Overview of ASME Post Construction Activities

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Introduction

- Traditionally, International Codes and Standards have focused on new construction because these standards are essential for both domestic and international trade.
- In the past, maintenance and inspection of fixed equipment has been handled on a local, regional or industry sector basis.
- In some cases, rules for maintenance and inspection are established by regulatory authorities.
- More recently, it has been recognized that broadly based international standards for maintenance and inspection are desirable to ensure worldwide acceptance of the best available approaches.

"Traditional" Post Construction Codes and Standards

- The American Petroleum Institute (API) publishes:
  - ✓ API 510, *Pressure Vessel Inspection Code: Maintenance, Inspection, Rating, Repair and Alteration*.
  - ✓ API 570, *Piping Inspection Code: Inspection, Repair, Alteration and Rerating of In-service Piping Systems*.
  - ✓ API 653, *Tank Inspection, Repair, Alternation and Reconstruction*.
- These standards were developed primarily for equipment in refineries and chemical plants, but they are used in other industries as well.
  - ✓ Some of these documents have been legally adopted by many Jurisdictions.

"Traditional" Post Construction Codes and Standards

- The National Board Inspection Code (NBIC-23) contains requirements for inspection and maintenance of boilers and pressure vessels and, more recently, piping. The intent of the NBIC is to cover installations other than those covered by API Standards.
  - ✓ This document has been legally adopted by many Jurisdictions.
- With a few notable exceptions, NBIC-23 focuses on assuring that equipment meets the requirements of new construction Codes throughout its life.
  - ✓ It is common practice for jurisdictional and regulatory authorities to grant exceptions on a case-by-case basis

Recently Published Post Construction Standards

- API-RP-579, *Fitness-for-Service*, was published in 2000.
  - ✓ Contains guidance for the evaluation of essentially all of the many types of flaws that may be found in pressure equipment.
  - ✓ It has been incorporated by reference into API-510, API-570 and API-653 and is mentioned as a reference in NBIC-23.
- API-RP-580, *Risk-Based Inspection*, was published in 2002.
  - ✓ Contains guidance for developing inspection intervals using well established risk assessment approaches.

Recently Published Post Construction Standards

- API-RP-581,*Base Resource Guide for Risk-Based Inspection* was published in 1997.
- ASME PCC-1, *Guidelines for Pressure Boundary Bolted Flange Joint Assembly* was published in 2001.

ASME Post Construction Standards Under Development

- Joint API/ASME Standard on Fitness for Service
  - ✓ Will be based primarily on API-RP-579, *Fitness-for-Service*.
  - ✓ Coverage will be broadened to include pressure equipment in industries other than refining and chemical manufacturing, but most of the technical content is expected to remain the same.
- ASME Standard on Inspection Planning
  - ✓ Was developed in parallel with API-RP-580, *Risk-Based Inspection*.
  - ✓ It is anticipated that the risk assessment approaches in API-580 will be included, and that approaches that have been developed for other industries will be added.

ASME Post Construction Standards Under Development (continued)

- ASME Standard on Repair of Pressure Equipment.
  - ✓ Will provide guidelines for the application of common repair procedures.
  - ✓ Will be available as individual articles, each covering a specific repair procedure.
  - ✓ Is intended to be referenced by existing Post Construction Codes, such as API-510 and NBIC-23.
- ASME/API Inspection Code.
  - ✓ A task group has been established to develop a proposal.
  - ✓ Would cover pressure vessels and piping for refineries and chemical plants only.

Why the Recent Activity in Post Construction Standards?

- Owners and Users are expected to follow “Recognized and Generally Accepted Good Engineering Practice” (RAGAGEP) in maintenance, inspection and repair of pressure equipment.
- Without the guidance of Codes and Standards developed under the consensus process, it is sometimes difficult to determine what RAGAGEP is.
- Regulatory Authorities and individual inspectors have indicated a need for guidance in reviewing fitness for service analyses and proposed repair procedures.
- Global Corporations support standards that are accepted and can be applied worldwide to facilitate training and to ensure integrity of pressure equipment.

Overview of ASME PCC-1

- Leaks at bolted flange connections represent a significant percentage of the causes of the release of hazardous material to the atmosphere.
  - ✓ Many of these leaks are due to improper assembly.
  - ✓ Proper training of flange joint assembly personnel using the procedures provided in this standard can significantly reduce these releases.
  - ✓ Becht Engineering has recently completed a project to develop training materials and to design a joint assembly test rig to train bolted flange joint assembly personnel.

Role of ISO

- The International Organization for Standardization has focused primarily on new construction standards, but that may change as services become more important.
- ISO is dominated by the European Union.
  - ✓ The EU countries are strongly encouraged to vote as a block. Since each country has a single vote, they can prevail in many cases. ISO does not use a consensus process.
  - ✓ The EU views standards as a significant trade weapon. ISO standards are often political rather than technical.
  - ✓ European membership on ISO Committees is primarily through government agencies. They do not always act in the best interests of their own manufacturers and users.
  - ✓ The Vienna agreement allows CEN Committees to develop standards without the participation of the rest of the world, or consideration of global relevance, then to submit them for "fast track" vote as ISO standards.

Role of ASME

- For the reasons described on the previous slide, ISO is not an appropriate home for post construction standards.
- The worldwide recognition and acceptance of ASME new construction codes and standards pave the way for broad acceptance of ASME post construction standards.
- ASME has prepared a proposal to develop guidance on risk analysis and management for the Department of Homeland Security.
  - ✓ This work may eventually lead to standards in this area.