	<b>Accreditation Criteria for In-service Inspection of Transportable Pressure Receptacles (TPRs)</b>	<b>G-24/07 Issue Date: 08/07/08 Rev No: 00</b>
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## 1 INTRODUCTION

- 1.1 This document has been produced by the Pakistan National Accreditation Council (PNAC) in conjunction with the PNAC Sectoral Committee for Inspection Bodies. It provides guidance to those requirements in ISO/IEC 17020 and Agreement between PNAC & IBs (F-01/13) that need interpretation when applied by Inspection Bodies carrying out in-service inspection of Transportable Pressure Receptacles (TPRs). It does not cover all of the requirements of ISO/IEC 17020-*General criteria for the operation of various types of bodies performing inspection* and Agreement between PNAC & IBs (F-01/13). Inspection Bodies are reminded of the need to comply with all of the requirements in these documents. Appeals concerning interpretation will be considered in accordance with the PNAC Appeals Procedure. Other PNAC documents may be referred to where relevant.
- 1.2 Non-destructive testing performed by an inspection body to support the inspection of TPRs covered by this document shall also be required to comply with the requirements specified in G-24/04 (Accreditation Criteria for Inspection bodies performing NDT)
- 1.3 For the purposes of this document the term 'inspection body' shall be taken to mean an accredited inspection body.


## 2 INSPECTION SERVICES COVERED BY (ISO/IEC 17020, CLAUSE 3.3)

- 2.1 This document covers the accreditation of in-service inspection at test stations (which may form part of a larger facility) that undertake the periodic inspection, testing and maintenance of TPRs, including dissolved acetylene containers.
- 2.2 This document also covers the examination of other items, for example, cylinder valves, level/contents gauges, fusible plugs, and permanently attached fittings where these are included in the TPR periodic inspection standard but not items such as regulators or other equipment downstream of the valve.
- 2.3 The services provided by an inspection body accredited under this document shall include:

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Verification that the TPR and, where appropriate, its fittings/accessories comply with the requirements of the standards or where applicable Regulations and industry codes for re-testing and/or refurbishment or modification.

- (a) Provision of an effective service for the detection of potential and actual defects in TPRs and, where appropriate, their fittings/accessories.
  - (b) Reporting to the user or owner as appropriate the condition of the equipment under examination and to specify any necessary corrective or reject action.
  - (c) Permanently stamping/markings the TPR in accordance with the relevant requirements where appropriate.
- 2.4 This document is not applicable to the inspection of (i) modifications, (ii) major repairs to TPRs involving hot work, TPRs at re-rating (other than for condition) and reassessment of conformity where separate statutory assessment and appointment arrangements apply.

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### **3.0 INDEPENDENCE, IMPARTIALITY AND INTEGRITY (ISO/IEC 17020, CLAUSE 4)**

- 3.1 Inspection bodies operating as Type A, B or C bodies as defined in ISO/IEC 17020 may be accredited for the in-service examination of TPRs provided that they meet the requirements of ISO/IEC 17020 and this document. It should, however, be noted that restrictions may be imposed by statutory regulations on the extent of work which some types of inspection bodies may undertake.
- 3.2 The organizational structure of Type B and/or Type C inspection bodies shall be such that the staff responsible for inspection shall have available a reporting line, to the Technical Manager, for inspection issues. This reporting line shall be independent to the reporting line for the operational issues associated with the day to day filling and maintenance of the TPRs that are inspected.

### **4.0 ORGANISATION AND MANAGEMENT - SUPERVISION (ISO/IEC 17020, CLAUSE 6.4)**

- 4.1 The requirements for supervision shown in clause 6.0 of this document shall be met.

### **5.0 INTERNAL AUDIT (ISO/IEC 17020, CLAUSE 7.7 AND 7.8)**

- 5.1 The internal audit programme shall include the on-site assessment of inspection personnel carrying out inspections of TPRs.
- 5.2 The Inspection body's internal audit programme for on-site assessment of inspectors shall ensure that each of the inspectors engaged in the inspection of TPRs is assessed at least once within a period of 2 years. In the event of an inspector having a break from inspection duties for a period exceeding six months then the inspector shall be reassessed at the re-commencement of his duties.

### **6 PERSONNEL (ISO/IEC 17020, CLAUSE 8)**

#### **6.1 Qualifications and Constraints**

- 6.1.1 The requirements for qualifications and constraints on activities for those performing the inspection shown in below shall be met.


Qualification categories:

#### **Category 1.**

Graduate Engineer holding membership of Pakistan Engineering Council (PEC) with at least 4 years experience in a relevant engineering discipline of which at least two years shall have been spent working in an engineering discipline associated with in-service inspection of TPRs.

#### **Category 2.**

Bachelor of technology from respective Board of Technical Education with at least 5 years experience in a relevant engineering discipline of which at least two years shall have been spent working within an engineering discipline associated with in-service inspection of

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TPRs.

**Category 3.**

Person having three years diploma of Associate Engineers as defined by PEC with at least 6 years of experience in a relevant engineering discipline of which at least three years shall have been spent working in an engineering discipline associated with in-service inspection of TPRs.

**Category 4.**

Person having two years vocational technical training as defined by PEC with at least 7 years of experience in a relevant engineering discipline of which at least three years shall have been spent working in an engineering discipline associated with in-service inspection of TPRs.

**Category 5.**

Person having three years apprenticeship training as defined by PEC with at least 9 years of experience in a relevant engineering discipline of which at least 5 years shall have been spent working in an engineering discipline associated with in-service inspection of TPRs.

**Category 6.**

Person employed prior to the date of application for accreditation in the inspection of pressure systems with less than tradesman's apprenticeship but having minimum Matriculation qualification with a minimum of 10 years spent working with an industry associated with relevant field of inspection and has general knowledge of relevant field of inspection and its operating environment.

*Note 1: All qualifications shall be from Higher Education Commission (HEC), Inter Board Committee Chairman (IBCC) & Board of Technical Education approved Universities, Colleges & Institutes.*

*Note 2: The persons from category 1-6 shall have training on relevant standard including the ISO/IEC 17020.*

**6.1.2 CONSTRAINTS ON ACTIVITY (Prohibited Areas)**

- Constraint I


Technology outside this field of competence - except by formal, documented consultation.

- Constraint II

As above, plus any non-routine repairs or modifications or changes to operating parameters or non-routine changes of inspection procedures involving considerations or calculations not defined within an appropriate, recognized national or international code or standard - unless with the specific and documented approval of an appropriately qualified person.

- Constraint III

Any activities other than the testing and inspection to identify faults and weaknesses within limits defined by the persons qualified to Category 1 or 2. Any decisions involving the interpretation of limits of acceptability, repairs or modifications shall have the documented approval of an authorized person qualified to Category 1 or 2.

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### 6.1.3 ACCESS TO SUPERVISION

In the Levels described below, 'Supervisor' means a technical superior, however named. Direct Contact means on the job contact at the site of operation.

- Level A Occasional

Formal, direct contact to review work with Supervisor at least annually. More frequent direct contact with Supervisor may be necessary. Authoritative technical support from personnel qualified to Category 1 or 2 to be readily available.

- Level B Frequent

Direct contact with Supervisor at least weekly. Authoritative technical support from personnel qualified to Category 1, 2 or 3.

- Level C Constant

Direct daily contact with Supervisor at site of operation. Authoritative technical support from personnel qualified to Category 1, 2, 3 or 4 to be readily available.

6.1.4 In addition to meeting the minimum requirements of 6.1.1, the inspection body shall employ supervisory personnel knowledgeable in the problems encountered in the field of TPR inspection for which they are responsible.

6.1.5 The inspection body shall also employ, or have defined access to Graduate Engineer(s) or equivalent as defined in 6.1.1 of this document, trained and experienced in relevant specialist areas, (e.g., materials, metallurgy, electrical, electronic, pneumatic, hydraulic, non-destructive testing), with the technical knowledge to make professional judgments on the range of technical problems likely to arise from the accredited scope of inspection.


6.1.6 Such supervisory and engineering personnel shall be knowledgeable, as appropriate, in the:

- (a) design standards for TPRs;
- (b) effects of operating conditions on the mechanical integrity of TPRs including interactions with contents;
- (c) relevant legislative requirements and associated codes of practice; and
- (d) inspection techniques for TPRs.

6.1.7 If staff are used to perform non-destructive testing, (NDT), in support of the inspection of TPRs they should hold personnel certification to the appropriate level for each NDT method used.

### 6.2 Competence (ISO/IEC 17020 Clauses 8.2, 8.3 and 8.4)

6.2.1 The inspection body shall only use staff to carry out inspections of TPRs who have the qualifications, training, experience and knowledge of the requirements of the inspections to be carried out. The inspection body shall maintain records of such qualifications, training

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and experience, and records to show how, and when, each member of staff was authorized to perform specific examination and testing activities.

6.2.2 The inspection body shall ensure that it only permits staff to carry out inspections of TPRs covered by this document if the inspections are within the designated competence of the staff and if the staff hold the category of qualification as defined in 6.1.1 of this document.

6.2.3 Where the staff of the inspection body carry out calibration or specialized types of testing, (such as NDT or metallurgical testing), in connection with the inspection of

TPRs, records of their training, qualifications and experience shall be maintained. Details should also be recorded of who is authorized to perform specific calibrations or tests and to evaluate the results.

## **7 TRAINING (ISO/IEC 17020, CLAUSE 8.2)**

7.1 The training provided by the inspection body for the personnel covered by 6.0 of this document shall provide a working knowledge (relevant to the role) of the following: -

- (a) Statutory requirements and the requirements of relevant Standards or other relevant documents.
- (b) Requirements relating to the safety of the inspector and others during the performance of the examination and in particular safe practices applicable to TPRs and relevant pressure systems.
- (c) TPRs including maintenance, operation, significance of defects and acceptability standards.
- (d) Test and inspection equipment and its use.

## **8 FACILITIES AND EQUIPMENT (ISO/IEC 17020, CLAUSE 9.1)**


8.1 The inspection body shall possess or have defined access to suitable inspection, measurement and test equipment with appropriate manufacturers' manuals or equivalent documents.

8.2 Inspection, measurement and test equipment shall comply with the requirements of the relevant inspection standard where this is specified. Equipment that is used for the determination of results which are critical to the outcome of the inspection shall also comply with the requirements of ISO/IEC 17020 and IAF/ILAC-A4: 2004 in respect of suitability, identification, maintenance, calibration status and traceability of calibration to national standards.

8.3 In addition to the results of visual examinations, pressure test parameters, dimensional measurements and NDT results, if applicable, are considered critical.

## **9 INSPECTION REPORTS AND CERTIFICATES (ISO/IEC 17020, CLAUSE 13)**

Inspection reports, certificates and/or TPR markings shall conform to the relevant statutory requirements and the requirements of the relevant inspection standard.

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Records and/or markings shall identify the examiner(s) who performed the inspection(s) and/or test(s)

## **10. REFERENCES**

ISO/IEC 17020, General Criteria for the Operation of Various Types of Bodies Performing Inspection

IAF/ILAC-A4: 2004, Guidance on the Application of ISO/IEC 17020