

DRAFT

SUPPLEMENTAL INFORMATION NEEDED

RELIEF REQUESTS 3RR-19, 3RR-20, AND 3RR-21

SUSQUEHANNA NUCLEAR, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2

DOCKET NOS. 50-387 AND 50-388

1.0 INTRODUCTION

By letter dated May 28, 2015,¹ Susquehanna Nuclear, LLC (the licensee)² requested relief from the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. The relief requests 3RR-19, 3RR-20, and 3RR-21 pertain to the examination coverage of the welds at the Susquehanna Steam Electric Station, Units 1 and 2 (SSES).

The Nuclear Regulatory Commission (NRC) staff completed its LIC-109 acceptance review of the licensee's application and all supporting information pursuant to Section 2.101 of Title 10 of the *Code of Federal Regulations* that allows the NRC staff to determine the acceptability of a requested licensing action for review by the NRC. Per LIC-109, the NRC staff may return an application found to be insufficient to a licensee or applicant to address any identified insufficiencies.

The NRC staff determined that the licensee's relief request (3RR-19, 3RR-20, and 3RR-21) and basis for relief that supports the change requested does not include sufficient detail to enable the NRC staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety.

Therefore, the NRC staff concluded that the information delineated below is necessary to enable the NRC staff to make an independent assessment regarding the acceptability of the relief request in terms of regulatory requirements.

2.0 LIST OF INSUFFICIENCIES

Relief Requests 3RR-19 and 3RR-20, Revision 0

The NRC staff determined that the following additional information is required in order for the NRC staff to evaluate the Relief Requests 3RR-19 and 3RR-20 in its safety evaluation.

¹ Agencywide Documents Access and Management System (ADAMS) Accession Number ML15148A774.

² PPL Susquehanna, LLC submitted this Relief Request. However, on June 1, 2014 the NRC staff issued an amendment changing the name of the licensee for the Susquehanna Steam Electric Station, Units 1 and 2, from PPL Susquehanna, LLC, to Susquehanna Nuclear, LLC.

1. Provide details of impracticality claim:
 - a. Explanation of obstructions (supported by pictures/diagrams, see #2 below).
 - b. Provide an explanation of the burden if ASME Code-required exam coverage is imposed.
 - c. Provide a discussion, if any, of other means to achieve ASME Code-required volume.
 - d. Given the limited exam coverage, provide a discussion of:
 - i. Compensatory measures, such as VT-2
 - ii. How the examined areas will give reasonable identification of degradation (had there been any)
2. The sketches provided do not provide clear information for the NRC staff to evaluate the exam coverage obtained or determine the cause of the impracticality of the examination. For examples of required information refer to the Industry/NRC Information Exchange Public Meeting held on January 13 -15, 2015,³ for a discussion of the NRC staff's expectations for the content of an inspection sketch/diagram (see slide 6 for the information expected and slide 12 for a sample sketch/diagram). This presentation clarifies what a satisfactory inspection sketch should clearly show, e.g., the required examination volume and achieved examination volume, such that the NRC staff can determine the percent examination coverage obtained by a licensee. The sketch/diagram should show relevant dimensions, such as wall thickness and weld dimensions.
3. Provide the examination methodology used (i.e., ASME Section XI, Appendix VIII or other methodology used). Refer to slide 6 of industry/NRC Information Exchange Public Meeting held on January 13 -15, 2015.
4. Provide results of the examination: i.e., whether indications were detected or not. If indications were detected provide descriptions of how they have been dispositioned. Refer to slide 9 of industry/NRC Information Exchange Public Meeting held on January 13 -15, 2015.
5. Discuss any industry or plant-specific operating experience regarding potential degradation and potential severe loading for the subject weld and associated components.

Relief Request 3RR-21, Revision 0

The NRC staff determined that the following additional information is required to evaluate Relief Request 3RR-21 in its safety evaluation.

1.
 - a. Provide schematic diagram of each weld and the associated components as well as provide sketches or scan plots detailing theinsonification angles, ultrasonic wave modes (e.g., refracted shear and longitudinal waves), and volumetric coverage achieved by each angle on each weld.
 - b. Mark clearly on the sketches the volume (i.e., the weld materials and the heat affected zone (HAZ) of base materials) examined and missed (i.e., not examined due to access and geometrical constraints). Please refer to the Industry/NRC Technical Information Exchange Public Meeting held on January 13-15, 2015, for a discussion of the NRC staff's

³ ADAMS Accession No. ML15013A266.

expectations for the content of an inspection sketch/diagram (see slide 6 for the information expected and slide 12 for a sample sketch/diagram).

- c. Discuss why the refracted longitudinal waves (L-waves) were not used as part of “Best Effort” examination. The NRC staff notes that the L-waves have been shown capable of detecting planar flaws on the far-side volume (weld root and HAZ) of cast austenitic stainless steel (CASS) and stainless steel weld and base materials.
 - d. Provide coverage summary table detailing percentage of axial scan coverage (upstream and downstream) and percentage of circumferential scan coverage (upstream and downstream), and the “Best Effort” scan coverage. As an example refer to relief requests by Turkey Point and North Anna.⁴
 - e. Provide discussions on whether use of alternative ultrasonic testing (UT) methods would have increased the examination coverage.
2.
 - a. Provide materials of construction for each weld and the associated components (e.g., pipes, nozzles, pumps, valves, branch connections) in this relief request.
 - b. Provide wall thickness for each weld.
 3. For each weld in this relief request, provide inspection history.
 - a. Discuss whether the licensee identified any indication(s) during construction and preservice inspections (i.e., volumetric or surface examination(s), or both) on the volume not covered by the UT of the affected welds.
 - b. Discuss whether the licensee identified any indication(s) in these welds in the previous 10-year inservice inspection (ISI) intervals.
 - c. Discuss whether the licensee identified any indication(s) in these welds in the third 10-year ISI interval.
 - d. Discuss disposition of identified indications in parts a, b, and c, above.
 4. The NRC staff notes that this relief request did not provide any discussions on whether a qualified UT was used to examine these welds.
 - a. Did the licensee use a qualified UT (e.g., according to Appendix VIII of Section XI that was administered by the Performance Demonstration Initiative program) to volumetrically examine these welds?
 - b. If Appendix VIII was used for the UT qualification, provide supplement(s) number that is applicable to this relief request.
 - c. Otherwise, provided subarticles and/or appendices (e.g., Appendix I of Section XI) of the ASME Code, the licensee used for the UT qualifications.
 5. According to RI-ISI program, the welds that are classified as Item Number R1.11 are prone to potential degradation by thermal fatigue. Discuss whether any supplemental inspection (e.g., surface examination) was performed on the volume not examined by UT to ensure structural integrity of the system.
 6. The NRC staff notes that when the RI-ISI program is established, the welds shall be selected such that the ASME Code required examination coverage is achievable.

⁴ ADAMS Accession Nos. ML15062A279 and ML14115A066 respectively.

- a. Discuss whether there were other welds with the same risk significance subject to the same degradation mechanism that could be examined and achieved the required examination coverage.
 - b. If the answer to part a. is yes, then will the licensee substitute that weld for the subject weld in its RI-ISI program update?
 - c. Discuss whether there exist additional weld with the same risk significance subject to the same degradation mechanism that could be chosen for examination provided that the coverage of chosen additional weld is greater than the coverage of the subject weld to supplement the reduced volumetric coverage of the subject weld.
7. Given the reduced inspection coverage of the welds under consideration, discuss the need for compensatory measures such as frequent plant walk downs, VT-2 examination, or leak detection systems and whether such compensatory measures have been implemented.
8. Discuss any industry or plant-specific operating experience regarding potential degradation (e.g., stress corrosion cracking and corrosion) and potential severe loading (e.g., vibration, water hammer, and overloading) for the subject weld and associated components.