



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

January 12, 2010

Kevin Ennis, Staff Secretary  
Board on Nuclear Codes and Standards  
The American Society of Mechanical Engineers  
Three Park Avenue  
New York, NY 10016

SUBJECT: ISSUES RELATING TO THE AMERICAN SOCIETY OF MECHANICAL  
ENGINEERS BOILER AND PRESSURE VESSEL CODE

Dear Mr. Ennis:

The Nuclear Regulatory Commission's (NRC's) Office of Nuclear Reactor Regulation (NRR) has become aware of an issue regarding activities associated with the American Society of Mechanical Engineers (ASME) and the American Society for Nondestructive Testing (ASNT) organizations. The issue regards questionable qualifications of Nondestructive Examination (NDE) personnel which relate to the ASME Boiler and Pressure Vessel Code (Code). Title 10 of the Code of Federal Regulations (10CFR) 50.55a(b) incorporates by reference the ASME Code, Sections III and XI. The Code addresses qualifications of NDE personnel; thus, these requirements become regulatory requirements with implications across the entire nuclear fleet. The NRR staff performed a review of the issue and believes that it would be better addressed by ASME. We are therefore forwarding this issue to your society for review and whatever action you deem appropriate. The NRC will follow ASME activities through our interactions on the Code committees.

Sincerely,

*(/RA by M. G. Evans)*

Michele G. Evans, Director  
Division of Component Integrity  
Office of Nuclear Reactor Regulation

Enclosure: As stated

January 12, 2010

Kevin Ennis, Staff Secretary  
Board on Nuclear Codes and Standards  
The American Society of Mechanical Engineers  
Three Park Avenue  
New York, NY 10016

SUBJECT: ISSUES RELATING TO THE AMERICAN SOCIETY OF MECHANICAL  
ENGINEERS BOILER AND PRESSURE VESSEL CODE

Dear Mr. Ennis:

The Nuclear Regulatory Commission's (NRC's) Office of Nuclear Reactor Regulation (NRR) has become aware of an issue regarding activities associated with the American Society of Mechanical Engineers (ASME) and the American Society for Nondestructive Testing (ASNT) organizations. The issue regards questionable qualifications of Nondestructive Examination (NDE) personnel which relate to the ASME Boiler and Pressure Vessel Code (Code). Title 10 of the Code of Federal Regulations (10CFR) 50.55a(b) incorporates by reference the ASME Code, Sections III and XI. The Code addresses qualifications of NDE personnel; thus, these requirements become regulatory requirements with implications across the entire nuclear fleet. The NRR staff performed a review of the issue and believes that it would be better addressed by ASME. We are therefore forwarding this issue to your society for review and whatever action you deem appropriate. The NRC will follow ASME activities through our interactions on the Code committees.

Sincerely,

*(/RA by M. G. Evans)*

Michele G. Evans, Director  
Division of Component Integrity  
Office of Nuclear Reactor Regulation

Enclosure: As stated

DISTRIBUTION

OAC Files  
MCase

ADAMS ACC NO: ML100140091

Publicly Available/Non-Sensitive

OFC	AT:DE:NRR	DCI:NRR	DCI:NRR	DCI:NRR	OAC:NRR
NAME	Malave/Petrosino	CNovo	TLupold	MEvans	GCwalina
DATE	01/07/10	01/07/10	01/08/10	01/11/10	01/12/10

OFFICIAL RECORD COPY

# REQUEST FOR REVIEW

## Concern:

There may be a generic issue with the effectiveness of nondestructive examination (NDE) inspections at all operating nuclear power plant stations in the United States. Specifically, the personnel who perform nondestructive examinations in the nuclear power industry may not be properly trained, and do not have the necessary education in mathematics, metallurgy and materials technology to perform their jobs adequately. As a result, the probability of detection (POD) of flaws may be as low as 50% using general methods. Of particular relevance to ASME, the American Society for Nondestructive Testing (ASNT) nondestructive testing (NDT) personnel certifications may not be typically acceptable per code expectations. Scores on some ASNT Level III examinations may have been lower than the Code required 70% for individual components and a composite score of 80% for all portions combined; however, due to the methods ASNT used to grade exams including the use of psychometrics, ASNT would have considered the scores to be passing. Thus, personnel with potentially inadequate test results could meet the qualification requirements of the ASME Code.

## Issue 1:

For in-service inspection, personnel qualification requirements are found in the ASME Code, Section XI, IWA-2300 "Qualification of Nondestructive Examination Personnel." For new construction, personnel qualification requirements are found in Section III, NX-5520, "Personnel Qualification, Certification and Verification." Conditions, such as those implemented by 10 CFR 50.55a(b)(2)(xviii) "Certification of NDE Personnel" and 10 CFR 50.55a(b)(2)(xiv) "Appendix VIII Personnel Qualification," provide additional requirements. ASME Code, Section XI, IWA-2310(b) "Qualifications of Nondestructive Examination Personnel," endorses the use of the ASNT Central Certification program (ACCP) as an alternative to the personnel qualification program based on ANSI/ASNT CP-189. ASME Code, Section III, NB-5521(a) requires the use of ASNT SNT-TC-1A for personnel qualifications.

Relative to these Code requirements for qualifying personnel the NRC requests ASME to consider the following questions:

- A. Are there deficiencies with the quality of qualification and certification of NDE personnel given that ASNT certifications (ANSI/ASNT CP-189, ACCP and SNT-TC-1A) may potentially fall short, specifically in regards to the methods implemented by ASNT to conduct testing, grade examinations and report results for interpretation by the Code?
- B. How does ASME ensure that ASNT's processes meet the Code requirements including adjustments of test scores by use of psychometrics or other means?
- C. Has ASME audited ASNT's certification process to ensure compliance?

## Issue 2:

NRC considers inservice inspection, and thus POD for the inservice inspection methods, to be important components of the defense-in-depth approach to nuclear power plant safety. As

**ENCLOSURE**

mentioned previously, POD may be as low as 50% using general methods. Please address how the POD is factored into the ASME Code's determination of Code criteria. For instance, since the joint efficiency (Section III, Paragraph UW-12) is based, in part, upon the degree of examination of the joint, is POD for radiographic examination a factor in determining the Code criteria?

If you have any questions on this request for review, please contact Carol Nove at (800) 368-5642.