

CRITERIA FOR THE ACCREDITATION OF INSPECTION BODIES PERFORMING INSPECTION IN TERMS OF THE PRESSURE VESSELS/BOILERS REGULATIONS IN ZIMBABWE

<p>Prepared by: SADCAS based on Advisory Committee for Inspection in Zimbabwe input</p>	<p>Approved by: SADCAS CEO</p>	<p>Approval Date: 2019-11-08 Effective Date: 2019-11-08</p>
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1. **PURPOSE AND SCOPE**

This document covers the criteria for the accreditation of independent inspection bodies performing inspection in terms of the pressure vessels/boilers regulations in Zimbabwe.

2. **DEFINITIONS**

2.1 **Approved Independent Inspection Authority**

Company approved by the regulatory authority as an independent inspection authority.

2.2 **Boiler**

Any apparatus adapted to convert continuously any liquid into steam, vapour or gas at a pressure higher than that due to the atmosphere.

2.3 **Designated Area**

Area specified by the Local Authority for specific activities in the Local Authority's area of jurisdiction.

2.4 **Inspection**

Examination of a product, process, service, or installation or their design and determination of its conformity with specific requirements or, on the basis of professional judgment, with general requirements.

2.5 **Pressure Vessel**

Any closed vessel other than a boiler, or the cylinder or chamber of a steam or internal combustion engine, which is subjected to an internal pressure higher or lower than that due to the atmosphere.

2.6 **Regulatory Authority**

Authority which is legally charged with the enforcement of the requirements of legislation that relates to pressure vessels (RGN No. 303 of 1976)/boilers ((RGN No. 279 Of 1976) in Zimbabwe.

2.7 **Verification**

The act of reviewing, inspecting, testing, checking or otherwise determining and documenting whether items, processes, services or documents comply with specified requirements.

3. GENERAL REQUIREMENTS

The approval of an independent inspection authority in Zimbabwe by the regulatory authority shall be conditional upon the following:

- 3.1 The inspection body shall be a registered legal entity with its own company certificate of registration.
- 3.2 The inspection body's registered office(s) shall be in a designated area.
- 3.3 The inspection body shall have the appropriate equipment to cover their respective scope of inspection activities.
- 3.4 The inspection body shall have access to a library for up to date information on appropriate inspection methods and codes.
- 3.5 The inspection body shall develop and maintain operating methods and procedures to cover its scope of inspection activities.

The following is a list of some of the standards, codes and regulations used in the inspection of boilers in Zimbabwe:

- Rhodesia Government Notice No. 279 of 1976 [CAP 14:08] Factories and Works (Boiler) Regulations, 1976
 - Rhodesia Government Notice No. 303 of 1976 [CAP 14:08] Factories and Works (Pressure-vessels) Regulations, 1976
 - ASME BPVC Section I – Rules for Construction of Power Boilers
 - ASME BPVC Section VIII – Rules for Construction of Pressure Vessels
 - BS 1113: Specification for Design and Manufacture of Water Tube Steam Generating Plant (including Superheaters, Re- heaters and Steel Tube Economizers)
 - BS 2790: specification for Design and Manufacture of Shell Boilers of Welded Construction
 - BS EN 12952 series: Water Tube Boilers
 - BS EN 12953 series: Shell Boilers
 - BS PD 5500: Specification for Unfired Fusion Welded Pressure Vessels
- 3.6 The inspection body's personnel who undertake inspections shall have the appropriate technical and professional qualifications and experience as outlined in Clause 4.
 - 3.7 The organization shall be accredited as an inspection body by a recognized accreditation body.

In assessing the inspection body's competence, the above criteria and the requirements of ISO/IEC 17020 shall apply. The accreditation process shall include a pre-assessment and initial assessment stages and once accredited, surveillance assessments once a year with a reassessment of its total activities being undertaken once every 5 years.

4. PERSONNEL QUALIFICATIONS, TRAINING AND EXPERIENCE

4.1 **Manufacturing Inspection.** The inspection body personnel who carry out manufacturing inspection applicable to pressure vessels/boilers shall have a Diploma/Higher National Diploma (HND) or Degree in any of the following fields:

- Mechanical Engineering
- Metallurgical Engineering
- Industrial Engineering
- Manufacturing Engineering
- Engineering discipline in boilers or pressure vessels

and shall have a minimum 4 years' relevant experience in manufacturing inspection. The personnel shall also have attended a relevant training course on manufacturing inspection as approved by the Chief Inspector of Factories and shall have knowledge of the applicable legislation for the scope of their inspection activities.

4.2 **In-service Inspection.** The inspection body personnel who carry out in service inspection applicable to pressure vessels/boilers shall either have a Diploma/Higher National Diploma (HND) or Degree in any of the following fields:

- Mechanical Engineering
- Metallurgical Engineering
- Industrial Engineering
- Manufacturing Engineering
- Engineering discipline in boilers or pressure vessels

and shall have a minimum 4 years' experience in in-service inspection.

OR shall be apprentice trained in the following disciplines:

- Boiler Making
- Welding
- Blacksmithing
- Fitting
- Fitting & Turning
- Engineering discipline in boilers or pressure vessels

and shall have a minimum 5 years' relevant experience in in-service inspection.

OR trade tested in any of the above fields and shall have a minimum 5 years' relevant experience in in-service inspection.

The personnel shall also have attended a relevant training course on in-service inspection as approved by the Chief Inspector of Factories and shall have knowledge of the applicable legislation for the scope of their inspection activities.

4.3 Design Verification. The inspection body's personnel who carry out design verification of pressure vessels/boilers shall have a Degree in any of the following fields as a minimum:

- Mechanical Engineering
- Metallurgical Engineering
- Industrial Engineering
- Manufacturing Engineering
- Engineering discipline in boilers or pressure vessels

and shall have a minimum 5 years' relevant experience in fired and non fired pressure vessels. The personnel shall also have knowledge of the applicable legislation.

5. REFERENCES

- ASME BPVC Section I – Rules for Construction of Power Boilers
- ASME BPVC Section VIII – Rules for Construction of Pressure Vessels
- BS 2790: Specification for Design and Manufacture of Water Tube Steam Generating Plant (including Super heaters, Re- heaters and Steel Tube Economizers)
- BS 2790: Specification for Design and Manufacture of Shell Boilers of Welded Construction
- BS EN 12952 series: Water Tube Boilers
- BS EN 12953 series: Shell Boilers
- BS PD 5500: Unfired fusion Welded Pressure Vessels
- ILAC P15: Application of ISO/IEC 17020:2012 for the Accreditation of Inspection Bodies
- ISO/IEC 17020 – Conformity assessment – Requirements for the operation of various types of bodies performing inspection
- Rhodesia Government Notice No. 279 of 1976 [CAP 14:08] Factories and Works (Boiler) Regulations, 1976
- Rhodesia Government Notice No. 303 of 1976 [CAP 14:08] Factories and Works (Pressure-vessels) Regulations, 1976

APPENDIX – AMENDMENT RECORD

Revision Status	Change			Approved by	Effective Date
	Page	Clause/ Subclause	Description of Change		
Issue 1	-	-		CEO	2012-06-21
Issue 2	2	Table of Contents	Added "Appendix – Amendment Record"	CEO	2013-11-01
	3	2 Definitions	<ul style="list-style-type: none"> ▪ Inserted new subclause 2.2. to define the term "Boiler" to read: "Any apparatus adapted to convert continuously any liquid into steam, vapour or gas at a pressure higher than that due to the atmosphere". ▪ Renumbered clauses 2.2 to 2.6 accordingly. 		
	4	3.5	Bullets 1 and 2 – Deleted "[CAP.283]" and substituted with "[CAP 14:08]".		
	6	4.3	Paragraph 1, line 2 – Added at the end of sentence "as a minimum".		
		5	Bullets 10 and 11 - Deleted "[CAP.283]" and substituted with "[CAP 14:08]".		
Issue 3	6	5	Bullet 8 - Deleted "IAF/ILAC – A4: Guidance on the application of ISO/IEC 17020" and substituted with "ILAC P 15: Application of ISO/IEC 17020:2012 for the accreditation of Inspection Bodies".	CEO	2019-11-08