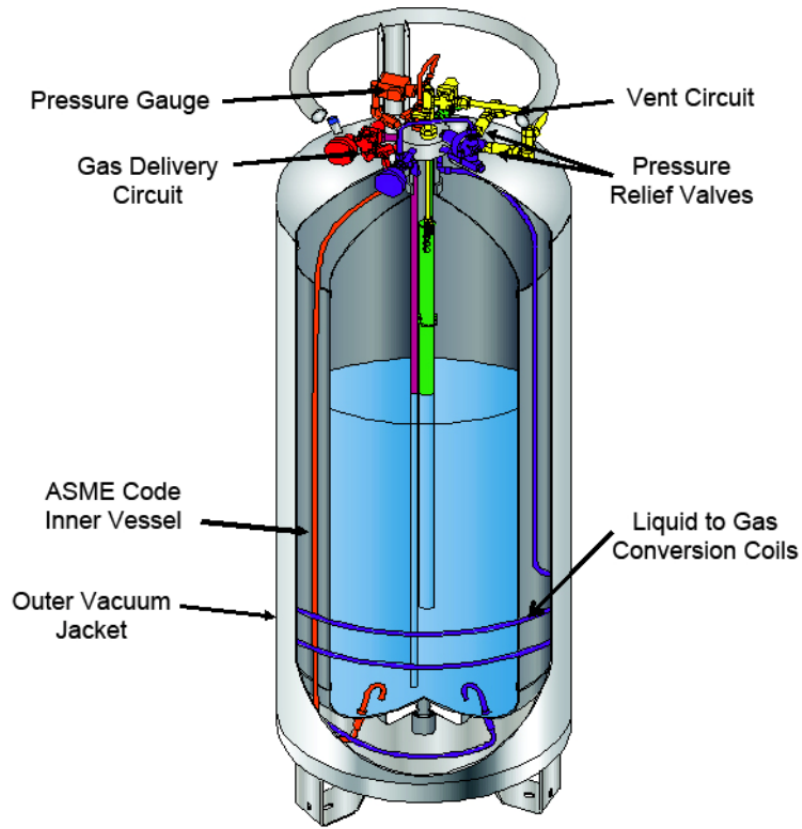


2013 NBIC
PART 1, SECTION 1
INSTALLATION – GENERAL GUIDELINES



5.13.4.1 INSTRUCTIONS FOR COMPLETING NATIONAL BOARD FORM “R” REPORTS

These instructions are to be used when completing the National Board Form “R” Reports. When computer generated, the format of the form shall replicate the type and relative location of the information depicted on the Form “R” Reports shown in NBIC Part 3, 5.13.1 through 5.13.4.

1. The name and address of the “R” Certificate Holder performing the work as it appears on the “Certificate of Authorization”. On a Form R-2, the organization that performed the design work will complete line 1a) and the organization completing the construction activities will complete line 1b).
2. When registering a Form “R” Report with the National Board, this line is solely designated for a unique sequential number assigned by the “R” Certificate Holder. When the “R” Form is not to be registered, indicate so by “N/A”. As described in NBIC Part 3,5.6, a log shall be maintained identifying sequentially, any Form “R” registered with the National Board. For re-rating only, the Design Organization registers the Form R-2. Where physical work is also performed, the Construction Organization registers the Form R-2.
3. Name and address of the Owner of the pressure-retaining item.
4. Name and address of plant or facility where the pressure-retaining item is installed.
5. Description of the pressure-retaining item, such as boiler or pressure vessel, or piping. Include the applicable unit identification.
6. Name of the original manufacturer of the pressure-retaining item. If the original manufacturer is unknown, indicate by, “unknown”.
7. Document the serial number of the pressure-retaining item if assigned by the original manufacturer. If there is no serial number assigned or is unknown, indicate “unknown”.
8. When the pressure-retaining item is registered with the National Board, document the applicable registration number. If the pressure-retaining item is installed in Canada, indicate the Canadian design registration number (CRN), and list the drawing number under “other.” If the item is not registered, indicate, “none”.
9. Identify the year in which fabrication/construction of the item was completed.
10. Indicate edition and addenda of the NBIC under which this work is being performed.
11. Indicate the name, section, division, edition, and addenda of the original code of construction for the pressure-retaining item. Also indicate the name, section, division, edition, and addenda of the construction code used for the work being performed. If code cases are used, they shall be identified in the “Remarks” section.
12. Provide a detailed summary describing the scope of work that was completed to a Pressure Retaining Item (PRI). The information to be considered when describing the scope of work should include such items as, the nature of the repair or alteration (i.e. welding, bonding, cementing), the specific location of the work performed to the PRI, the steps taken to remove a defect or as allowed by 3.3.4.8 to remain in place, the method of repair or alteration described as listed in the examples of Part 3, Section 3 or supplemental section if applicable, and the acceptance testing and or examination method used in accordance with the NBIC. When additional space is needed to describe the scope of work, a Form R-4 shall be used and attached. Information determined to be of a proprietary nature need not be included , but shall be stated on the Form.

A13

SUPPLEMENT 7**INSPECTION OF PRESSURE VESSELS IN LIQUEFIED PETROLEUM GAS (LPG) SERVICE****S7.1 SCOPE**

- a) Containers designed for storing LPG can be stationary or can be mounted on skids. LPG is generally considered to be non-corrosive to the interior of the vessel. NBIC Part 2, Supplement 7, is provided for guidance of a general nature for the Owner, user, or jurisdictional authority. There may be occasions where more detailed procedures will be required such as changing from one service to another (i.e., above ground to underground; or containers that are commercially refurbished). A13
- b) The application of this Supplement to underground containers will only be necessary when evidence of structural damage to the vessel has been observed, leakage has been determined, or the tank has been dug up, and is to be reinstalled. Special consideration will be given to containers that are going to be commercially refurbished (See NBIC Part 2, S7.J.) A13

S7.2 PRE-INSPECTION ACTIVITIES

- a) A review of the known history of the container should be performed. This should include a review of information, such as: A13
- 1) Operating conditions;
 - 2) Historical contents of the vessel;
 - 3) Results of any previous inspection;
 - 4) Current jurisdictional inspection certificate, if required;
 - 5) ASME Code symbol stamping or mark of code of construction, if required; and
 - 6) National Board and/or jurisdictional registration number, if required.
- b) The container shall be sufficiently cleaned to allow for visual inspection. For commercially refurbished containers see NBIC Part 2, S7.J. A13

S7.3 INSERVICE INSPECTION FOR VESSELS IN LP GAS SERVICE

The type of inspection given to pressure vessels should take into consideration the condition of the vessel and the environment in which it operates. The inspection may be external or internal, and use a variety of nondestructive examination methods. Where there is no reason to suspect an unsafe condition or where there are no inspection openings, internal inspections need not be performed. When service conditions change from one service to another, i.e. above ground to underground; or containers that are commercially refurbished, an internal inspection may be required. The external inspection may be performed when the container is pressurized or depressurized, but shall provide the necessary information that the essential sections of the vessel are of a condition to operate. A13

S7.3.1 NONDESTRUCTIVE EXAMINATION (NDE)

A13 Listed below are a variety of methods that may be employed to assess the condition of the pressure vessel. These examination methods should be implemented by experienced and qualified individuals. Generally, some form of surface preparation will be required prior to the use of these examination methods: visual, magnetic particle, liquid penetrant, ultrasonic, radiography, radioscopy, eddy current, metallographic examination, and acoustic emission. When there is doubt as to the extent of a defect or detrimental condition found in a container, additional NDE may be required.

S7.4 EXTERNAL INSPECTION

A13 The container shall be inspected for corrosion, distortion, cracking, or other conditions as described in this Section. In addition, the following should be reviewed, where applicable:

a) Insulation or Coating

A13 If the insulation or coating is in good condition and there is no reason to suspect an unsafe condition behind it, then it is not necessary to remove the insulation or coating in order to inspect the vessel. However, it may be advisable to remove a small portion of the insulation or coating in order to determine its condition and the condition of the container surface. For commercially refurbished containers see NBIC Part 2, **S7.J**.

b) Evidence of Leakage

Any leakage of vapor or liquid shall be investigated. Leakage coming from behind insulation or coating, supports, or evidence of past leakage shall be thoroughly investigated by removing any insulation necessary until the source is established.

c) Structural Attachments

The pressure vessel mountings should be checked for adequate allowance for expansion and contraction, such as provided by slotted bolt holes or unobstructed saddle mountings. Attachments of legs, saddles, skirts, or other supports should be examined for distortion or cracks at welds.

d) Vessel Connections

Components that are exterior to the vessel and are accessible without disassembly shall be inspected as described in this paragraph. Manholes, reinforcing plates, nozzles, couplings, or other connections shall be examined for cracks, deformation, or other defects. Bolts or nuts should be examined for corrosion or defects. Weep holes in reinforcing plates shall remain open to provide visual evidence of leakage as well as to prevent pressure buildup between the vessel and the reinforcing plate. Accessible flange faces should be examined for distortion. It is not intended that flanges or other connections be opened unless there is evidence of corrosion to justify opening the connection.

e) Fire Damage

Pressure vessels shall be carefully inspected for evidence of fire damage. The extent of fire damage determines the repair that is necessary, if any. (See NBIC Part 2, S7.7).

Form R-2 Report of Alteration
in accordance with provisions of the National Board Inspection Code

② _____
(Form "R" Registration no.)

(P.O. No., Job No., etc.)

1a. Design performed by: ① _____
(name of "R" organization responsible for design)

(address)

1b. Construction performed by: ② _____
(name of "R" organization responsible for construction)

(address)

2. Owner of Pressure Retaining Item: ③ _____
(name)

(address)

3. Location of Installation: ④ _____
(name)

(address)

4. Item identification: ⑤ _____ Name of original manufacturer: ⑥ _____
(boiler, pressure vessel, or piping)

5. Identifying nos: ⑦ _____ ⑧ _____ ⑧ _____ ⑧ _____ ⑨ _____
(mfg. serial no.) (National Board No.) (Jurisdiction No.) (other) (year built)

6. NBIC Edition / Addenda: ⑩ _____ ⑩ _____
(edition) (addenda)

Original Code of Construction for Item: ⑪ _____ ⑪ _____
(name / section / division) (edition / addenda)

Construction Code Used for Alteration Performed: ⑪ _____ ⑪ _____
(name / section / division) (edition / addenda)

7a. Description of Design Scope: ⑫ _____

Form R -4, Report Supplementary Sheet is attached

7b. Description of Construction Scope: ⑫ _____

Form R -4, Report Supplementary Sheet is attached

Pressure Test, if applied ⑬ _____ psi MAWP ⑬ _____ psi

8. Replacement Parts. Attached are Manufacturer's Partial Data Reports or Form R-3's properly completed for the following items of this report:

⑭ _____
(name of part, item number, data report type or Certificate of Compliance, mfg's. name and identifying stamp)

9. Remarks: 15

DESIGN CERTIFICATION

I, 16, _____, certify that to the best of my knowledge and belief the statements in this report are correct and that the Design Change described in this report conforms to the *National Board Inspection Code*.
National Board "R" Certificate of Authorization No. 17 expires on 18
Date 19 of 20 Signed 21
(name of design organization) (authorized representative)

CERTIFICATE OF DESIGN CHANGE REVIEW

I, 22, _____, holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency, where required, issued by the jurisdiction of 23 and employed by 24 of 25 have reviewed the design change as described in this report and state that to the best of my knowledge and belief such change complies with the applicable requirements of the *National Board Inspection Code*.
By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage or loss of any kind arising from or connected with this inspection.
Date 26 Signed 27 Commissions 28
(inspector) (National Board and jurisdiction no.)

CONSTRUCTION CERTIFICATION

I, 16, _____, certify that to the best of my knowledge and belief the statements in this report are correct and that all material, construction, and workmanship on this Alteration conforms to the *National Board Inspection Code*.
National Board "R" Certificate of Authorization No. 17 expires on 18
Date 19 of 20 Signed 21
(name of alteration organization) (authorized representative)

CERTIFICATE OF INSPECTION

I, 22, _____, holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency, where required, issued by the jurisdiction of 23 and employed by 24 of 25 have inspected the work described in this report on 26 and state that to the best of my knowledge and belief this work complies with the applicable requirements of the *National Board Inspection Code*.
By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage or loss of any kind arising from or connected with this inspection.
Date 27 Signed 28 Commissions 29
(inspector) (National Board and jurisdiction no.)