



## 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 Lifting Equipment. 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 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 in-service inspection of lifting equipment that includes that undertaken after installation and prior to being put into service. It does not include the inspection of lifting equipment during manufacture.
- 2.2 In-service inspection of lifting equipment performed both onshore and offshore may be accredited using this document.
- 2.3 The scope of activity of in service inspection for which accreditation is granted may be described in the accreditation schedule as Powered Lifting Appliances, Manual Lifting Appliances or Lifting Accessories as defined in Section 6.7 of this document or by reference to the specific type of lifting equipment (e.g., Lifts, tower cranes, etc).
- 2.4 Inspection Bodies accredited under this publication provide one or more of the following services:
- a). development of schemes of in-service inspection;
  - b). in-service inspection of equipment to detect actual and potential defects and judgments on the significance of such defects for continued safe use;
  - c). reporting the result of the in-service inspection, specifying any remedial action and/or recommendations;
  - d). inspection during or following remedial action;
  - e). commenting on the suitability of, and any changes necessary to, inspection methods/ schemes of in-service inspection.



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**3 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 in-service inspection of lifting equipment.

**4 Organization and Management - Supervision (ISO/IEC 17020, Clause 6.4)**

- 4.1 The requirements for minimum levels of supervision are shown in Table 1.

**5 Internal Audit (ISO/IEC 17020, Clause 7.7 And 7.8)**

- 5.1 The internal audit programme shall include provision to include the on-site witnessing of inspections. Sections 6.4d and 6.4e of IAF/ILAC-A4: 2004 refer.

**6 Personnel (ISO/IEC 17020, Clause 8)**


- 6.1 The Inspection Body shall ensure that the persons used to resolve technical issues and to perform inspections have the category of qualifications, experience and training specified in Table 1 and defined in section 6.6 of this document.
- 6.2 The Inspection Body shall demonstrate that persons engaged in non-destructive testing of lifting equipment have been trained and examined in accordance with a documented programme.
- 6.3 The Inspection Body shall only use persons to carry out inspections of lifting equipment 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 and experience, and records to show how, and when, each person was authorized to perform specific in-service inspection activities. These records shall, as a minimum, indicate the Class of lifting equipment as defined in Table 1, considered to be within the competence of that person.
- 6.4 The Inspection Body shall only authorize persons to carry out in-service inspections of lifting equipment if the inspections are within the designated competence of that person and if that person holds the Category of qualification shown in Table 1 and defined in Section 6.6 of this document.
- 6.5 Where the persons of the Inspection Body carry out in-house calibrations of inspection, measuring and test equipment, the records of their training, qualifications and experience shall be maintained together with details of who is authorized to perform specific calibrations.
- 6.6 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 within an engineering discipline associated with in-service inspection of Lifting Equipment.

**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

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spent working within an engineering discipline associated with in-service inspection of Lifting Equipment.

**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 Lifting Equipment.

**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 Lifting Equipment.

**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 Lifting Equipment.

**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.*

## 6.7 Classification of Lifting Equipment

### Class A. Powered Lifting Appliances

Powered lifting appliances cover a wide range of appliances used for lifting and mean any stationary or mobile appliance including attachments for anchoring, fixing or supporting that appliance, which is operated by means of motive power. e.g., electric, hydraulic or pneumatic or other powered means.

### Class B. Manual Lifting Appliances

Manual lifting appliances cover a wide range of appliances used for lifting and mean any stationary or mobile appliance including attachments for anchoring, fixing or supporting that appliance which is operated solely by means of the operator without any powered assistance.


### Class C. Lifting Accessory

Lifting Accessory covers the whole range of equipment used for attaching loads to Lifting Appliances.

**Table 1**

**Requirements for qualifications and minimum supervision levels of inspectors performing inspection of Lifting equipment**

<b>Class of lifting equipment</b>	<b>Qualification Category</b>	<b>Min. level of supervision of technical activities</b>	<b>Constraints</b>
Class A Powered Lifting Appliances	1	Occasional	Inspection or associated activities in technology outside the field of competence is prohibited except by formally documented consultation.
	2 & 3	Occasional	The above constraint plus prohibition on any non-routine repairs, modifications, changes to operating parameters, changes to inspection methods, calculations not defined in recognized standards except with specific approval by an appropriately qualified person.
	4	Occasional	Permitted only for testing and examination to identify defects, within the limits specified by Category 1 or 2 person. Any decisions involving limits of acceptability, repairs or modifications shall be approved by authorized persons qualified to
	5&6	Frequent	Category 1 or 2. Same as for Category 4 above.
Class B Manual Lifting Appliances	1	Occasional	Inspection or associated activities in competence technology outside the field of is prohibited except by formally documented consultation.
	2 & 3	Occasional	The above constraint plus prohibition on any non-routine repairs, modifications, changes to operating parameters, changes to inspection methods, calculations not defined in recognized standards except with specific approval by an appropriately qualified person.


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	4	Occasional	Permitted only for testing and examination to identify defects, within the limits specified by Category 1 or 2 person. Any decisions involving limits of acceptability, repairs or modifications shall be approved by authorized persons qualified to Category 1 or 2.
	5	Frequent	Same as for Category 4 above.
	6	Constant	Permitted only for testing and examination to identify defects, within the limits specified by Category 1 or 2 person. Any decisions involving limits of acceptability, repairs or modifications shall be approved by authorized persons qualified to Category 1 or 2.
Class C Lifting Accessories	1	Occasional	Inspection or associated activities in technology outside the field of competence is prohibited except by formally documented consultation.
	2 & 3	Occasional	The above constraint plus prohibition on any non routine repairs, modifications, changes to operating parameters, changes to inspection methods, calculations not defined in recognized standards except with specific approval by an appropriately qualified person.
	4 & 5	Occasional	Same as for Category 2 & 3 above.
	6	Frequent	Same as for Category 2 & 3 above.

## 6.8 Levels of supervision and requirements for technical support

### 6.8.1 Occasional

Formal, direct contact to review work with Supervisor at least annually. More frequent direct contact with Supervisor may be necessary. Technical support from persons qualified to Category 1 or 2 to be readily available. For example, an Inspector working from home who has little direct contact with his Head Office.

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#### 6.8.2 Frequent

Direct contact with Supervisor at least weekly. Technical support from persons qualified to Category 1, 2 or 3. For example, an Inspector whose work is based from a depot or office where the Supervisor is available.

#### 6.8.3 Constant

Direct daily contact with Supervisor. Technical support from persons qualified to Category 1, 2, 3 or 4 to be readily available. For example an inspector working within a factory environment under direct control of the Supervisor.

### 7 Training (ISO/IEC 17020, Clause 8.2)

7.1 The training provided by the Inspection Body shall provide a working knowledge of the plant, equipment and systems including design construction, operation, maintenance, significance of defects, typical problem areas and associated method of rectification.

7.2 The training shall include the safe conduct of the inspectors' duties, in particular safe practices applicable to lifting equipment, risk assessment, knowledge of applicable statutory requirements, codes of practice and standards.

### 8 Facilities & Equipment (ISO/IEC 17020, Clause 9.1)

8.1 Testing facilities owned or used by the Inspection Body for testing (functional or other tests) of lifting equipment shall comply with the relevant requirements of ISO/IEC 17020 and IAF/ILAC-A4: 2004.

### 9 Inspection Methods and Procedures (ISO/IEC 17020, Clause 10.1, 10.2, 10.3, 10.4, 10.5)

9.1 The procedures and instructions used to develop schemes of in-service inspection and performance of in-service inspection of lifting equipment shall detail how the Inspection Body interprets and applies the appropriate regulations, codes of practice, standards, specifications, guidance documents and customer requirements.


9.2 Where risk assessment techniques are used to establish the nature and frequency of inspections, the Inspection Body shall document the techniques used in procedures including a demonstrable justification for using the technique.

9.3 The Inspection Body shall have instructions from its customer clearly specifying the precise scope of work it contracts to undertake including any specific conditions. For example, if the Inspection body undertakes the inspection of repairs or witnessing of proof load testing, this should be clearly stated in the instructions agreed with the customer.

9.4 If the Inspection Body uses information supplied by any other party as part of in-service inspection of lifting equipment then it shall be able to demonstrate the measures taken to verify the integrity of such information.

9.5 Non-destructive testing methods used by the Inspection Body shall comply with requirements of G-24/04.

9.6 Reporting requirements including any statutory requirements for reporting shall be detailed in procedures.

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9.7 Codes, Standards, Specifications and other technical literature applicable to the design, construction, operation, inspection, test and repair of lifting equipment and their components within the accredited scope shall be maintained up to date and be readily available to the persons of the Inspection Body.

**10 Sub-Contracting (ISO/IEC 17020, Clause 14 and IAF/ILAC-A4:2004, Clause 14)**

10.1 Where the Inspection Body sub contracts certain specialized activities there must be identifiable member(s) of the management personnel sufficiently knowledgeable in those technical activities being subcontracted, to be able to:

- a). define the problem adequately to enable the sub contractor to offer appropriate services, personnel and equipment;
- b). choose an appropriate sub contractor and to assess its technical competence (e.g., methods, personnel and facilities);

interpret the results supplied by the sub contractor and relate those results properly to the service originally requested or problem originally defined.

**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