

The National Board  
Body of Knowledge  
for the  
**Repair Inspector**



SINCE 1919

Approved by:  8-25-25  
Executive Director Approval Date

**The National Board of Boiler and Pressure Vessel Inspectors**  
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# The National Board Body of Knowledge for the **Repair Inspector (R)**

The National Board has developed this Body of Knowledge to outline the duties, responsibilities, knowledge, and skills required for the inspection of pressure-retaining items during a repair or alteration.

## \* **Objectives**

An Individual responsible for inspection of pressure-retaining items during a repair or alteration should have knowledge of, and the ability to apply that knowledge, for the following:

- Material Identification
- Welding
- Nondestructive Examination
- Heat Treatment
- Pressure Testing
- Quality Management Systems
- Joint Review Process
- Repairs and Alterations
- Inspector Diary

## **Reference Material**

The following reference material is required to obtain and apply the knowledge of the listed objectives in this Body of Knowledge.

- NB-263, RCI-1, *Rules for Commissioned Inspectors*
- *National Board Inspection Code, Part 3, Repairs and Alterations*
- ASME Section I, *Rules for the Construction of Power Boilers*
- ASME Section IV, *Rules for the Construction of Heating Boilers*
- ASME Section VIII, Div. 1, *Rules for the Construction of Pressure Vessels*
- ASME Section IX, *Welding, Brazing, and Fusing Qualifications*
- ASME B31.1, *Power Piping*
- NB-415, *Accreditation of "R Repair Organizations*

## Body of Knowledge Outline

This outline provides information regarding the listed objectives of this Body of Knowledge, and further describes the duties and responsibilities of the Repair Inspector.

1. Material Identification  
\* Ability to identify existing material and to verify only intended and acceptable material (including welding material) with proper identification is used for repairs and alterations.
  
2. Welding  
Ability to evaluate documents associated with welded repairs/alterations; understanding of requirements for Welding Procedure Specifications (WPS), Standard Welding Procedures Specifications (SWPS), Procedure Qualification Records (PQR), and Welder/Operator Performance Qualification (WQP/WOPQ).
  
3. Nondestructive Examination  
\* Ability to define and understand the requirements and guidelines for performing examinations for the repair and alteration of pressure-retaining items; ability to define and understand the principles of the following nondestructive examination methods:
  - radiography
  - ultrasonic
  - magnetic particle
  - liquid penetrant
  - visual

Familiarity with written procedures and personnel qualifications for each nondestructive examination method and ability to determine the proper nondestructive examination methods to be used is also necessary.
  
4. Heat Treatment  
Ability to define and understand the general requirements for preheating, interpass temperature control, postweld heat treatment, and alternative welding methods without postweld heat treatment.
  
5. Pressure Testing  
Ability to define and understand the requirements and guidelines for performing examinations and tests for the repair and alteration of pressure-retaining items; ability to define and understand the different pressure testing methods and principles, such as:
  - liquid pressure test
  - pneumatic test
  - initial service leak test
  - vacuum test

- \* 6. Quality Management Systems  
Ability to identify and understand the elements of a Quality Management System as described in the *National Board Inspection Code, Part 3, Repairs and Alterations*, for the “R” stamp.
  - 7. Repairs and Alterations  
Familiarity with the requirements for repairs and alterations of pressure-retaining items, as outlined in *National Board Inspection Code, Part 3, Repairs and Alterations*.
  - \* 8. Inspector Diary  
Familiarity with the Inspector Diary requirements for use of the National Board Commission and Endorsements related to Repair Inspector activity, including monitoring of the Certificate Holder’s Quality Management System.
- \* For individuals involved with inspection of nuclear repair/replacement activities, the following also applies:
- Ability to verify repair/replacement activities are performed in accordance with the Owner’s Quality Assurance Program
  - Ability to review the Quality Assurance Program and its implementation