

# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

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## TRIP REPORT

**SUBJECT:** ASME-Sponsored Seminar Course—ASME Boiler & Pressure Vessel  
Code Section III, Division 1: Requirement for Design & Manufacture of  
Nuclear Power Plant Components  
AI No. 20.06002.01.332.623

**DATE/PLACE:** April 3–6, 2006  
Las Vegas, Nevada

**AUTHORS:** Fernando Ferrante and Roman Kazban

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### BACKGROUND AND PURPOSE OF TRIP:

The American Society of Mechanical Engineers (ASME) offered a short course entitled ASME Boiler and Pressure Vessels Code: Section III, Division 1, Requirements for Design and Manufacture of Nuclear Power Plant Components in Las Vegas, Nevada, on April 3–6, 2006. As indicated in its title, the course provided an overview of technical and administrative procedures that form the basis of the Section III Quality Systems. The objective was to provide the engineers, manufacturers, installers, inspectors, and insurance providers with a general knowledge of the ASME Nuclear Code requirements. It was not intended to be an in-depth course on design, fabrication, inspection, quality assurance, or other technical requirements.

The course consisted of four days of lectures on historical background, organization of the ASME Nuclear Code, and practical impact of the code provisions and its relevance to the regulatory requirements. The course was administered by M. Bressler, a Registered Professional Engineer with an extensive experience in design, materials, manufacturing, and installation of boilers and pressure vessels. Bressler is also an active member of various ASME Codes and Standards committees, subcommittees, and subgroups.

The ASME policy prevents distribution of the list of the course's attendees. However, it was noted that the group attending the short course comprised of manufacturing and design engineers from various private companies (including utilities) as well as a significant contingent from the U.S. Nuclear Regulatory Commission (NRC). The outline of the short course is provided in Appendix A.

### SUMMARY OF ACTIVITIES AND PERTINENT POINTS:

- The instructor pointed out that the number of participants (30), was the highest since he began offering this short course and that it could be viewed as an indication that the next cycle of interest in nuclear energy is very near.
- The group of participants from NRC comprised mostly of staff members of the Office of Nuclear Reactor Regulation from all Regions (I to IV), and NRC headquarters.
- The latest edition of the ASME Nuclear Code was published on July 1, 2004, and the latest ASME Code Addenda was published on July 1, 2005. The 2004 edition incorporated all the previous editions (dating back to 1963) as well as the 2002 and

2003 Addenda. A new edition will be published in 2007, incorporating changes and errata approved by the ASME Committee on Boiler and Pressure Vessels.

- NRC is currently completing the technical review for the 2004 Edition of the ASME Nuclear Code. NRC currently incorporates by reference in 10 CFR 50.55a the 2001 Edition of the ASME Boiler and Pressure Vessel Code up to and including the 2003 Addenda.
- The instructor indicated that the standards for the Nuclear Packaging Vessels (NUPACK) are under current review for inclusion as a new subsection. NUPACK provides rules similar to Section III, Division 1, for the shipping casks that will be used to transport high-level waste to the repositories. These include unique provisions such as drop tests to evaluate the structural integrity of the shipping casks. Currently, the proposed subsection has been included as a Code Case in the 2005 Addenda to the 2004 Edition of Section III, Division 3. This effort is expected to bring rules for the construction of internal structures for transport and storage containment into the Division 3 standard.
- The Board on Nuclear Codes and Standards has supported a Committee on Nuclear Risk Management (CNRM) whose charter is to develop guidance on Risk Management Techniques, including Probabilistic Risk Assessment for nuclear power plants and other facilities. A new ASME standard was published in April 2002 (ASME RA-S-2002) followed by its first Addendum in 2003. A second Addendum is in preparation. CNRM is currently considering possible additional elements such as the development of a generic reliability/failure rate database and methods for applying risk-based considerations for items not modeled in Probabilistic Risk Assessment.
- The instructor emphasized that the hiatus in nuclear plant construction in the United States did not prevent the development and continued growth of the ASME Section III Code. Hence, the importance of knowledge in the code provisions has not diminished for companies, institutions, and individuals involved in activities related to nuclear applications. Furthermore, the indication of renewed interest in nuclear technology for future reactors will instigate more activities related to codes and standards development, revision, and interpretation.
- As an American National Standard, ASME Section III has gained the acceptance of the world's nuclear community. The instructor indicated that this has become a hot issue for ASME as fast-developing countries such as China begin to aim for prominence in the world energy market. This effort includes future revisions to add the metric unit system into the ASME Nuclear Code and the possible use of the ASME accreditation process throughout the world.

## **CONCLUSIONS:**

The short course was beneficial as an introduction into the general requirements of the ASME Section III Code. The lectures provided an in-depth historical background of the development and changes in the code. The importance of the code provisions was illustrated through examples of its significant financial and technological impacts on the nuclear industry.

It should be emphasized that the ASME Boiler & Pressure Vessel Code Section III is relevant not only to the design and manufacture of nuclear power plant components, but also to high-level radioactive waste disposal during the operational period.

**PROBLEMS ENCOUNTERED:**

None.

**PENDING ACTIONS:**

None.

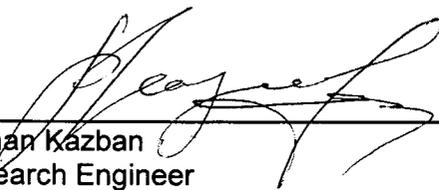
**RECOMMENDATIONS:**

Courses that supplement the general knowledge provided in this course would also be highly beneficial for the Center for Nuclear Waste Regulatory Analyses staff.

**SIGNATURE AND DATE:**

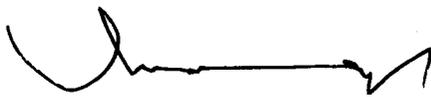
  
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Fernando Ferrante  
Research Engineer

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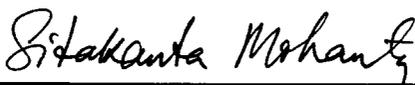
  
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