From:	Swain, Ronald
To:	RulemakingComments Resource
Cc:	Chengelis, Steve; Selby, Greg; Lindberg, John; Latiolais, Carl; Kull, Doug; Orihuela, Mike; Dunlap, Myles; Langevin, John; Hoffman, Keith; Nove, Carol; Cumblidge, Stephen
Subject:	[External_Sender] Comments to Proposed Rulemaking Docket ID NRC-2018-0290
Date:	Tuesday, May 25, 2021 4:44:57 PM
Attachments:	NDE 20210525-001_Comments to Proposed Rulemaking_FINAL.pdf

Dear Sirs,

Attached are comments to Proposed Rulemaking in Docket ID NRC-2018-0290.

Regards,

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Nondestructive Evaluation Program 20210525-001

Via Email

May 25, 2021

U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards and Office of Nuclear Reactor Regulation
Washington, DC 20055-001
ATTN: Rulemakings and Adjudications Staff

Subject: Proposed Rulemaking Comments (Docket ID NRC-2018-0290)

Dear Sir or Madam,

This letter provides comments to the subject proposed rulemaking on behalf of the Nuclear Nondestructive Examination (NDE) Program at the Electric Power Research Institute.

Our comment pertains to the proposed rulemaking posted by the Nuclear Regulatory Commission on Mar 26, 2021, and specifically to Section 50.55a(b)(2)(xviii)(D) NDE Personnel Certification: Fourth Provision. According to the subject proposed rulemaking (Docket ID NRC-2018-0290), the NRC proposes to amend the condition found in § 50.55a(b)(2)(xviii) to address the removal of ASME BPV Code, Section XI, 2011 Addenda from § 50.55a(a)(1)(ii). In addition, the NRC has stated that research performed at the Pacific Northwest National Laboratory (PNNL) has shown that laboratory practice can be effective in developing the skill to find flaws, and on-the-job training is effective at developing the ability to perform examinations in a nuclear reactor environment. Based on the research described in Technical Letter Report PNNL-29761 (ADAMS Accession No. ML20079E343), the NRC is proposing that the 250 experience hours for a Level I certification can be reduced to 175 hours, with 125 experience hours and 50 hours of laboratory practice, and the experience hours for Level II certification can be reduced to 720 hours, with 400 experience hours and 320 hours of laboratory practice, without significantly reducing the capabilities of the examiners to navigate in a nuclear reactor environment. The NRC is therefore proposing to add an option to § 50.55a(b)(2)(xviii) to allow these requirements as an alternative to Appendix VII, Table VII-4110-1 and Appendix VIII, Subarticle VIII-2200 in the 2010 Edition.

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EPRI NDE Comment – EPRI agrees that laboratory practice can be effective in developing UT examiner skills. As a matter of fact, we have been studying this question as part of a project we are working on to develop a technical basis for nondestructive examination (NDE) experience requirements for ASME Section XI, Appendix VII, which is scheduled to be published by the end of July, 2021. As part of that project work, we have determined that experience gained in many aspects of ultrasonic testing (UT) in the lab can be superior to experience gained performing the same examinations in the field, in terms of providing the opportunity for learning and improvement. Some of these skills are listed below:

- Inspecting UT equipment for wear/damage/operation
- Linearity checks
- Use of common calibration standards
- Applications of common UT mathematics
- Calibration and examination using shear wave transducers
- Calibration and examination using longitudinal wave straight beam transducers
- Calibration and examination using refracted longitudinal wave angle beam transducers
- Review of UT procedures and preparation for examinations (including equipment/angle selection)
- Examination of ferritic piping welds
- Examination of austenitic piping welds
- Examination of dissimilar metal piping welds
- Examination of cast austenitic piping welds
- Examination of carbon steel vessels
- Examination of bolts and studs
- Taking thickness and contour information of a component
- Recording and plotting of UT indications
- Reporting of UT examination results
- Reporting examination coverage limitations and performing calculations of coverage
- Advanced flaw detection techniques
- Through-wall sizing of flaws

We also recognize that there are certain skills associated with performing UT examinations in a nuclear power plant that would not easily be replicated in a lab and, therefore, are advantageous to learn and practice in the field. These include:

- Reviewing historical examination data
- Providing radiological protection for UT equipment
- Reading plant isometric and fabrication drawings
- Location and positive identification of field components
- Assessing the accessibility and condition of a component for UT examination
- Performance of UT in difficult field conditions and environments

So, while it is recognized that are aspects of the performance of UT in nuclear power plants that are not conducive to learning in a lab environment, many aspects of the examination process are easily replicated and can be fully exercised in the lab environment and include the added advantage of knowing the “truth” information (location, type, size, and orientation of defects as well as geometric and metallurgical reflectors) about the components being examined. Additionally, radiological hazards and other safety issues and stressful conditions are not present in the lab. These advantages enable meaningful feedback to be provided to the examiner and, if necessary, the technician can even be allowed to re-examine components to reinforce learning.

Lab Time for the Skills Development of a UT Level II

Borrowing from the ASME ANDE job task analysis information for UT as well as taking inputs from numerous industry UT Level III technicians, on what the required skills are to become an eligible candidate for Level II in the nuclear industry, our project team has determined that a majority of those hours would apply to learning and practicing skills that could be gained in a laboratory environment. Certainly, considering the goal of producing Level IIs that are capable of performing consistent and reliable examinations, the idea of allowing a significant portion of their experience to be garnered in the lab should be seriously considered. During our in-depth review of the skills and knowledge required of a UT technician, and a corresponding review of the hours needed to obtain proficiency in each skill area, we have determined that at least 65% of a technicians working time is spent mastering skills that can be replicated in the lab.

Now, we are not recommending that all of the experience needed to master a skill should be obtained in the lab environment, even where that is demonstrably possible. We recognize that there are some situations and issues that will be experienced in the field that are unlikely to occur in the lab and that those experiences are also valuable to the overall development of a well-rounded technician. But given the advantages to learning so many of these skills in a lab setting, we would suggest that up to 45% of the overall experience hours required for a technician to be considered eligible for UT Level II should be allowed to be obtained in the laboratory.

This aligns with the current NRC proposal for 320 of the 720 experience hours for a Level II to be allowed to be conducted in the lab, since 320 is approximately 45% of 720. But we think that the percentage is more important than the actual number, because once EPRI has completed the development of its technical basis for experience hours, there is a likelihood that a code action will be forwarded that, backed by technical basis, will propose a change in the experience hours in Appendix VII. If the NRC uses the percentage, in lieu of the number, then the regulation can still be applied to the overall experience hours, regardless of the actual number that is published in Appendix VII.

Lab Time for the Skills Development of a UT Level III

The subject proposed rulemaking does not currently address any reduction in experience hours for eligibility for UT Level III, nor does it provide any provision for lab time that can be substituted for these experience hours. However, as part of the afore-mentioned project and using the same methodology applied to the Level II question, we have carefully thought about the experience needed to become skillful and knowledgeable enough to be eligible for initial certification to UT Level III. Many of the skills that a UT Level II gains through experience, which goes toward their qualification to become a UT Level III, are the same skills that have been outlined in this letter as being needed for qualification to UT Level II. By scrutinizing the entire list of skills needed for this certification level and thinking about the time needed to become proficient in those areas, we have determined that 39% of the overall experience needed could be gained in the lab. Similar to the discussion in the previous paragraphs on the unique learning opportunities afforded by field experience, we again would only suggest that 27% of the experience hours needed to qualify an individual to be a candidate for UT Level III be allowed to be obtained via lab practice. Based on the logic provided in the previous section of this letter, we think this would result in improved technical skills leading to more consistent and reliable examination results.

Lab Time for the Skills Development of a UT Level I

At present, EPRI has not studied the specific skills and knowledge needed to be a candidate for UT Level I, nor the time required to obtain proficiency in those

areas. Therefore, we are unable to propose modifications to that aspect of the proposed rulemaking.

Summary of Changes Requested to the Proposed Rulemaking

Based on the discussion provided in this letter, which is geared toward improving the overall capabilities and reliability of nuclear industry UT examiners, we request that the NRC consider modifying the proposed rulemaking with regard to § 50.55a(b)(2)(xviii) to include allowing up to 45% of required experience hours for initial certification to UT Level II to be obtained through laboratory practice and to allow up to 27% of required experience hours for initial certification to UT Level III to be obtained through laboratory practice.

We appreciate the opportunity to provide comments to this proposed rulemaking. Should you have any questions pertaining to the comments provided in this letter, please contact Ronnie Swain for clarification.

Sincerely,

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