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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

October 15, 2001

Secretary
U.S. Nuclear Regulatory Commission
ATTN: Rulemaking and Adjudications Staff
Washington, D.C. 20555-0001

Gentlemen:

NUCLEAR REGULATORY COMMISSION (NRC) - INDUSTRY CODES AND
STANDARDS; AMENDED REQUIREMENTS (Volume 66 *Federal Register*
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TVA is pleased to provide comments on the subject proposed
revision to 10 CFR 50.55a. TVA's comments are provided in
the Enclosure. In addition, we have reviewed and endorse
the comments provided to you on this matter by letter dated
September 12, 2001, from Mr. G. Michael Bratton, Committee
Chairman of the Performance Demonstration Initiative.

If you have any questions, please contact Rob Brown at
(423) 751-7228.

Sincerely,

Mark J. Burzynski

Mark J. Burzynski
Manager
Nuclear Licensing

Enclosure

cc (Enclosure):

(via NRC Electronic Distribution)
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

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ENCLOSURE

PROPOSED RULE	COMMENTS
<p>The proposed rule change 10 CFR 50.55a(g) (6) (ii) (B) (1) states:</p> <p style="padding-left: 40px;"><i>"The start date of the first 120-month interval for the inservice inspection of Class MC and Class CC components must coincide with the start of the first containment inspection."</i></p> <p>[Summary of Proposed Revisions paragraph 2.2 - Section XI]</p>	<p>The proposed change conflicts with NRC's prior position on this matter as follows:</p> <ul style="list-style-type: none"> • NRC's letter to NEI dated November 6, 1996, stated: <p style="padding-left: 40px;"><i>"It is the Staff's position that pursuant to 10 CFR 50.55a(g) (4) (v), all repair or replacement activities within the scope of Subsection IWE and IWL which are conducted after September 9, 1996, must be conducted in accordance with those subsections."</i></p> • NRC's letter to NEI dated May 30, 1997, indicated that when the first period IWE examinations are completed that this should be considered the completion of the first period of the first inspection interval (Refer to Question 17 and Response, therein). Also, subsequent periods and intervals are counted in accordance with the ASME code. NRC also indicated that relief requests from meeting these repair and replacement requirements for a period of up to one year from September 1996 would be reasonable. <p>Development of the containment inservice inspection program and the implementation of IWE and IWL for repair and replacement activities, that include performance of pre-service examinations, was mandated to begin on September 9, 1996. Thus, the start date for the first 120-month interval for the ISI of Class MC and Class CC components should be September 9, 1996. The first period examinations were required to be completed prior to September 9, 2001. The examinations for the first period of the first inspection interval for IWE and IWL were required to be completed no later than September 8, 2001. Thus, the first inspection period should have begun September 9, 1996, and ended September 8, 2001. This is consistent for inservice examinations, pre-service examinations, repairs, and replacements conducted in accordance with Subsections IWE and IWL.</p>

The proposed rule change
paragraph 10 CFR
50.55a(b) (2) (xii) (B)

"Piping that penetrates the containment that is connected to piping that is outside the scope of Section XI is not exempt from the pressure testing provisions of Subsection IWA as permitted by IWA-5110(c) of the 1997 Addenda through the latest editions and addenda incorporated by reference in paragraph (b) (2) of this section."

[Summary of Proposed
Revisions paragraph 2.2.4 -
Containment Penetration
Piping]

ASME Section XI Code Case N-522, "Pressure Testing of Containment Penetration Piping," was incorporated in the 1997 Addenda of the ASME Boiler and Pressure Vessel Code. This revision of paragraph IWA-5110(c) of the 1997 Addenda provides an exemption to the system pressure test requirement for certain piping which penetrates the primary containment vessel. The piping segments which are included in this exemption are these segments in non-safety systems, but which are classified Class 2 due to their penetration of the primary containment vessel. Such piping segments do not perform any safety function required to shutdown the reactor to the shutdown condition, or to maintain the reactor in the shutdown condition. The only safety function of such piping segments is the containment of radioactive material from plant systems during normal operation and during postulated accident conditions.

The purpose of the periodic ASME Section XI system pressure test is to detect failure in the structural integrity of pressure retaining components prior to the loss of the component function. However, the only safety function performed by these piping segments is the containment of radioactive material within the primary containment structure. The Section XI pressure test is not designed, nor is it intended, to verify the leakage tightness of components necessary to perform the primary containment function.

The ASME Section XI system pressure test relies on the visual detection of leakage from the component pressure boundary. The testing requirement for components performing the function of primary containment integrity are defined in Appendix J to 10 CFR 50. Appendix J testing requires the leakage testing of primary containment components employ quantifiable leak detection methods and acceptance criteria based on a total limit of 60% of the maximum allowable limit from the total primary containment system for radiation release. These leakage tests are performed to high levels of precision (prescribed in American Nuclear Society Standard ANS-56.8) in order to detect extremely small leakage. The leakage detection method utilized in the Appendix J test program are substantially more sensitive than the visual examination performed during Section XI pressure tests.

The Appendix J testing of containment does not provide for the determination of whether measured leakage is through-wall or through test boundary valves. However, this determination is unnecessary because all leakage detected by Appendix J testing is assumed to escape the primary containment structures. The maximum limit for primary containment leakage assumes that all releases from the primary containment will exit the primary containment and be treated in the secondary containment system prior to release to the environment. The determination of whether leakage from the primary containment is through-wall, or not, is of no consequence to the acceptance criteria. Since these

piping segments perform no other safety function, the structural integrity of the segment is of no importance to the safe shutdown of the reactor or maintaining the reactor in the shutdown condition.

As established in ASME Section XI Code Case N-522, the performance of system pressure tests on Class 2 piping segments which perform only primary containment safety functions is unnecessary and serves no technical purpose to increase plant safety. The requirement to determine whether leakage measured during Appendix J leakage tests is through-wall or intra-system requires that the entire test volume be examined by a method capable of detecting extremely small leakage. Many Appendix J tests are performed using air as the test medium. The detection of very small air leakage from a large surface area requires a substantial amount of effort and has the potential for significant unnecessary radiation exposure.

Based on these issues, the additional requirements proposed by the NRC Staff on the use of the provisions of ASME Section XI Code Case N-522 that were incorporated as part of the later Code editions and addenda is a burden which provides no increase in plant safety. The imposition of the additional requirements treats the containment penetration piping as system piping that performs the specific function of an accident mitigation support system and not as a component whose sole function is to support containment integrity. While the imposed requirements accomplish the Code requirement to verify the integrity of the component, the additional criteria is unnecessary for ascertaining the integrity of the component to a degree commensurate with its safety function. This proposed additional requirement should be deleted from approval of the incorporated provisions for industry use.

The proposed Rule Change
paragraph 10 CFR
50.55a(b) (2) (xviii) (A)

"Level I and II nondestructive examination personnel, and personnel qualified under the American Society for Nondestructive Testing Control Certifications Program shall be recertified on a 3-year interval in lieu of the 5-year interval specified in IWA-2314 of the 1997 Addenda and the 1998 Edition, and IWA-2314(a) and IWA-2314(b) of the 1999 Addenda through the latest editions and addenda incorporated by reference in paragraph (b) (2) of this section."

[Summary of Proposed Revisions paragraph 2.2.5 - Certification of Nondestructive Examination (NDE) Personnel]

TVA agrees that the proficiency of examination personnel decreases over time. However, the justification for having Level I and II personnel recertify every five years is reasonable based on the following:

- 1) Proficiency of examination personnel is measured via performance demonstrations which includes practical examinations that are normally given as part of the certification process.
- 2) Ultrasonic personnel are already having to practice on cracked specimens for eight hours, within six months prior to an outage. This normally requires the examiner to demonstrate proficiency two times a year, for a total of 16 hours. Based on these existing requirements, five-year recertification for UT personnel is reasonable and verifies that proficiency has been maintained.
- 3) In regards to the other NDE methods (e.g., MT, PT, RT, VT, etc.), proficiency is demonstrated every three years during the certification process via a practical demonstration.
- 4) In order to maintain certifications as active, examiners are currently required to demonstrate proficiency by virtue of having to perform an examination within 12 months. This adds further justification that the examiner is maintaining his proficiency.

Thus, TVA recommends that the proposed additional requirement for personnel retraining be deleted from approval for use of the provisions in paragraph IWA-2314 of the proposed new approved Code Editions and Addenda. However, if this issue cannot be resolved in this manner and since examination proficiency is best qualified by giving a practical examination, it is recommended that, at the most, recertification for Level I and II personnel be five years with an interim practical demonstration, per CP-189, no longer than every three years. This would, at least, eliminate the need to administer written exams, that have little value in maintaining proficiency, every three years. In the case of the Staff's approval for the use of the provisions on VT-2 examinations in accordance with the incorporated parts of ASME Code Case N-546, TVA recommends that the proposed restrictions be deleted altogether.

The proposed Rule Change
paragraph 10 CFR
50.55a(b) (2) (xviii) (B)

"Paragraph IWA-2316 of the 1998 Edition through the latest editions and addenda incorporated by reference in paragraph (b)(2) of this section, may be used to qualify visual examination personnel only for the performance of VT-2 visual examinations when the proficiency of the training required under IWA-2316 is demonstrated by administering an initial qualification examination and administering recertification examinations on a 3-year interval."

[Summary of Proposed Revisions paragraph 2.2.5 - Certification of Nondestructive Examination (NDE) Personnel]

ASME Section XI Code Case N-546, "Alternative Requirements for Qualification of VT-2 Examination Personnel," was approved by the ASME Board for Nuclear Codes and Standards in August 1995 and was incorporated into the 1998 Edition of the ASME Pressure Vessel and Piping Code, Section XI. Since the approval of N-546 in 1995, many nuclear utilities have incorporated this code case into their inservice inspection programs through regulatory relief requested under paragraph 50.55a(a)(3)(i) of Title 10, Part 50 of the Code of Federal Regulations. The intent of this code case is to allow utilization of appropriate plant personnel to perform the VT-2 visual examinations conducted in conjunction with Section XI system inservice pressure tests as a method of reducing the cost of these examinations.

The code case defines specific requirements which must be met by personnel in order to be qualified to perform these examinations. To ensure the quality of the VT-2 examinations performed by personnel qualified using N-546, the code case requires the following: 1) documentation of experience in plant equipment identification and location to ensure that all components which are pressurized and subject to examination will be included in the examination; 2) an annual vision acuity examination to ensure the ability of the examiner to visually detect the signs of active and past leakage from the pressure boundary; and 3) training in the code requirements for performance of system pressure tests and the examination procedure to be used in the performance of the examination.

The NRC Staff is proposing that in addition to the qualification requirements contained in the code case, personnel qualified through use of N-546 should also receive periodic re-training. After review of Code Case N-546, the requirements for the VT-2 visual examination, and consideration of the NRC staff position concerning retraining, TVA finds this additional requirement for re-training of N-546 qualified personnel to be unnecessary and that it places an unjustified burden on utilities.

It is TVA's understanding that this proposed additional requirement is based on the recertification requirements of IWA-2314. As stated in IWA-2316, the qualification of VT-2 examination personnel may be accomplished by using the incorporated provisions from Code Case N-546 in lieu of the qualification and certification requirements of IWA-2310 through IWA-2314. The requirements necessary for Code Case N-546 equivalent qualification do not meet, nor are they intended to meet, the certification requirements of ASNT SNT-TC-1A, ANSI/ASNT CP-189 or Section XI Appendix VI. Personnel qualified under the provisions of Code Case N-546 do not receive certification in visual examination nor limited certification under IWA-2350. They are specifically exempted from the requirements for certification and re-certification of IWA-2314.

This use of non-certified personnel to perform NDE is justified by the nature of the VT-2 visual examination. Unlike other NDE techniques such as ultrasonic examination, magnetic particle examination and liquid penetrant examination, the performance of the VT-2 visual examination does not require in-depth technical training or use of sophisticated technical equipment which would require the periodic demonstration of technical proficiency in performing the examination. Neither does the VT-2 require the technical acceptance criteria evaluation as do the VT-1 and VT-3 examination methods. The visual inspection of plant equipment for leakage is part of the routine duties of nuclear power plant system engineers, licensed and non-licensed operators, maintenance personnel, and local leak rate test personnel. Due to the non-technical nature of visually examining a component for the existence of active leakage or evidence of past leakage, no specialized training is required for these types of personnel. In addition, personnel with the required plant experience are usually the most familiar with plant equipment locations, possible leakage paths, and equipment maintenance history.

All technical work performed at nuclear power plants is required to be performed in accordance with approved plant procedures. The expectation when performing any task at a nuclear power plant is that the task must be performed in accordance with the current procedure controlling the activity. Likewise, personnel performing VT-2 examinations are expected to be familiar with and knowledgeable in the requirements of the procedure for performing these visual examinations. Prior to performing a VT-2 examination, the examiner would be expected to review the plant procedure for the VT-2 examination method and thoroughly understand the requirements for performance. In addition, an individual's leak detection skills are maintained through their routine system walkdowns during all modes of plant operation (i.e., power operation, reactor startup, and reactor shutdown).

TVA is aware of what some utilities have undertaken to qualify all systems engineers, all non-licensed operators, and a large portion of their plant maintenance staff to perform VT-2 examinations through the use of Code Case N-546. This is intended to ensure that qualified personnel are always available to meet Code program requirements as well as to educate personnel to the importance of early pressure boundary leak detection. The addition of a re-training requirement of personnel qualified via Code Case N-546 will increase the cost of implementation of the inservice inspection program. These costs include the labor costs for instructors and examination personnel and costs associated with management of additional training records. These additional costs would be expected to return minimal or no increase in the quality of the performance of VT-2 examinations thereby placing an undue burden on the utility.

	<p>Due to the non-technical nature of a visual examination for leakage, no periodic re-training should be required. The requirement for re-training of personnel qualified using Code Case N-546 to perform VT-2 examinations in conjunction with system pressure tests is unnecessary and places an additional financial and logistical burden on the plant licensee in the form of personnel training time and records maintenance without realizing an increase in the quality of examination performance or plant safety.</p>
<p>The proposed Rule change Paragraph 10 CFR 50.55a(b) (xix)</p> <p><i>"Substitution of alternative methods. The provision in IWA-2240, 1998 Edition through the latest editions and addenda incorporated by reference in paragraph (b)(2) of this section, and IWA-4520(c), 1997 Addenda through the latest editions and addenda incorporated by reference in paragraph (b)(2) of this section, that allows the substitution of alternative examination methods, a combination of methods, or newly developed techniques for the methods specified in the Construction Code may not be applied."</i></p> <p>[Summary of Proposed Revisions paragraph 2.2.6 - Substitution of Alternative Methods]</p>	<p>The proposed limitation in 10 CFR 50.55a(b) (xix) prohibits the use of the provision in IWA-2240 as related to the Construction Code (1998 Edition, 1999 Addenda, and 2000 Addenda). IWA-2240 allows alternative examination methods, a combination of methods, or newly developed techniques to be substituted for the methods specified in the Construction Code or this Division, provided the Inspector is satisfied that the results are demonstrated to be equivalent or superior to those in the Construction Code. This provision for the Construction Code is also included in IWA-4520(c). The provisions of IWA-2240 as related to this Division (ASME Section XI, Division 1) have been accepted by NRC. NRC comments in the proposed rule state that "The NDE requirements of the Construction Code are different from those of Section XI because the objectives of the examination differ." The provisions of IWA-2240 permit alternative examination methods or techniques that have been shown to be superior to the Construction Code to be utilized. When the provisions of IWA-2240 are used, the Construction Code NDE personnel qualification requirements, examination volume requirements, and examination acceptance criteria requirements must still be satisfied in the same manner that these requirements are satisfied when using IWA-2240 for Section XI examinations.</p> <p>In addition, the statement is made in the discussions in section 2.2.6 (see 66FR40630, No. 150) as follows:</p> <p><i>"Furthermore, there are examination coverage, volume, flaw acceptance, and qualification requirements related to these respective methods that are outside the scope of the ANI's responsibility."</i></p> <p>Commencing with the 1997 Code Addenda to Section XI, subarticle IWA-2120, "Qualification of Authorized Inspection Agencies, Inspectors, and Supervisors," requires that the Inspector [i.e., the Authorized Nuclear Inservice Inspector (ANII)] meet the requirements of ASME QAI-1. In accordance with the Section XI General Requirements Table IWA-1600-1, the applicable year and addenda of ASME QAI-1 to be used is the 1995 version.</p>

	<p>QAI-1-1995 in Part 1, paragraph 3.1, on the qualifications of the ANII, requires the ANII to "be Authorized Nuclear Inspectors in accordance with 0-3.1 [i.e., Part 0, para. 3.1] of Part 0 of this Standard." Accordingly, the ANII must possess dual credentials for both the ANI and ANII certification and would therefore be cognizant of both the construction, installation, fabrication, code NDE requirements and the inservice inspection code NDE requirements. With the dual certification and the associated training, the ANII would be capable of making a value judgment of proposed substitute equivalent NDE techniques and methodologies in accordance with Section XI paragraphs IWA-2240 and IWA-4520(c).</p> <p>Thus, it appears that the objectives of Construction Code examinations would not be compromised by using the provisions of IWA-2240 and IWA-4520(c) from the 1998 Edition through the latest editions and addenda incorporated by reference in paragraph (b)(2) of this section.</p>
<p>The proposed Rule Change Paragraph 10 CFR 50.55a(b)(2)(xx)</p> <p><i>"System Leakage Tests. The pressure and temperature hold time requirements of IWA-5213(a) of the 1995 Edition must be applied in lieu of the provisions of IWA-5213(a) of the 1997 Addenda through the latest editions and addenda incorporated by reference in paragraph (b)(2) of this section, when performing system leakage tests."</i></p> <p>[Summary of Proposed Revisions paragraph 2.2.7 - System Leakage Tests]</p>	<p>For those licensees who choose (or have to upgrade their programs) to use the 1997 Addenda and later editions and addenda, the NRC Staff proposes to increase the holding times for the conduct of system pressure tests above that required by ASME Section XI. A holding time is required after achieving test pressure to provide time for leakage to collect in sufficient amounts to facilitate the detection of pressure boundary leakage. The time period required for the collection of sufficient leakage is contingent upon several factors such as the rate of leakage, the accessibility of the area in which the component is located, the path along which the leakage travels, and whether the component is encapsulated in thermal insulation. Due to the large variance in these factors which might exist within a nuclear power plant, it is not practical to empirically define a necessary holding time. The holding times for system pressure tests have, historically, been defined by times that through practice appear to be sufficiently conservative.</p> <p>The pressure test holding time requirements have been established (e.g., as four hours for components encased in thermal insulation and ten minutes for components whose surfaces are not insulated) with consideration to special conditions existing in the design and/or operation of plant systems. When modified, these basic pressure test holding times require further modification. Such special conditions exist and are justified for Code Class 1 component and for standby emergency systems.</p> <p>The leakage test for Code Class 1 components is required to be performed following each refueling outage. This test is performed as the reactor is heating up. The heatup process of the reactor is performed within the pressure-temperature constraints of the heatup curve in the plant technical specifications. These constraints limit the temperature and pressure rates</p>

of increase resulting in a heatup period of several hours. In light of the substantial length of time required for the reactor heatup process, sufficient time is available for leakage from the Class 1 system to collect in sufficient quantity to be detectable by visual examination. Holding the Class 1 components for additional time at this temperature and pressure is unnecessary to accomplish the purpose of the pressure test.

Certain plant emergency systems do not operate during normal plant operation at power or during refueling outage periods. In addition, these standby emergency systems (e.g., standby liquid control, high pressure coolant injection, and safety injection) have limited inventories available for recirculation in test conditions. Operating these systems continuously for four hours can result in approaching and possibly exceeding the temperature limits for the system storage tanks. In order to accommodate the limited inventory situation for such systems, a shorter holding time duration is required.

The ASME Section XI Committee has been made aware of the NRC Staff's concern with the removal of holding time requirements for periodic inservice system pressure tests and has taken an action to re-instate the necessary holding time requirements. Currently, the Working Group on Pressure Testing is preparing a code revision to re-instate the holding times for pressure test as contained in the 1989 Edition of Section XI. These holding time requirements had previously been used in the Code since the 1975 Addenda. The planned incorporation of the 1989 Edition holding times for pressure testing has been preliminarily discussed with members of the ASME Section XI Subcommittee and members of the NRC Staff and found to be acceptable. The incorporation of these holding times with their exemption for Class 1 systems after achieving test pressure and the reduced holding time of 10 minutes for standby systems into the proposed 10 CFR 50 revision will eliminate the need for many requests for relief from the proposed holding time requirements while providing an adequate margin of safety in the performance of Section XI pressure tests.