



# The National Board Body of Knowledge for

## Certified Individuals Pressure Relief Devices

Approved by: \_\_\_\_\_



Executive Director

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(date of approval)

\*Denotes Revisions

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# The National Board

## Body of Knowledge for Certified Individuals (PRD)

The National Board has developed this Body of Knowledge to outline the duties, responsibilities, knowledge, and skills required of the Certified Individual providing oversight to ensure each application of the V, HV, UV, or UD Code Symbol Stamp meets all applicable Code requirements. It is recognized each organization will have differing scopes of work, and the Certified Individual should be most familiar with the organization's products and the Code requirements applicable to those products.

### Objectives

Depending upon the scope of work performed by the organization (manufacturer and/or assembler), the Certified Individual should have knowledge, and the ability to apply that knowledge, of the following:

- Duties of the Certified Individual
- Capacity Certification
- Material Requirements
- Mechanical Requirements
- Testing Requirements
- Pressure Testing
- Performance Testing
- Welding
- Heat Treatment
- Nondestructive Examination
- Documentation
- Quality Systems

### Reference Material

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

- ASME Section I, *Rules for Construction of Power Boilers*
- ASME Section IV, *Rules for Construction of Heating Boilers*
- ASME Section VIII, Division 1, *Rules for Construction of Pressure Vessels*
- ASME CA-1, *Conformity Assessment Requirements*
- ASME QAI-1, *Qualifications for Authorized Inspection*
- National Board *Pressure Relief Device Certifications*, NB-18
- National Board *Rules for Certified Individuals* NB-383

*Approved translations are acceptable.*

## **The National Board Body of Knowledge for Certified Individuals (PRD)**

This outline provides information regarding the listed objectives of this Body of Knowledge, and further describes the duties and responsibilities of the Certified Individual, depending upon the scope of the designator.

### **1. *Duties and Responsibilities***

Familiarity with and understanding of ASME CA-1, QAI-1, and the applicable ASME Code section as they relate to the following:

- Provide oversight and verify each application of the V, HV, UV, and/or UD Designator meets all applicable requirements of the ASME Code.
- Verify pressure relief devices have current capacity certifications.
- Review documentation and verify Code requirements have been met.
- Sign appropriate Certificate of Conformance prior to release of the item.

### **2. *Capacity Certification***

Understanding of and ability to determine the requirements for capacity certification which include the following:

- Original design test
- Procedure for reviewing design when changes are made to the flow path, lift, or performance
- Production testing
- Status of capacity certification of current designs
- Calculation of nameplate capacities

### **3. *Materials Requirements***

Familiarity with material requirements applicable to pressure relief valves and devices which include permitted materials for the following:

- Bodies, bonnets and yokes, and rupture disk holders
- Valve internal parts and rupture disks
- Assemblers

### **4. *Mechanical Requirements***

Ability to determine mechanical requirements based upon applicable rules for the following equipment types:

- Lifting levers (Applies to V, HV, UV)
  - For ASME Section I, exceptions for PVG and PTFH
- Sealing of adjustments and seal identification
  - For pin devices, sealing of critical parts
- Body drains
  - For ASME Section I, exceptions for PVG and PTFH

### **5. *Testing Requirements***

Familiarity with and understanding of all applicable testing requirements.

## 6. *Pressure Testing*

Understanding of and ability to determine pressure testing requirements for the following:

- Pressure containing parts
- Hydrostatic tests
- Pneumatic tests
- Methods used to indicate the completion of a pressure test

## 7. *Performance Testing*

Understanding of and ability to determine performance testing requirements for the following:

- Set pressure tests and tolerances
- Permitted test media
- Alternative test mediums
- Cold differential test requirements
- Temperature testing for rupture disks and pin devices
- Blowdown tests
- Tolerances
- Test methods used
- Provisions for alternative test methods (lift assist)
- Setting of blowdown control elements
- Seat leakage tests
- Test procedures and acceptance criteria
- Secondary pressure zone tests
- Test medium
- Test pressure used
- Acceptance criteria

## 8. *Welding*

Ability to determine the requirements for welding which include the following:

- Acceptable weld procedures
- Procedure qualifications
- Qualification of welder
- Identification of welder
- Parts covered by the Code welding program (No HV scopes include welding)

## 9. *Heat Treatment*

Familiarity with and understanding of postweld heat treatment.

## 10. *Nondestructive Examination*

Ability to determine the requirements for nondestructive examination (NDE) which include the following:

- Personnel qualification requirements
- When volumetric examination is required

## 11. Documentation

Familiarity with and understanding of the required documentation which include the following:

- Production documents, such as the traveler, route card, test report, etc.
- Status markers used in production, such as tags, stamps, bar codes, etc.
- Certificate of Conformance
  - Retention period
  - Organization and storage
- Retention of all production documentation

## 12. Quality Systems

Understanding of the required elements of the quality system, dependent upon the scope of the manufacturer or assembler's activities and the processes employed in construction or assembly, which include the following:

- Written description of a quality program, including the Authority and responsibilities of the Certified Individual
  - Control and approval of quality description
  - Requirements for becoming and maintaining Certified Individual status
- Authority and responsibility
  - Ability to control problems
- Organization
- Drawing and design control
  - Method of assuring latest drawings and procedures are used
  - Method of controlling changes to documentation
- Material control
- Documentation required for incoming material
  - Method of identifying acceptable material
  - Method of controlling springs
- Examination and inspection program
  - Control of manufacturing or assembly operations
  - Provisions for performing in-process inspections
  - Provisions for final inspection
  - Control of use of ASME Code Symbols and National Board NB mark
    - Alternative marking methods
- Correction of nonconformities
  - Provisions for isolation of nonconforming parts or assemblies
  - Documentation used for NCR resolution
- Welding
  - Assignment of welding procedures to be used
  - Assurance of procedure qualification
  - Assignment of qualified welder
  - Identification of completed weld
  - Traceability of welding materials
- Nondestructive Examination (NDE)
  - Control of NDE during production
  - Assignment of NDE method
  - Documentation of results of NDE

- Heat Treatment
  - Determination of heat treatment procedure used
  - Use of calibrated equipment
- Calibration of measurement and test equipment
  - Assurance of calibration frequency and status indicators
  - Procedure for out-of-calibration items
- Record retention
  - Maintenance of P-8, HV-1, UV-1, and UD-1 Certification Forms
  - Records kept for documentation of production
- Sample Forms
  - Documentation retention requirements
- Provisions for inspection (access of ASME Designated Organization)
- Certifications
  - Control of methods other than written signatures