



**THE NATIONAL BOARD
BODY OF KNOWLEDGE
FOR
REPAIR INSPECTORS**

Approved by: _____


Executive Director

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(date of approval)

*Denotes Revisions

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THE NATIONAL BOARD

BODY OF KNOWLEDGE FOR REPAIR INSPECTORS

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

OBJECTIVES

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

- Material Identification
- Welding
- Nondestructive Examination
- Heat Treatment
- Pressure Testing
- Quality Systems
- Repairs and Alterations

REFERENCE MATERIAL

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

- RCI-1, NB-263, *Rules for Commissioned Inspectors*
- *National Board Inspection Code, Part 3*
- ASME Section I, *Power Boilers*
- ASME B.31.1, *Power Piping*
- ASME Section IV, *Heating Boilers*
- ASME Section VIII, Division 1, *Pressure Vessels*
- ASME Section IX, *Welding and Brazing Qualifications*
- NB-415, *Accreditation of Repair Organizations*

Approved translations are acceptable.

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 acceptable new 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 and tests for the repair and alteration of pressure-retaining items; ability to define and understand the principles of the following nondestructive examination methods:

- radiography
- ultrasonic testing
- magnetic particle testing
- liquid penetrant testing
- visual testing

Familiarity with written procedures and personnel qualifications for each nondestructive examination method and ability to determine the proper selection of nondestructive examination method 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 Systems*

Ability to identify and understand the elements of a quality 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*.