that falls under the regulation and record such inspections into a site logbook or folder
- Make use of manufacturer’s instructions and guidance of the use of any such equipment
- Give appropriate instruction and training to staff

5.2 The asset logbooks shall contain equipment description, unique identifier number as issued by Zurich, location and frequency of inspection

5.3 The inspection logbooks shall contain equipment description, unique identifier number, location, date of inspection, name and signature of inspector

5.4 Inspection logbooks shall be produced for all steam, unvented heating, hot water, chilled, and compressed air equipment and ancillaries. This list is not exhaustive and local risk assessments must be produced so as to capture any additional equipment that may fall under the regulations

5.5 A risk assessment must be produced for all/any hazardous duties which involve working on any systems that fall under the regulation

5.6 All completed risk assessments are to be held in a central file, with the file location communicated to all employees within the Directorate. Estates & Facilities risk assessments are currently held at:

J:\Shared\EAF Health and Safety\Risk Assessment Register\Risk Assessments

6 Pressure Systems Hazards

6.1 Typical hazards associated with pressure equipment;

- Impact from the blast/explosion or release of compressed liquid or gas
- Impact from parts of equipment that fail or any flying debris
- Contact with the released liquid or gas, such as steam and
- Fire resulting from the escape of flammable liquids or gases

7 Pressure Systems Risks

7.1 The level of risk from the failure of pressure systems/equipment depends on a number of factors including
EMAP 31 – Pressure Systems (PSSR)

- The pressure in the system
- The type of liquid or gas and its properties
- The suitability of the equipment and pipework that contains it
- The age and condition of the equipment
- The complexity and control of its operation
- The prevailing conditions (e.g., a process carried out at high temperature)
- The skills and knowledge of the people who design, manufacture, install, maintain, test, and operate the pressure equipment and systems.

8 Safe Systems of Work

8.1 The following control measures should be considered and developed into a comprehensive safe system of work;

- Only individuals with the required training, experience, and qualifications shall work on plant / systems / vessels / cylinders containing pressurised gases at more than 0.5 bar above atmospheric, or steam at any pressure. The rules cover all associated pipe work and any protective devices / components designed to achieve system safety.

- In the event of immediate danger, or as a result of a reported serious defect (or missed insurance inspection visit)

- Users of Pressure Systems are required to:
  - Establish the safe operating limits of the plant.
  - Have a suitable written scheme drawn up or certified by a competent person for the examination at appropriate intervals of:

1. All pressure vessels unless exempt from regulations
2. All safety devices
3. Any pipework which is potentially dangerous

- Arrange to have examinations carried out by a competent person at the intervals set down in the scheme.

- Ensure the pressure system is maintained in good repair.

- Provide adequate operating instructions (including emergency instructions) to any person operating it (e.g., operating manual supplemented by on-the-job training and supervision for new staff)
EMAP 31 – Pressure Systems (PSSR)

- Keep adequate records of the most recent examination and any manufacturer's records supplied with the new plant.
- Implement a robust mechanism of communication between insurance inspector, maintenance manager and faculty/schools manager
- Undertake repairs in a timely manner

9 Definitions

9.1 For the purpose of this EMAP the following definitions apply;

9.1.1 A pressure vessel is usually taken to be a closed vessel which operates at a pressure greater than atmospheric pressure. This includes steam boilers, steam receivers and air receivers.

9.1.2 The regulations refer to pressure systems as systems with steam at any pressure, gases which exert a pressure in excess of 0.5 bar above atmospheric pressure and “relevant fluids” which may be combinations of gases, vapours or liquids where the gas or vapour phase may exert a pressure in excess of 0.5 bar above atmospheric pressure.

9.1.3 Pressure System Assets are a list of recorded assets that fall under the Pressure Systems Safety Regulations.

9.1.4 A logbook is the booklet to be used to detail assets, inspections, maintenance, examination or repairs/replacement of pressure systems.

9.1.5 Crimson reports, are the thorough examination reports issued following the visit of the Zurich engineer surveyor.

9.1.6 The written scheme of examination for pressure systems, specifies a periodic and systematic inspection of the main safety critical parts of specific equipment, it is effectively a document stating the details of required inspections for the pressure system it relates to.

9.1.7 A competent person will be appointed by QMUL to compile the Written Scheme of Examination (WSE) under PSSR regulation 8, and to carry out the resultant examination under regulation 9. Any individual, be they a contractor of a QMUL employee, undertaking works to pressure systems, will have the correct level of skills, knowledge, experience and other qualities required to carry out said works competently.
THE PRESSURE SYSTEMS SAFETY REGULATIONS 2000

WRITTEN SCHEME OF EXAMINATION
Part 3 - Examination Schedules

Policy/Contract No: NHE01CA1900013000
ES Item No: SC500006
Written Scheme Designation No: 332569
System / Sub-system : Situation: Steam : School Of Biological & Chemical Sciences
Sequence Number: SC506

1. Name and Address of
   . User (installed systems),
   . Owner (mobile systems) or
   . Lessor (leasee / hired systems)

QUEEN MARY UNIVERSITY OF LONDON
327 MILE END ROAD
LONDON
E1 4NS

2. System and Part Identification
   (description of part within system and identification where appropriate)

Self Generating Autoclave [bolted door] (Lab Room 4.30) Serial No: DA0755
Associated Door Interlock Door Restraint - Door Interlock Seal Break - Pressure Gauge - Safety Valve

3. Part Information
   (a) Name of Manufacturer and Date
   (b) Standard or Specification of Manufacture

Dixon - 2005
No information available.

4. Safe Operating Limits

1.3 bar 125 degs C.

5. Types of Examination
   (a) Preparation and Examination procedure
   (b) System- or Part-specific procedure

RIA GPD ADI API ASV
The parts of the system identified shall be subject to a 'Thorough Examination' at intervals not exceeding 14 months - followed by a 'Working Examination' as soon as reasonably practicable and within 28 days of the 'Thorough Examination'. 'Examinations' to be carried out in accordance with procedures specified above

6. Additional Special Criteria for Non PSSR
   2000 Mechanical Integrity

Not Applicable

7. Written Scheme of Examination Review
   Record

8. History of Repairs / Modifications

9. Authentication:
   On behalf of competent person:
   Authorised by Surveyor:
   Date of Authentication:

Zurich Engineering, 176 Hagley Road, Edgbaston, Birmingham B16 9PF. Telephone: 0121 456 1311 Fax: 0121 697 9136
Email: engineering@uk.zurich.com

https://serverc.zuricheng.co.uk/crimson/YYKPEE-6VQLHU-CRC.nsf/(FormFormula... 15/03/2016
**APPENDIX B – EXAMPLE of EXAMINATION REPORT**

---

**THE PRESSURE SYSTEMS SAFETY REGULATIONS 2000**

**REPORT OF THOROUGH EXAMINATION OF PRESSURE VESSEL & ASSOCIATED PROTECTIVE DEVICES**

Report: 21961112/4

Policy/Contract No: NHE01CA190013000 Schedule: B0004 ES Item No: 00015

Policy/Contract Name: QUEEN MARY & WESTFIELD COLLEGE

---

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| **1. (a) Name and Address of:** | QUEEN MARY & WESTFIELD COLLEGE  
**User (Installed Systems), Owner (Mobile Systems) or Lessee (Leased Systems)**  
BLIZZARD BUILDING 4 NEWARK STREET  
LONDON E1 2AT |
| **(b) Name of User and Address at which system is installed (leased systems) or located (mobile systems) if different from (a) above** | ZE / 338460 |
| **2. WRITTEN SCHEME CERTIFIER / DESIGNATION NUMBER** | Steam  
Room LG107 Media Preparation / B4/15  
Self Generating Autodave - 'Bench Top' type [quick opening]  
(RHS) Serial No: E2007/1051/2 Associated Door Interlock  
Depressurise Before Unlock - Door Interlock Door Restraint - Door Interlock Lock Before Pressure - Door Interlock  
Temperature - Pressure Gauge - Safety Valve |
| **3. SYSTEM AND PART IDENTIFICATION** |  
(a) System / Sub-System  
Situation / Sequence Number |
|   |   |
|   |   |
| **4. PART INFORMATION** | Boxer Laboratory Equipment Ltd 2007  
PD 5500 : 2006 Cat 3  
12/07/2007 to 60 psi  
- Does not apply -  
- No record available -  
- Does not apply - |
| (a) Name of Manufacturer and Date |   |
| (b) Standard or Specification of Manufacture |   |
| (c) Date of initial or non-routine hydraulic test and pressure applied |   |
| (d) Date of last routine hydraulic test and pressure applied |   |
| (e) Date and reference of any non-routine NDT |   |
| (f) Date and reference of last routine NDT |   |
| **5. PREPARATION** |   |
| (a) Parts which were inaccessible | Externally in confined areas.  
Externally in way of casings.  
Externally in way of supports.  
Internal parts except as seen from inspection openings. |
| (b) Date of last exposure | No information available |
| **6. EXAMINATION** |   |
| (a) Type of examination and tests carried out | External and internal. |
| (b) External condition and result of examination | No defect or imperfection apparent - result satisfactory. |
| (c) Internal condition and result of examination | No defect or imperfection apparent - result satisfactory. |
7. REPAIRS REQUIRED
(a) Details of repairs required and the date by which they should be completed

Yes. The machined end of the door cam locking mechanism is badly worn - result unsatisfactory.

(b) Details of any alterations to safe operating limits and the date to be made by

The defective machined end of the door cam locking mechanism requires to be replaced before return to service.

Reduce to zero pressure immediately.

8. SAFE OPERATING LIMITS

On satisfactory completion of the required repairs 38 psi / FV @ 140 Deg C.

9. OTHER OBSERVATIONS
(a) General

The associated safety valve was tested against Surveyors calibrated test gauge (serial number 100659/PQ/014-A) 0 to 11 bar and last calibrated on 04/06/2010, the safety valve was observed to lift freely at 38 psi and then reset satisfactorily.

Immediate Report Issued No. 350820.
Immediate repairs required which necessitate further statutory examination on completion - the date(s) by which next examination should be completed have been adjusted accordingly - to arrange further examination please contact our
Engineer Surveyor. Tel: 07734-336586 or E mail michael.walsh@uk.zurich.com

(b) Repairs / Modifications Completed

- None Recorded -

10. WRITTEN SCHEME REVIEW
(a) Whether any changes are required to the Written Scheme, and details if appropriate

No.

11. AUTHENTICATION
On behalf of competent person

ENGINEER SURVEYOR: Michael Walsh
Date of Authentication: 21/07/2010
Date of Examination: 21/07/2010

ZURICH ENGINEERING

12. Dates by which future actions should be completed
(a) next statutory examination(s):

- Next Thorough Examination
  21/07/2010

- Next Working Examination
  18/08/2010

NOTE: The date by which the next examination should be completed specified above is subject to the system being properly used and normal maintenance being carried out. For this purpose, normal maintenance means such maintenance as it is reasonable to expect the user (installed system) and the owner (mobile system) to ensure is carried out independently of any advice from the competent person making the examination.

Client's Additional Comments

Submit Comment
## APPENDIX (C) – EXAMPLE of ASSET LIST RECORD

| Name            | Title/Position          | Insurance ID No | Equipment Description                                                                 | Item Location                  | Maintained | Month Insurance Inspection Due | Email                      | Phone            | Mobile         |
|-----------------|-------------------------|-----------------|---------------------------------------------------------------------------------------|--------------------------------|------------|--------------------------------|--------------------------|------------------|----------------|}
| James Martin    | Campus Maintenance      | 1               | Horizontal Multitubular Hot Water Heating Boiler & 2 Cylinders 221701 [Static Head Pressure OK] | Dawson Hall Basement Boiler Room | Sept       |                               | james.martin@qmul.ac.uk | 020 7882 8449 | 07785 171844 |
|                 | Manager                 |                 |                                                                                      |                                |            |                               |                          |                  |                |
| James Martin    | Campus Maintenance      | 2               | Horizontal Multitubular Hot Water Heating Boiler 2 221703 [Static Head Pressure NV] ISOLATED | Dawson Hall Basement Boiler Room | Sept       |                               | james.martin@qmul.ac.uk | 020 7882 8449 | 07785 171844 |
|                 | Manager                 |                 |                                                                                      |                                |            |                               |                          |                  |                |
| James Martin    | Campus Maintenance      | 3               | Horizontal Multitubular Hot Water Heating Boiler 3 221702 [Static Head Pressure OK]     | Dawson Hall Basement Boiler Room | Sept       |                               | james.martin@qmul.ac.uk | 020 7882 8449 | 07785 171844 |
|                 | Manager                 |                 |                                                                                      |                                |            |                               |                          |                  |                |
| James Martin    | Campus Maintenance      | 4               | Horizontal Multitubular Hot Water Heating Boiler [Summer boiler] 221704 [Static Head Pressure OK] | Dawson Hall Basement Boiler Room | Sept       |                               | james.martin@qmul.ac.uk | 020 7882 8449 | 07785 171844 |
|                 | Manager                 |                 |                                                                                      |                                |            |                               |                          |                  |                |
# APPENDIX (D) – Example of Log Book Inspection Record

<table>
<thead>
<tr>
<th>ID Number</th>
<th>Description</th>
<th>Manufacturer</th>
<th>Location</th>
<th>Next Inspection Date</th>
<th>Name</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>QMUL 1</td>
<td>Self-Generating Auto-Clave</td>
<td>Rodwell</td>
<td>JVSC Lab 1</td>
<td>20.10.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QMUL 2</td>
<td>Bladder Type Pressurisation Unit</td>
<td>Aquatech Pressmain</td>
<td>Dawson Hall Boiler Room</td>
<td>06.10.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QMUL 3</td>
<td>Horizontal Air Receiver</td>
<td>OB Monzuno</td>
<td>Robin Brooke Upper Plant Rm</td>
<td>17.06.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QMUL 4</td>
<td>Hot Water Heating Boiler</td>
<td>Ultra Gas 300</td>
<td>Robin Brooke Boiler Room</td>
<td>19.04.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QMUL 5</td>
<td>Fume Cupboard</td>
<td>Unknown</td>
<td>Wolfson Institute Rm 016</td>
<td>Examination Not Completed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QMUL 6</td>
<td>Diaphragm Type Pressurisation Vessel</td>
<td>Grundfos</td>
<td>Old Anatomy Building Workshop (1)</td>
<td>02.07.17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX (E) – APPLICATION of REGULATIONS

Figure 1 User/owner decision tree: Do the Regulations apply to my pressure system?

Start

PSSR does not apply

Is there a relevant fluid in the system?

No

Is there a pressure vessel that contains steam or has a pressure x volume product of 250 lb or more?

Yes

Is the system mobile or subject to a lease/hire agreement?

No

User has duties

Reg 7 Safe operating limits
Reg 11 Operation
Reg 12 Maintenance
Reg 15 Precautions to prevent pressurisation of certain vessels (user only)

Yes

Owner has duties

Is the system mobile or subject to a lease/hire agreement?

No

User has duties

Reg 7 Safe operating limits
Reg 11 Operation
Reg 12 Maintenance
Reg 14 Keeping of records etc
Reg 15 Precautions to prevent pressurisation of certain vessels (user only)

Yes

Owner has duties

Reg 7 Safe operating limits
Reg 8 Written scheme of examination
Reg 9 Examination in accordance with the written scheme
Reg 10 Action in case of imminent danger
Reg 11 Operation
Reg 12 Maintenance
Reg 14 Keeping of records etc
Reg 15 Precautions to prevent pressurisation of certain vessels (user only)

Note: This diagram only covers type (a) pressure systems, as defined in regulation 2(1) under "pressure system", 'one or more pressure vessels of rigid construction, any associated pipework and protective devices.'
## APPENDIX (F) - PRESSURE SYSTEM CATEGORIES

<table>
<thead>
<tr>
<th>Minor systems</th>
<th>Intermediate systems</th>
<th>Major systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small, simple, systems containing steam, pressurised hot water, inert gases</td>
<td>Anything that does not fall into minor or major categories.</td>
<td>Systems which because of their size, complexity or hazardous contents require the highest level of expertise in determining their condition.</td>
</tr>
<tr>
<td>or fluorocarbon refrigerants.</td>
<td></td>
<td>Steam generator over 10 MW</td>
</tr>
<tr>
<td>Pressure should be less than 20 bar (2.0 MPa) above atmospheric pressure</td>
<td>Pipelines are included if the pressure-volume product is</td>
<td>Any pressure storage system where largest vessel is more than $10^6$ bar litres (100MPa m$^3$)</td>
</tr>
<tr>
<td>unless the system has a direct-fired heat source, when it should be less</td>
<td>greater than $10^5$ bar litres.</td>
<td></td>
</tr>
<tr>
<td>than 2 bar (200kPa)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure-volume product for largest vessel should be less than $2 \times 10^5$</td>
<td>Any manufacturing or chemical reaction system</td>
<td>Pipelines are included if the pressure-volume product is greater than $10^5$ bar litres</td>
</tr>
<tr>
<td>bar litres ($20 \text{ MPa m}^3$).</td>
<td>where the pressure-volume product for the largest vessel</td>
<td></td>
</tr>
<tr>
<td>Temperatures in system should be between $-20^\circ\text{C}$ to $250^\circ\text{C}$</td>
<td>is more than $10^5$ bar litres ($10 \text{ MPa m}^3$)</td>
<td></td>
</tr>
<tr>
<td>Smaller refrigeration systems operating at lower temperatures</td>
<td></td>
<td>Pipelines are included if the pressure-volume product is greater than $10^5$ bar litres.</td>
</tr>
<tr>
<td>Pipelines are not included</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX (G) – PROCESS FLOW CHART FOR INSURANCE INSPECTION VISITS

Process for Zurich Inspection Visits for EAF Managed Pressure Systems on Crimson Register

1. Insurance Inspection Due.

2. Surveyor Contacts CMM.

3. CMM Contacts Stakeholders.


6. Site Visit Missed / Equipment not available.

7. CMM to isolate from use.

8. Inspection Visit Re-booked.

9. Defects or Observations identified.

   a. Serious Defects Identified.
      - CMM Isolates Equipment.
   b. Minor Defects identified.
      - CMM arranges for works to be completed.

10. Defects Identified.

   a. YES
      - Works Completed.
      - CMM Updates Record.
   b. NO

   - CMM Contacts Stakeholders.

   - CMM Arranges for works to be completed.

   - Works Completed.

   - CMM Updates Record.