ASME PCC-2–2006

Repair of Pressure Equipment and Piping

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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Three Park Avenue • New York, NY 10016

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The next edition of this Standard is scheduled for publication in 2007. There will be no addenda or written interpretations of the requirements of this Standard issued to this edition.

The American Society of Mechanical Engineers
Three Park Avenue, New York, NY 10016-5990

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FOREWORD

ASME formed an Ad Hoc Task Group on Post Construction in 1993 in response to an increased need for recognized and generally accepted engineering standards for the inspection and maintenance of pressure equipment after it has been placed in service. At the recommendation of this Task Group, the Board on Pressure Technology Codes and Standards (BPTCS) formed the Post Construction Committee (PCC) in 1995. The scope of this committee was to develop and maintain standards addressing common issues and technologies related to post-construction activities and to work with other consensus committees in the development of separate, product-specific codes and standards addressing issues encountered after initial construction for equipment and piping covered by Pressure Technology Codes and Standards. The BPTCS covers non-nuclear boilers, pressure vessels (including heat exchangers), piping and piping components, pipelines, and storage tanks.

The PCC selects standards to be developed based on identified needs and the availability of volunteers. The PCC formed the Subcommittee on Inspection Planning and the Subcommittee on Flaw Evaluations in 1995. In 1998, a Task Group under the PCC began preparing Guidelines for Pressure Boundary Bolted Flange Joint Assembly. In 1999, the PCC formed the Subcommittee on Repair and Testing. In 2002, the Subcommittee on Flaw Evaluation was dissolved, and replaced by the Joint ASME/API Committee on Fitness for Service. Other topics are under consideration and may be developed into future guideline documents.

The subcommittees were charged with preparing standards dealing with several aspects of the in-service inspection and maintenance of pressure equipment and piping. The Inspection Planning Standard provides guidance on the preparation of a risk-based inspection plan. Defects that are identified are then evaluated, when appropriate, using the procedures provided in the Fitness for Service. Finally, if it is determined that repairs are required, guidance on repair procedures is provided in the Repair of Pressure Equipment and Piping Standard. These documents are in various stages of preparation.

None of these documents are Codes. They provide recognized and generally accepted good practices that may be used in conjunction with Post-Construction Codes, such as API 510, API 570, and NB-23, and with jurisdictional requirements.

The first edition of ASME PCC-1, *Guidelines for Pressure Boundary Bolted Flange Joint Assembly*, was approved for publication in 2000. ASME PCC-1-2000 was approved by the American National Standards Institute (ANSI) as an American National Standard on November 15, 2000.

The first edition of ASME PCC-2, *Repair of Pressure Equipment and Piping*, was approved for publication in 2004. This revision was approved by ANSI as an American National Standard on April 17, 2006.

PREPARATION OF TECHNICAL INQUIRIES

INTRODUCTION

The ASME Post-Construction Standards Committee will consider written requests for interpretations and revisions of the rules of this Standard and develop new rules if dictated by technological development. The Committee's activities in this regard are limited strictly to interpretations of the rules or to the consideration of revisions to the present rules on the basis of new data or technology. As a matter of published policy, ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity, and, accordingly, inquiries requiring such consideration will be returned. Moreover, ASME does not act as a consultant on specific engineering problems or on the general application or understanding of the rules. If, based on the inquiry information submitted, it is the opinion of the Committee that the inquirer should seek professional assistance, the inquiry will be returned with the recommendation that such assistance be obtained.

An inquiry that does not provide the information needed for the Committee's full understanding will be returned.

REQUIREMENTS

Inquiries shall be limited strictly to interpretations of the rules or to the consideration of revisions to the present rules on the basis of new data or technology. Inquiries shall meet the following requirements:

(a) Scope. Involve a single rule or closely related rules in the scope of the standard. An inquiry letter concerning unrelated subjects will be returned.

(b) Background. State the purpose of the inquiry, which may be either to obtain an interpretation of rules of this Standard, or to propose consideration of a revision to the present rules. Provide concisely the information needed for the Committee's understanding of the inquiry, being sure to include reference to the applicable Part, Article, Edition, Addenda, paragraphs, figures, and tables. If sketches are provided, they shall be limited to the scope of the inquiry.

(c) Inquiry Structure

(1) Proposed Question(s). The inquiry shall be stated in condensed and precise question format, omitting superfluous background information, and, where appropriate, composed in such a way that "yes" or "no" (perhaps with provisos) would be an acceptable reply. The inquiry statement should be technically and editorially correct.

(2) Proposed Reply(ies). Provide a proposed reply stating what the inquirer believes that the standard requires.

If in the inquirer's opinion, a revision to the standard is needed, recommended wording shall be provided in addition to information justifying the change.

SUBMITTAL

Inquiries shall be submitted in typewritten form; however, legible handwritten inquiries will be considered. They shall include the name and mailing address of the inquirer, and may either be sent by email to SecretaryPCC@asme.org, or by mail to the following address:

Secretary
ASME Post Construction
Three Park Avenue
New York, NY 10016-5990

ASME PRESSURE TECHNOLOGY POST CONSTRUCTION COMMITTEE

(The following is the roster of the Committee at the time of approval of this Standard.)

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STANDARD FOR THE REPAIR OF PRESSURE EQUIPMENT AND PIPING

PART 1
SCOPE, ORGANIZATION, AND INTENT

1 SCOPE

This Standard provides methods for repair of equipment and piping within the scope of ASME Pressure Technology Codes and Standards[1] after it has been placed in service. These repair methods include relevant design, fabrication, examination, and testing practices and may be temporary or permanent, depending on the circumstances.

The methods provided in this Standard address the repair of components when repair is deemed necessary based on appropriate inspection and flaw assessment. These inspection and flaw evaluation methods are not covered in this document, but are covered in other post-construction codes and standards.

Only technical procedures and information are provided; administrative or policy requirements are outside of the scope of this Standard.

2 ORGANIZATION

This Standard is divided into five Parts.

(a) Part 1 covers the scope, organization, and intent and is applicable to all articles in this Standard. Table 1 provides guidance for the applicability of repair methods listed in this Standard.

(b) Part 2 covers repair methods and techniques that include the use of welding, brazing, soldering or other methods involving metal deposit.

(c) Part 3 covers mechanical repairs, with or without sealant, such as bolted clamps or fixtures and includes all repair methods not covered in Part 2 or Part 4.

(d) Part 4 covers repairs using nonmetallic means, such as nonmetallic liners and wraps, and bonding (e.g., joining by epoxy), including bonding of metallic components.

(e) Part 5 covers examination and testing methods and techniques.

3 INTENT

3.1

This Standard provides technical information, procedures, and recommendations for repair methods that were determined by consensus to be recognized and generally accepted good engineering practice. Where equipment repair is subject to jurisdictional regulation, jurisdictional approvals may be required.

3.2

The words *should*, *shall*, and *may* are used in the repair articles of PCC-2 and they have the following intent:

should: an action that is not mandatory. It indicates an action that when performed, is generally considered to be good practice; however, there are some circumstances when the action is not appropriate or required, so the word *should* is used to provide flexibility for the article to cover a broad range of circumstances. It is not mandatory unless so specified by others in the application of these articles.

shall: an action that is mandatory. It indicates an action that is an essential element of the repair method that cannot be eliminated.

may: indicates an action that is permitted, but not required.

3.3

For administrative requirements such as inspection, documentation, and quality control, the user is referred to an applicable post-construction code and to the jurisdictional requirements. In the absence of an applicable post-construction code or jurisdictional requirements, the owner of the pressure equipment or piping should establish the administrative requirements. A post-construction code is one that provides requirements and guidance for inspection and/or repair of equipment

[1] Equipment and piping within the scope of ASME Pressure Technology Codes and Standards includes piping (including pipelines) and piping components (such as valves), boilers, pressure vessels (including heat exchangers), and storage tanks.