



NB-380 Workbook Implementation Guide

The National Board of Boiler and Pressure Vessel Inspectors

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Workbook Implementation Guide

Forward

This implementation guide is intended to provide all participants with information and recommendations that may be applied in an Inspector Candidate's path to obtaining a National Board Inservice Inspector Commission (IS) through the NB-380 program and associated Workbook. The guide clarifies many of the requirements contained in NB-380 and, as such, may also be used as a foundation for any policies and procedures the employer may choose to develop.

References

- NB-263, RCI-1, *Rules for Commissioned Inspectors*
- NB-380, *National Board Inservice Inspector Training Program*
- NB-380-1, *National Board Inservice Inspector Training Program Workbook*
- NB-380-2, *National Board Inservice Inspector Training Program Workbook Inspection Log*
- Employer Policies and Procedures

About the Program

Scope

This training program provides an alternate method for fulfilling the education and experience requirements for an Inservice Inspector Commission (IS). It includes jurisdictional inspections, various OJT activities with knowledge checks, and the completion of required National Board courses. The program is described in the National Board publication NB-380.

General Requirements

- **Body of Knowledge:** The program Body of Knowledge found in NB-380, Section 3.0, should be incorporated into training to ensure adequate coverage of the subject matter.
- **Inspections:** A minimum of 300 inspections must be recorded in the Workbook Inspection Log. NB-380, Sections 4.1 and 4.2, includes a list of appropriate objects and inspection types. Ensure that inspections are performed with an appropriate mix of objects and operating conditions.

Roles and Responsibilities

- **Inspector Candidate:** Undergoes field training and additional instruction leading to Workbook and Workbook Inspection Log completion. Participates fully with assigned mentor and trainers in fulfilling program requirements. Completes required NBBI courses and the IS Commission exam.
- **Commissioned Inspector:** Provides field training and additional instruction leading to Workbook and Workbook Inspection Log completion. Participates fully with assigned mentor and Commissioned Inspector(s) in fulfilling program requirements. Verifies that the Inspector Candidate meets each module's required knowledge checks in the NB-380 Workbook. Witnesses the Inspector Candidate has demonstrated an understanding of inspection methods in the field as required in the NB-380 Workbook.

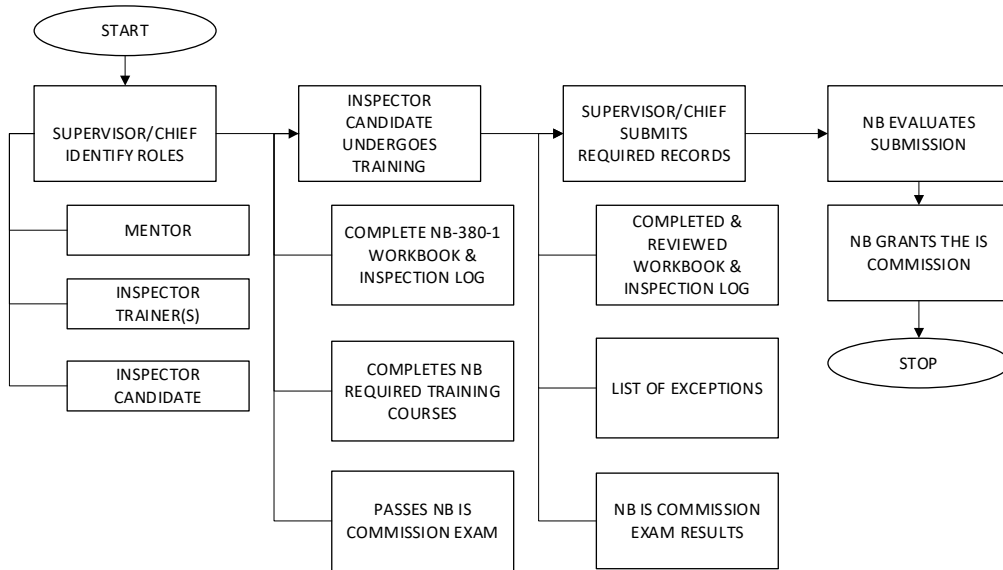
Note: Training may be provided by an individual other than a Commissioned Inspector. In these cases, the trainer may not sign the Workbook Inspection Log. A Commissioned Inspector must verify successful completion of all training by signing the Workbook Inspection Log.

- **Mentor:** Provides guidance and oversight to assigned Inspector Candidate and Commissioned Inspector(s). Must also be a Commissioned Inspector. Participates fully with assigned Inspector Candidate and Commissioned Inspector(s) in fulfilling program requirements.
- **Chief Inspector or Inspector Supervisor:** Provides oversight, coordination, and monitoring of the training program and assigned staff. Ensures that prior acceptance of exceptions is obtained from the NB. Performs final reviews of completed modules and the Workbook Inspection Log.

Nominal Training Path

This process diagram represents a nominal sequence of training and administrative events for an Inspector Candidate. While most of the activities may be carried out and completed in any order:

- Program roles should be assigned first.
- The virtual NBBI Boiler and Pressure Vessel Fundamentals Seminar should be completed before attending the Inservice Inspector Commission Course (IS).
- All required activities shall be completed, and records reviewed and approved before submitting the package to NBBI for acceptance.



About the Workbook

Workbook Composition

- **Online Courses:** The Workbook Inspection Log lists the required online courses.
- **Modules:** The Workbook Inspection Log consists of seven modules, representing the major knowledge areas. They may be addressed simultaneously or in any sequence.
- **Reviews and Verifications:** The Chief Inspector or Inspector Supervisor attests that the Inspector Candidate has fulfilled all program requirements and is eligible for the IS Commission.

Module Elements

- **Knowledge Checks:** The Inspector Candidate demonstrates satisfactory knowledge and understanding of a specific inspection topic.
- **Practical Applications:** The Inspector Candidate actively demonstrates an understanding of a field inspection method or activity.
- **Module Assessments:** The Inspector Candidate demonstrates successful retention of subject matter from each Workbook Inspection Log module through written or oral testing by the Chief Inspector or Inspector Supervisor.

About the Workbook Inspection Log

- **Purpose:** The Workbook Inspection Log records the Inspector Candidate's participation in 300 or more boiler and pressure vessel inspections. Alternatives to the NB-380-2, *Workbook Inspection Log*, may be used subject to prior NBBI acceptance.

- **Implementation:** While the standard NB-380-2, *Workbook Inspection Log*, may be modified to suit the training organization, the information contained therein should be considered the minimum information required for successful completion and submission, including alternative logs. Each organization should develop guidelines for maintaining the log to meet their needs while adhering to the minimum requirements.

Note: Only Commissioned Inspectors may sign off items in the Workbook Inspection Log.

Training Exceptions

- **Overview:** In cases where a Practical Application cannot be successfully performed after reasonable means have been taken, a Workbook Inspection Log exception may be requested. NBBI determines in advance if the exception is acceptable or needs to be readdressed. The number of exceptions requested should be kept to an absolute minimum.
- **Recording Exceptions:** Exceptions to the Workbook or Workbook Inspection Log should be annotated next to the training item in a readily identifiable manner and refer to the exceptions list. The exceptions list may be a separate document or included in the Comments section of the Workbook. It should adequately describe the alternative action taken to address the requirements of the Practical Application.

Program Completion

- **Final Review:** Mentors should work with the Commissioned Inspector(s) to review the completed Workbook, Workbook Inspection Log, and exceptions list to ensure all training items have been completed and verified prior to submission.
- **Submission:** The Chief Inspector or Inspector Supervisor shall review and approve the Workbook, Workbook Inspection Log, and other records before submitting the IS Commission application to the National Board.

Training Techniques and Approaches

FOR CHIEF INSPECTORS/INSPECTOR SUPERVISORS

- Get the Inspector Candidate out and inspecting as early as possible. This will provide context as they connect information from code books and reference materials with their experience in the field.
- Assign multiple Commissioned Inspectors to Inspector Candidates. Every Commissioned Inspector brings varied experiences, unique perspectives, and preferred processes to their field activities. Inspector Candidates need to see

different approaches as they build their own repertoire of skills. If you are the only inspector available for training, try to present alternatives to your normal approach.

- Training inspections take more time, so plan accordingly. The Commissioned Inspector and the equipment owner need to allow more time for thorough training to be completed. To start, plan on training inspections that take twice as long as routine inspections, then adjust your schedule as necessary.
- Course timing requires coordinated scheduling and completion of required NBBI courses with training progression in mind. For example, assign the PRD course with module 7, the RCI-1 course after some time in the field, etc. Availability will drive the timing of the NBBI IS Commission course, but be sure to complete the online BPV Fundamentals course before taking the NBBI IS Commission course.

FOR COMMISSIONED INSPECTORS

- Utilize driving time for training. The drive between locations is an excellent opportunity for knowledge checks, especially if the Inspector Candidate is riding with you. Relating knowledge checks to equipment inspected that day is particularly beneficial.
- Knowledge Checks are a chance for Inspector Candidates to demonstrate their knowledge, but also an opportunity to learn. Inspector Candidates should demonstrate a solid understanding of a subject during a knowledge check, but they shouldn't be expected to be a complete expert on the topic. When an Inspector Candidate gets hung up on a question, feel free to prompt them or help fill in some of the blanks. Not only are they more likely to retain the information when absorbed as part of the larger conversation, but you might be surprised at how much additional information the Inspector Candidate may be able to share once your prompting makes the connection.
- "Look-ups" are critical training tools. No Commissioned Inspector knows the answer to every code question. Memorizing a code doesn't help because codes are updated and changed. Train Inspector Candidates to identify the appropriate code book and locate the applicable code reference. When an Inspector Candidate doesn't know or can't quickly deduce the answer to a question, have them look it up (immediately, if possible). This will help them build a strong familiarity with the code books. Early on, you need to guide them to find the answer without taking them straight to it. For example, you can say things like, "This is a question about relief valve capacity; which book specifically covers relief valves?" or "This is a newly installed heating boiler; which section of Part 1 addresses heating boilers?" Do not forget to highlight

the usefulness of the table of contents! As Inspector Candidates progress, you should reduce your prompting to allow them to reinforce their familiarity with repetition.

- Knowledge checks are a great opportunity to go on a tangent. So much of what we do is interconnected. When conducting a knowledge check, allowing your conversation to branch out into related topics will help candidates fit the information into the larger picture. For example, you could rephrase a question by saying something like, "How would your answer change if we were talking about a power boiler instead of a low-pressure steam boiler?" You can also prompt for additional information, for example: "Yes, an emergency shutoff switch is a required safety device. Where would a switch need to be located if this room were an equipment room?"
- Reinforce valid information, even if it is not the information you were asking for. There is so much knowledge for an Inspector Candidate to absorb, especially if they have minimal experience in the industry. It can be easy for them to get frustrated with their progression, especially early on. It's important to reinforce valid information they've retained, even if they share it when you're looking for something else. For example, if you asked a question about power boilers and received an answer that would be true for a low-pressure boiler, you could say, "That's true for low-pressure boilers, so good work remembering that, but let's think about why the answer might be different for power boilers." This approach will help reinforce the candidate that they are learning while still prompting them to figure out the correct answer.
- Be vocal when demonstrating Practical Applications. Explaining what you are about to do and describing the details while doing it will help Inspector Candidates better understand and retain inspection techniques. For example, state: "Next I'll be visually inspecting the outer shell of this air tank for dents, bulges, and cracks." Then, explain the details while performing the action: "I am holding my flashlight at an angle so that dents will create visible shadows. I'm looking at the furthest most edge of the shell while walking around it so that bulges are more readily apparent." These kinds of details will help candidates better understand what you are doing and why you are doing it.
- Expect your Inspector Candidates to be vocal as well. When performing Practical Applications, Inspector Candidates should explain what they plan to do before doing so and provide details after you confirm that they should continue with the action. This keeps you in full control of the inspection while also allowing you to assess the Inspector Candidate's level of understanding of Inspection tasks.

- Mix up things. While it is great to focus on a particular topic for a while, it can become difficult for an Inspector Candidate to remain focused on any one subject for too long. Try not to spend more than a few days on a single topic without introducing something new or doing refresher training on completed subjects.

Frequently Asked Questions

The National Board's website has a list of NB-380 program FAQs. Here are a few additional FAQs related to Inspector Candidate training.

1. What is an "inspection?" May I perform more than one "inspection" at a location?

An inspection is an activity where a pressure retaining item (boiler or pressure vessel) is examined and assessed for the *National Board Inspection Code* (NBIC) and jurisdictional compliance. More than one object may be inspected at each location.

2. How do I determine which objects are acceptable in fulfilling the requirement to perform 300 or more inspections?

NB-380, Section 4.0 includes a list of appropriate boilers and pressure vessels for inspection. Commissioned Inspectors should select an appropriate mix of various types of boilers and pressure vessels and internal and external inspections.

3. How do I record completed inspections?

Completed inspections are recorded in the NB-380-2, *Workbook Inspection Log*, and verified by a Commissioned Inspector's sign-off. The Chief Inspector or Inservice Inspector Supervisor shall review and sign the completed Workbook Inspection Log before submission.

4. What information should I record in the Workbook Inspection Log?

Refer to the Help tab of the Workbook Inspection Log for instructions on completing the Workbook Inspection Log. **Note:** Column H (the seventh column) is used for progress tracking, and its use is optional.

5. Can I customize the NB-380-2, *Workbook Inspection Log*?

The use of alternate inspection logs is permitted with prior NB acceptance. The minimum required information for alternate inspection logs (less the optional Total Hours column) is in the NB-380-2, *Workbook Inspection Log*.