



NATIONAL ACCREDITATION BOARD FOR CERTIFICATION BODIES (NABCB)

Quality Council of India (QCI), 2nd Floor, Institution of Engineers Building, Bahadur Shah Zafar Marg, New Delhi – 110002
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Competence Requirements for Inspection Bodies for Accreditation under PNGRB Regulations

BCB 501(O&G)- December'2024



Effective Date: 1 January' 2025



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1.0 Foreword

The National Accreditation Board for Certification Bodies (NABCB) provides accreditation to inspection bodies in accordance with ISO/IEC 17020 standard. The Inspection Bodies (IB) provide inspection services to industry sectors including Oil & Gas sector, which is crucial to economy and involves high risk of hazards in the installation / operation of oil & gas facilities. This document specifies additional requirements that shall be complied with by the applicant / accredited inspection bodies to ensure appropriate competence for providing inspection services to the industry in oil & gas sector as well as for the regulatory / statutory bodies to rely on inspection services provided by the NABCB accredited inspection bodies for specific scope of accreditation in the oil & gas sector.

Petroleum and Natural Gas Regulatory Board (PNGRB) is the regulatory board constituted by the Government of India to protect the interests of consumers and entities engaged in specified activities relating to petroleum, petroleum products and natural gas and to promote competitive markets and for matters connected therewith or incidental thereto.

As a part of the responsibility, the PNGRB has also formulated regulations on Technical Standards and Specifications including Safety Standards in areas of:

- i) City Gas Distribution network (CGD)
- ii) Natural Gas Pipelines (NGPL)
- iii) Petroleum & Petroleum Products Pipelines (PPPL)
- iv) LNG Facilities
- v) LPG Installations (On-ground/Mounded /Refrigerated / Cavern Storage, Bulk loading/Bottling facilities etc.)
- vi) Petroleum Installations
- vii) Petroleum Refineries/Gas Processing Plants.
- viii) Integrity Management System (IMS) for CGD, NGPL and PPPL
- ix) Petroleum Retail Outlets (RO)
- x) Emergency Response & Disaster Management Plan (ERDMP) for mid and downstream sectors.

The enforcement of these regulations is monitored directly by the Board or by utilizing the services of accredited inspection bodies. A MoU between PNGRB and QCI, of which NABCB is a constituent Board, also exists in this regard. PNGRB has entrusted NABCB with reviewing the requirements for accredited Inspection Bodies in line with a regulatory mandate of PNGRB.

2.0 Scope

This document specifies the competence requirements to be followed by inspection bodies under NABCB accreditation. The Scope Sector category with respect to the above-mentioned areas of PNGRB Regulations has been formulated as per NABCB Procedural Document **BCB 503(O&G)**, to support the Inspection Bodies in classification.

3.0 PNGRB Regulations Sub-Sector Classification in Oil & Gas Sector:

The table below outlines the extant/ about to be notified applicable PNGRB regulations in mid & downstream Petroleum and Natural Gas sector:



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| PNGRB REGULATION/NOTIFICATION | | APPLICABLE TO SUB- SECTOR CATEGORY |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Codes of Practices for Emergency Response And Disaster Management Plan (ERDMP) Regulations - 2010 (As amended till date) | (a) Hydrocarbons processing installation (Refinery, Gas processing, LNG Re-gasification installations etc.); (b) Pipeline such as Natural Gas, Propane, Butane etc. and the hydrocarbons products which remain in gaseous state at NTP; (c) Liquid Petroleum Product pipeline; (d) Commercial petroleum storage facilities, gas storage facilities and terminals including LNG terminals; (e) Hydrocarbons gas bottling Installations having receiving, storage and handling facilities including storage for LPG, Propane and Butane; (f) City or local Natural Gas Distribution facilities; (g) Dispensing stations and POL retail outlets. (h) Transportation of Petroleum products by road; as per ERDMP 2020 (i) Any other installation as may be notified by the Board from time to time; |
| 2 | Technical Standards and Specifications including Safety Standards for Natural Gas Pipelines Regulations, 2009 (As amended till date) | Natural Gas Pipelines including dedicated pipelines. |
| 3 | Technical Standards and Specifications including Safety Standards for City or Local Natural Gas Distribution Networks Regulations, 2008 (As amended till date) | City or local Gas Distribution Network |
| 4 | Integrity Management System for Natural gas pipelines Regulations, 2012 (As amended till date) | Natural Gas Pipelines including dedicated pipelines. |
| 5 | Integrity Management System for City or Local Natural Gas Distribution Networks Regulations, 2013 (As amended till date) | City or Local Gas Distribution Network |
| 6. | Technical Standards and Specifications including Safety Standards for Petroleum and Petroleum Products Pipelines) Regulations 2016 (As | Petroleum and Petroleum product pipelines including dedicated pipelines. |



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| | amended till date) | |
| 7. | Technical Standards and Specifications including Safety Standards for Liquefied Natural Gas Facilities Regulations-2018 (As amended till date) | Liquefied Natural Gas (LNG) Facilities |
| 8. | Technical Standards and Specifications including Safety Standards for Retail Outlets dispensing Petroleum, Auto LPG, and CNG Regulations-2018 (As amended till date) | Retail Outlets for Petroleum, Auto LPG, CNG, LCNG, LNG Dispensing |
| 9. | Technical Standards and Specifications including Safety Standards for LPG Storage, Handling and Bottling Facilities Regulations-2019 (As amended till date) | LPG Storage, Handling and Bottling facilities |
| 10. | Third Party Conformity Assessment Regulations-2015 (As amended till date) | Third Party Inspection Agencies (TPIA) of Oil & Gas installations/facilities in mid and downstream sectors |
| 11 | Technical Standards and Specifications including Safety Standards for Petroleum Installations) Regulations, 2020 (As amended till date) | Petroleum installations, AFS, and Lube Plants |
| 12 | Integrity Management System for Petroleum and Petroleum Products Pipelines Regulations 2021 (As amended till date) | Petroleum and Petroleum Products Pipelines |
| 13 | Technical Standards and Specifications including Safety Standards for Petroleum Refineries and Gas Processing Plants) Regulations, 2023 | Petroleum Refineries and Gas Processing Plants |



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4.0 Competence Requirements for Inspection Bodies accredited as per requirements of PNGRB's Third Party Conformity Assessment Regulations-2015- As amended till date:

Competencies for T4S & IMS auditing and ERDMP verification as per PNGRB Regulations:

| S.No. | STREAM Of ENGINEERING/ SCIENCE | EDUCATION & EXPERIENCE DETAIL | |
|-------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Qualification & Experience | Experience requirements |
| 1. | Mechanical / Metallurgy /Materials/Production | B.E. / B. Tech/ AMIE or equivalent in: Mechanical /Metallurgical Engineering from recognized institution and having work experience of minimum 5 years in Oil & Gas Sector post qualification. | Essential: Awareness: a) PNGRB Regulations and PNGRB circulated checklists for T4S & IMS audits and ERDMP b) BIS/OISD/ other Standards c) Statutory requirements under Petroleum Rules/ Gas Cylinder Rules, SMPV (U) Rules, etc. d) Awareness of Risk Assessment/ Analysis/QRA e) Applicable national / international codes such as API, ASME, NACE, NFPA etc. f) Knowledge of IB documentation of technical procedures, Checklists, Formats etc. g) Knowledge of Operation & Maintenance Additionally , at least one of the following: a) Non Destructive Testing (NDT) Level –II ISNT /ASNT in Ultrasonic /Radiography / Magnetic Particle Testing, Thickness Survey b)Experience in Procurement /Inspection/ Audits/Acceptance /Laying/ testing of on-shore/off shore pipeline Cathodic Protection / Wrapping /Coating practices & associated Testing c)Preventive/Predictive Maintenance of Rotary & Static Mechanical equipment. d)Safety Audits e)Computer proficiency, Communication & Report writing skills |
| 2. | CIVIL / STRUCTURAL ENGINEERING | B.E. / B.Tech/ AMIE or equivalent in: Civil Engineering from a recognized institution and having work | Essential: Awareness of: a) PNGRB Regulations and PNGRB circulated checklists for T4S & IMS audits and ERDMP |



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| | | <p>experience of minimum 5 years in Oil & Gas Sector post qualification.</p> | <p>b) BIS/OISD/ other Standards</p> <p>c) Statutory requirements under Petroleum Rules/ Gas Cylinder Rules etc.</p> <p>d)Applicable national / international codes such as API, ASME, NACE, NFPA etc.</p> <p>e) Risk Assessment/ Analysis/QRA</p> <p>f) Pipeline stress analysis / Structural integrity</p> <p>g) Geographical Information System (GIS)</p> <p>h) Knowledge of IB documentation of technical procedures, Checklists, Formats etc.</p> <p>i) Knowledge of Operation & Maintenance</p> <p>Additionally, at least one of the following:</p> <p>a) Design/Construction/Cathodic Protection /Wrapping/Coating practices.</p> <p>b) Procurement /Inspection /Acceptance / testing of pipeline /operation / safety</p> <p>c) Safety Audits</p> <p>e) Computer proficiency, Communication & Report writing skills</p> |
| 3. | <p>ELECTRICAL/ CONTROL /INSTRUMENTATION</p> <p>:</p> | <p>B.E. / B.Tech/ AMIE or equivalent in:</p> <p>Electrical/ Electronics/ Instrumentation & Control Engineering from a recognized institution and having work experience of minimum 5 years in Oil & Gas Sector post qualification</p> | <p>Essential:</p> <p>Awareness of:</p> <p>a) PNGRB Regulations and PNGRB circulated checklists for T4S and IMS audits and ERDMP</p> <p>b) Statutory OISD standards, BIS Standards on Electrical Earthing, Area Classification and Selection of Electrical Equipment</p> <p>c) Statutory requirements under Petroleum Rules/ Gas Cylinder Rules etc.</p> <p>d) Awareness of Risk Assessment/ Analysis / QRA</p> <p>e) Applicable national / international codes such as API, ASME, NACE, NFPA etc.</p> <p>f) Knowledge of IB documentation of technical procedures, Checklists, Formats etc.</p> <p>g) Electrical Maintenance of HT & LT Rotary and Static Equipment, Sub-station equipment and facilities</p> <p>h) Inspection/Testing of electrical equipment</p> |



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| | | | <p>i) Cathodic Protection /Coating/Wrapping</p> <p>j) Selection of equipment /instrument for hazardous zones, specific maintenance / testing requirements.</p> <p>k) Instrument / Control equipment Maintenance / /Inspection /Testing, UPS/DCS maintenance/ Inspection/testing, Logics, Interlocks, Communication equipment, operation/safety.</p> <p>l) Operation & Maintenance</p> <p>Additionally, at least one of the following:</p> <p>a) Safety Audits</p> <p>b) Computer proficiency, Communication & Report writing skills</p> |
| 4. | <p>CHEMICAL/PETROLEUM /PETROCHEMICAL/PROCESS Engineer</p> | <p>B.E/ B.Tech. / AMIE/ in: Chemical/ Petroleum / Petrochemical Engineering from a recognized institution and having work experience of minimum 5 years for Engineering in Oil & Gas Sector post qualification</p> | <p>Essential:</p> <p>Awareness of:</p> <p>a) PNGRB Regulations and PNGRB circulated checklists for T4S and IMS audits + ERDMP</p> <p>b) Statutory OISD standards, BIS Standards on Area Classification and Selection of Electrical Equipment</p> <p>c) Statutory requirements under Petroleum Rules/ Gas Cylinder Rules etc.</p> <p>d) Awareness of Risk Assessment/ Analysis /QRA</p> <p>e) Applicable national / international codes such as API, ASME, NACE, NFPA etc.</p> <p>f) Knowledge of IB documentation of technical procedures, Checklists, Formats etc.</p> <p>g) Chemical Hazards/HAZID/HAZOP/Risk Assessment</p> <p>h) Procurement/Inspection/Acceptance/laying/ & associated Testing/operation/safety.</p> <p>i) Operation & Maintenance</p> <p>Additionally, at least one of the following:</p> <p>a) Safety Audits</p> <p>b) Computer proficiency, Communication & Report writing skills</p> |



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| 5. | Health, Safety and Environment | B.E./B. Tech. /AMIE with Diploma in Industrial Safety/ Degree in Fire Engineering from a recognized institution and having work experience of minimum 5 years in Oil & Gas Sector post qualification | <p>Essential:</p> <p>Awareness of:</p> <p>a) PNGRB Regulations and PNGRB circulated checklists for T4S & IMS audits and ERDMP of installations as per Regulation-2010</p> <p>b) Statutory OISD standards, BIS Standards on Area Classification and Selection of Electrical Equipment</p> <p>c) Statutory requirements under Petroleum Rules/ Gas Cylinder Rules etc.</p> <p>d)Applicable national / international codes such as API, ASME, NACE, NFPA etc.</p> <p>e) Risk Assessment/ Analysis/QRA/HAZID</p> <p>f) HSE in operation / maintenance / testing / construction /commissioning/de-commissioning etc.</p> <p>g) Operation & Maintenance</p> <p>Additionally, at least one of the following:</p> <p>a) Safety Audits</p> <p>b) Computer proficiency, Communication & Report writing skills</p> |
|----|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

5.0 TEAM COMPOSITION:

Minimum Nos. of auditors/inspectors with required competencies (see Item No. 4) are required for Site visit Audits and Verification of PNGRB Regulations by TPIA as per revised **Annexure-1, dated 30-12-2024**

NOTES:

A. Mandatory (with the term “Shall”) requirements:

• ERDMP Audit:

Refinery:

The Audit Team shall include one HSE and One Process engineering member for ERDMP Inspection in the Refinery. Other members shall have O&M experience (Mechanical/ Electrical / Instrumentation) in Refinery.

Gas Processing/ LPG Recovery & Other downstream sectors:

The Audit Team shall include O & M and HSE experience (Mechanical/ Electrical / Instrumentation) in field where ERDMP audit is taking place.



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- **T4S Audit:**

- i) **LPG and PI:**

T4S Audit team shall include one HSE member. Other member(s) shall have O&M experience in Mechanical/ Electrical / Instrumentation in LPG/ Petroleum installations as the case may be.

- ii) **CGD, NGPL, PPPL, RO**

- iii) T4S/IMS audit team shall include one HSE member. Other member (s) shall have O&M experience in Mechanical/ Electrical / Instrumentation in **CGD, NGPL, PPPL, RO as relevant to the installation.**

- iv) **Refinery/ Gas Processing (GPU) / LPG Recovery Unit (LRU):**

T4S audit team for a Refinery shall include one HSE member and One Process engineering member, having experience of related field. Other team members for T4S audit in the Refinery shall have O&M experience (Mechanical/ Electrical / Instrumentation) in the Refinery.

T4S audit team for Gas Processing Unit/ LPG Recovery Unit shall include one HSE member. Other team members for T4S audit in Gas Processing Unit/ LPG recovery Unit shall have O&M experience (Mechanical/ Electrical / Instrumentation) in either of GPU / LRU.

HSE member may be a qualified HSE professional or a retired HOD-HSE department of Oil Industry Safety Directorate (OISD) or PNGRB.

B. General Requirement:

The Inspecting Body (IB) shall carry out due diligence and make sure that the inspection team being recommended to PNGRB for Site Visit approval for any audit/inspection shall have **relevant experience of product/facility to be audited** in the following fields:

- Audits
- Safety
- O&M (Electrical/ Mechanical/ instrumentation)
- Inspection
- Preventive/Predictive/OEM type/ Breakdown/ Risk Based Maintenance

6.0 Documentation for Competence:

Inspection Bodies would be required to maintain records of knowledge and competence evaluation of it's personnel on annual basis. This shall be applicable even if the teams are regularly carrying out Inspection/Audit work. Attrition of competent personnel and action taken/being taken shall be informed to NABCB & PNGRB every six months.



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Note:

1. The Audit Team shall ensure that the risk analysis is carried out by the entities to ensure the adequacy of the QRA and other safety studies.
2. Team approval from PNGRB shall be obtained before document review.
3. Documents review shall be completed before proceeding with the site visit.
4. The concerned Technical Manager of IB shall review all audit and compliance reports before submission to PNGRB/Entity.
5. The audit team shall ensure that inspection of all critical areas is conducted, and reference document number is mentioned in the audit checklist.
6. Minimum man-days for the Site visit shall be as per revised *Annexure-1, dated 30-12-2024*. Adequate additional man-days for the desktop review, report compilation, compliance review, certificate issuance, etc., shall be ensured

7.0 Amendment Record

| <u>Date</u> | <u>Auth. By</u> | <u>Description of Amendment</u> |
|-------------|-----------------|---------------------------------------------------------------------------------------------------|
| 20.08.2020 | NABCB TC | Inclusion of Competencies needed for carrying out T4S audit as per LPG, LNG Regulations of PNGRB. |
| 09.10.2020 | NABCB TC | Inclusion of comments of TC members. |
| 09.02.2021 | NABCB TC | Inclusion of comments by PNGRB. |
| 31.01.2024 | NABCB TC | Inclusion of Comments by TC members /PNGRB. |
| 21.08.2024 | NABCB TC | Inclusion of Comments of PNGRB |
| 30.12.2024 | NABCB TC | Inclusion of Comments of PNGRB |