

VERBAL AUTHORIZATION BY THE OFFICE NUCLEAR REGULATION

RELIEF REQUEST NO. 10

USE OF ASME CODE CASE N-513-4 FOR EXTENDED

PERIOD NOT TO EXCEED SIX MONTHS

TURKEY POINT NUCLEAR PLANT, UNIT NO. 3

FLORIDA POWER & LIGHT COMPANY

DOCKET NO. 50-250

OCTOBER 29, 2021

Technical Evaluation read by Matthew Mitchell, Chief of the Piping and Head Penetration Branch, Office of Nuclear Reactor Regulation

By letter dated September 30, 2021 and supplemented by letters dated October 15, and 25, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21273A239, ML21288A544, and ML21298A207, respectively), Florida Power & Light Company (the licensee) proposed an alternative to requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Code Case N-513-4, "Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping," at Turkey Point Nuclear Plant, Unit 3 (TPN3).

Pursuant to 10 CFR 50.55a(z)(2), the licensee submitted Relief Request No. 10 which requested to extend the use of ASME Code Case N-513-4 beyond the allowed single operating cycle and until repairs and testing have been completed on the unit's Intake Cooling Water (ICW) discharge spool piece, but for no more than six months after approval (or April 29, 2022). The degraded spool piece is part of the ICW system and its safety function is to remove heat load from the Component Cooling Heat Exchangers (CCHXs) during accident conditions to support both reactor heat removal and containment heat removal requirements. The leak is located in piping downstream of the CCHXs and downstream of the last isolation valve, before returning water back to the discharge structure and the ultimate heat sink. The piping is made of cast iron material with a nominal wall thickness of 0.73 inch, has a design pressure of 55 pounds-per-square-inch gauge (psig), and a design temperature of 120 degrees Fahrenheit. The system operates at 25 psig. The licensee performed a flaw evaluation in accordance with NRC-approved ASME Code Case N-513-3 when the through-wall leak was initially discovered. The ASME Code Case N-513-3 evaluation was performed to validate the structural integrity of the as found condition and justify continued system operation until a repair could be performed. The leak rate has been between 5 and 10 gallons per hour depending on system lineups and system cleanliness. The leak has not shown an increasing trend indicative of further degradation. The licensee has determined that performing an ASME Code compliant repair/replacement on the degraded portion of ICW piping in accordance with ASME Code, Section XI, IWA-4000 represents a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The hardship cited by the licensee deals with the unusual configurations required to affect a repair and the materials in the ICW system that create both operational and repair risks. The degraded ICW piping is a cast iron spool piece with concrete lining which is un-isolable and would require the entire TPN3 ICW system to be placed out of service for repairs. The operational risks associated with the ASME Code-compliant repair options evaluated by the licensee would require removing the CCHXs from service and providing temporary heat exchangers and temporary flow paths which could impact cooling of the TPN3 spent fuel pool. The repair risks associated with these options are related to the cast iron piping material and the likelihood of further damage caused by drilling and/or welding on the pipe. Because of the cast iron material, drilling or welding could cause cracking of the piping which could increase the leak rate or cause further damage to the concrete lining making the system more susceptible to internal corrosion. In addition, if removed by drilling, the size of the flaw would necessitate a plug size which will limit the number of threads that can be cut into the pipe wall and therefore affect the ASME Code-required thread engagement and leak tightness of the plug.

Going forward the licensee has proposed to follow the latest NRC-approved version of Code Case N-513 which is N-513-4. The licensee has requested to extend the use of ASME Code Case N-513-4 to demonstrate structural integrity of the ICW discharge spool piece for a period not to exceed six months after approval (or April 29, 2022) to allow for the design of an alternative repair method. Once an alternative repair method has been designed, the repair would be installed and tested on the ICW spool piece within the 6-month period and would not involve any of the operational or repair risks discussed earlier.

The piping degradation for the TPN3 ICW discharge piping spool piece has been characterized as a through-wall leak which may have been caused by internal corrosion of the piping due to localized degradation of the concrete liner in the cast iron piping. However, the licensee has not confirmed a definitive degradation mechanism for this area to be used in the flaw growth analysis, and therefore has proposed to increase the frequency of the compensatory measures (leak rate monitoring and wall thickness ultrasonic measurement) as discussed below to extend the use of ASME Code Case N-513-4 beyond the allowed single operating cycle to provide assurance regarding the integrity of the component. The extended period would not exceed six months after approval (or April 29, 2022) beyond this current refueling outage.

The licensee proposed that during the extended use of ASME Code Case N-513-4 they would perform enhanced frequent periodic examinations of the flaw and leakage monitoring beyond what is currently required by ASME Code Case N-513-4. Leakage monitoring will be increased to twice per day to ensure timely identification of leak rate changes and associated system operability determinations. Flaw growth monitoring will be increased to every 15 days to measure the affected wall thickness that will be used in evaluating the structural integrity of the piping. The licensee also described actions to be taken should changes to the flaw growth rate or leak rate occur. Therefore, the licensee will continue to ensure that the structural integrity requirements of ASME Code Case N-513-4 be met.

Based on the review of the information provided above, the NRC staff finds that there is reasonable assurance of adequate protection based on (1) the ASME Code Case N-513-3 evaluation performed to validate the structural integrity of the as found condition, (2) the enhanced periodic ultrasonic measurement inspections and leakage monitoring, (3) the licensee operational decision making actions described in the October 25th letter should changes in the flaw growth rate or leak rate occur, (4) the licensee ensuring the structural integrity requirements of ASME Code Case N-513-4 continue to be met, (5) the apparent lack of increase in flaw growth/leak rate and (6) the very low operating pressure of the system.

Therefore, the NRC staff finds that Relief Request No. 10 will provide reasonable assurance that structural integrity of the subject TPN3 ICW discharge piping and its intended safety function will be maintained in that the licensee will ensure the piping continues to meet the structural integrity requirements of ASME Code Case N-513-4. The NRC staff also finds that specific operational and repair risks based on the system function and materials of construction create an unusual, but valid, basis for establishing hardship with respect to implementing an ASME Code-compliant repair during the current TPN3 refueling outage.

Authorization read by David Wrona, Chief of the Plant Licensing Branch II-2, Office of Nuclear Reactor Regulation

As Chief of the Plant Licensing Branch II-2, Office of Nuclear Reactor Regulation, I agree with the conclusions of the Piping and Head Penetration Branch.

The NRC staff concludes that the proposed alternative for extending the use of ASME Code Case N-513-4 for a period not to exceed six months (or April 29, 2022) to allow for the design of a repair method to be established will provide reasonable assurance of the piping structural integrity. The NRC staff finds that complying with the requirements of the ASME Code, Section XI would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2).

Therefore, effective October 29, 2021, the NRC authorizes the use of the proposed Relief Request No. 10, at TPN3 for a period not to exceed six months (or April 29, 2022).

All other requirements in ASME Code, Section XI for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

This verbal authorization does not preclude the NRC staff from asking additional clarification questions regarding the proposed alternative while subsequently preparing the written safety evaluation.

LIST OF ATTENDEES

OCTOBER 29, 2021 VERBAL AUTHORIZATION

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT NUCLEAR PLANT, UNIT 3

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