Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-19-012

January 30, 2019

10 CFR 50.55a

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Sequoyah Nuclear Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-77 and DPR-79
NRC Docket Nos. 50-327 and 50-328

Subject: **Sequoyah Nuclear Plant, Units 1 and 2, American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section XI, Inservice Inspection Program, Request for Alternative, 18-ISI-1**

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a, "Codes and Standards," paragraph (z)(2), Tennessee Valley Authority (TVA) is submitting an alternative request for Nuclear Regulatory Commission (NRC) approval for the Sequoyah Nuclear Plant (SQN) Units 1 and 2 for the remainder of the current renewed operating licenses for SQN Units 1 and 2. SQN Units 1 and 2 are in the fourth 10-Year inservice inspection (ISI) interval scheduled to end on April 30, 2025.

The enclosure to this letter provides relief request 18-ISI-1 that requests relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," ASME Code Class 1.

The ASME B&PV Code, Section XI, 2007 Edition through 2008 Addenda is the code of record for the SQN Units 1 and 2.

10 CFR 50.55a(z)(2) authorizes the NRC to grant an alternative to the requirements of paragraphs (b) through (h) of 10 CFR 50.55a when compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. As noted in Section IV to the enclosure to this letter, the volumetric examinations of the upper head injection dissimilar metal butt welds on the periodic schedule required by ASME Code Case N-770-2, “Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated With UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities Section XI, Division 1,” and the volumetric examinations of the control rod drive mechanism and incore instrumentation nozzle welds required by ASME Code Category B-O, present a hardship without a compensating increase in the level of quality and safety. Sections V and VI to the enclosure to this letter provides the proposed alternative and basis for use, respectively.

TVA requests approval of this relief request within 12 months from the date of this letter.

There are no new regulatory commitments associated with this submittal. Please address any questions regarding this request to Michael A. Brown at 423-751-3275.

Respectfully,

Erin K. Henderson
Director, Nuclear Regulatory Affairs

Enclosure: Sequoyah Nuclear Plant (SQN), Units 1 and 2, American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section XI, Inservice Inspection Program, Request for Alternative, 18-ISI-1

cc (w/Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Sequoyah Nuclear Plant
NRC Project Manager - Sequoyah Nuclear Plant

Sequoyah Nuclear Plant (SQN), Units 1 and 2, American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI, Inservice Inspection (ISI) Program, Request for Alternative, 18-ISI-1

I. ASME Code Component(s) Affected:

The affected components are ASME Class 1 pressurized water reactor (PWR) full-penetration piping butt welds fabricated with Alloy 600 materials as shown in Figure 1 and Figure 2 and identified in the table below.

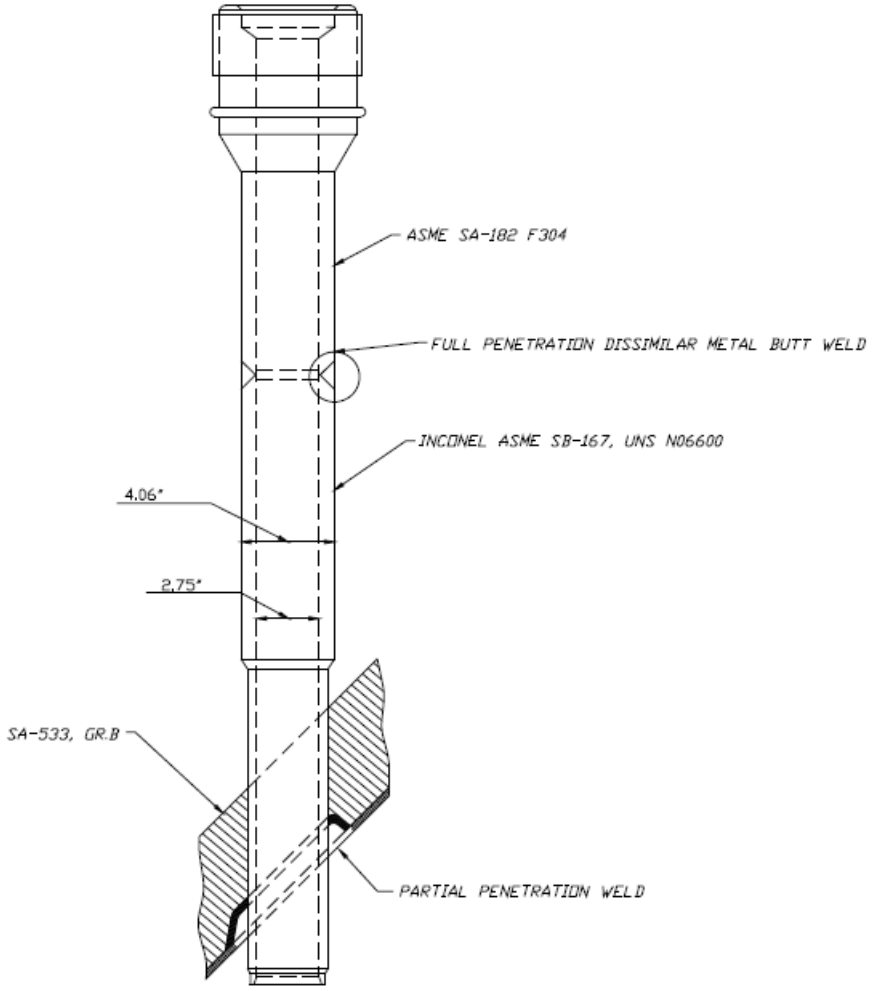
Component ID	Description	Examination Category	Item No.
CRDW-1 through -73	Control rod drive (CRD) housing welds (full length, part length, and spare penetrations)	B-O	B14.20
CRDW-74 through -78	CRD housing welds (containing incore thermocouples)	B-O	B14.21
UPIW-23 through -26	Upper head injection (UHI) housings	Code Case N-770-2	B

CRDW-1 through -78 are dissimilar metal welds adjoining the Alloy 600 penetration sleeve adaptors to the stainless steel process pipe for the various reactor pressure vessel (RPV) head penetrations. The weld is a full penetration ASME Section III Class 1 butt weld fabricated from Alloy 82/182 weld metal. Of these 78 welds, 15 (CRDW-54, -58, -60, and -62 through -73) are peripheral CRD housing welds and five (CRDW-74 through -78) are incore thermocouple housing welds. Although the design and operating conditions of these 20 dissimilar metal welds are identical, the welds are categorized by ASME Section XI Category B-O based on their function, as either Item Number B14.20, CRD housings, or as Item Number B14.21, incore instrument (ICI) housings. These 20 welds are all located on the periphery of the RPV head and are accessible for manual volumetric examination. The CRD and ICI penetration detail is shown in Figure 1.

UPIW-23 through -26 are dissimilar metal welds adjoining Alloy 600 penetration sleeve adaptors to the stainless steel UHI system process piping. The UHI System was designed to improve the responsiveness of the emergency core cooling system during a large break loss of coolant accident (LOCA). The system would have provided additional core cooling by injecting borated water into the reactor vessel head during the blowdown portion of a LOCA, but has been functionally abandoned by plant design modifications. The modification involved cutting and removing the UHI piping above the dissimilar metal welds, and installing a welded stainless steel cap. Although the function of the system is no longer required, the remaining RPV head penetrations, pipes, and pipe caps still perform a primary reactor coolant system (RCS) Class 1 pressure boundary function for SQN Units 1 and 2. Welds UPIW-23 through -26 are categorized per ASME Code Case N-770-2 as Inspection Item B, “Unmitigated Butt Welds at Cold Leg Operating Temperature.” These four welds are located on the periphery of the RPV head and are accessible for manual volumetric examination. The UHI penetration detail is shown in Figure 2.

Figure 1

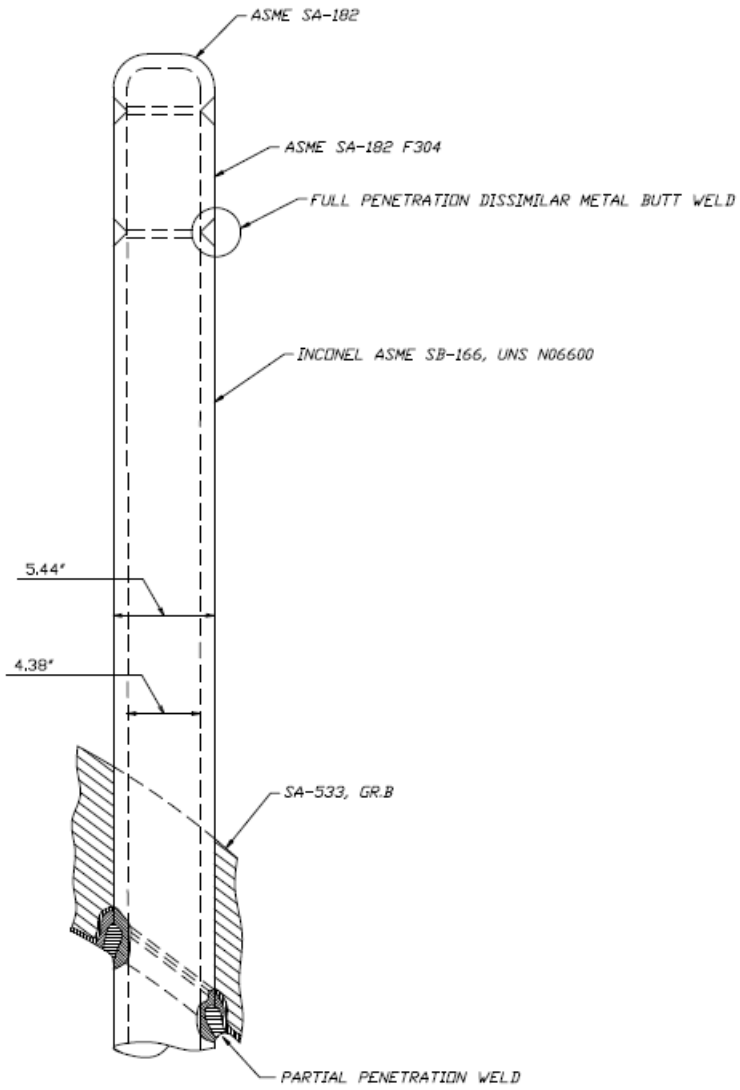
CRD and ICI Penetrations



Enclosure

Figure 2

UHI Auxiliary Head Adaptor Penetration



II. Applicable Code Edition and Addenda:

SQN Units 1 and 2 are in the fourth ISI interval. The ISI Code of Record for both units is the ASME Boiler and Pressure Vessel Code (ASME Code), Section XI, 2007 Edition through 2008 Addenda, as conditioned by 10 CFR 50.55a.

III. Applicable Code Requirement:

CRD Housings, CRDW-1 through -73

ASME Code, Section XI, Examination Category B-O requires a volumetric or inside diameter (ID) surface examination of ten percent (%) of the peripheral CRD housings each inspection interval. For SQN Units 1 and 2, 15 of the 73 CRD penetrations are considered accessible periphery locations. Therefore, two CRD welds are examined each interval on each unit.

ICI Housings, CRDW-74 through -78

ASME Code, Section XI, Examination Category B-O requires a volumetric or ID surface examination of 10% of the ICI housings each inspection interval. SQN Units 1 and 2 each have five ICI penetrations. Therefore, one of the ICI welds is examined each ISI interval on each unit.

UHI Housings, UPIW-23 through -26

Title 10 of the Code of Federal Regulations (10 CFR) 50.55a(g)(6)(ii)(F), requires licensees of pressurized water reactors to implement the requirements of ASME BPV Code Case N-770-2, subject to the conditions specified in paragraphs (g)(6)(ii)(F)(2) through (13). Code Case N-770-2, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities, Section XI, Division 1", Table 1, Inspection Item B, requires a volumetric examination of each category B weldment once every second inspection period, not to exceed seven years.

IV. Reason for Request:

TVA is submitting this proposed alternative in accordance with 10 CFR 50.55a(z)(2) because the volumetric examinations of the UHI dissimilar metal butt welds on the periodic schedule required by ASME Code Case N-770-2, and the volumetric examinations of the CRDM and ICI nozzle welds required by ASME Code Category B-O, present a hardship without a compensating increase in the level of quality and safety.

The basis for the hardship is the high dose required for performance of the RPV head penetration UHI, CDRM, and ICI butt weld examinations at varying frequencies that do not align with the RPV Head volumetric examinations required by Code Case N-729-4, "Alternative Examination Requirements for PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds Section XI, Division 1." The butt welds are located above the RPV head, which limits accessibility and worker stay times due to high dose rates. For example, the last time the inspection was performed, in the SQN Unit 2 Cycle 20 Refueling Outage (U2R20) in Fall 2015, the calculated dose estimate for manual ultrasonic examination of the four dissimilar metal UHI welds, including supporting field work activities, was 4.335 rem. In an effort to maintain radiological exposure As Low As Reasonable Achievable (ALARA), TVA instead elected to utilize an NDE vendor to develop new tooling and volumetric examination procedure qualifications to perform the inspections remotely, using specialized robotic tooling to examine the welds from the inside surface of the UHI penetration.

The NDE vendor and the robotic tooling manipulator selected were the same as those previously used for inspection of RPV head partial-penetration welds at SQN for compliance with ASME Code Case N-729-1. Access for the robotic equipment was obtained from under the RPV head, with the head on the storage stand. Using this remote inspection method to examine the four UHI butt welds resulted in a 0.643 rem radiological exposure to examination personnel; significantly less than that estimated for manual examination (i.e., 4.335 rem). However, as a long-term solution, this option is cost prohibitive when performed independently of the RPV Head volumetric examinations required by Code Case N-729-4, due to the specialized robotic tooling required. While the actual dose rates at the RPV head vary between the units, this example from SQN Unit 2 provides a representative case study similar to SQN Unit 1.

Code Case N-770-2 requires volumetric examination of the UHI penetration welds every second inspection period, not to exceed seven years. ASME Section XI, Category B-O requires examination of a sample the RPV CRD and ICI penetration welds each 10-year ISI interval. The SQN RIY parameter calculation from Code Case N-729-4 requires volumetric examination of the RPV Head penetrations on a frequency not to exceed eight years. Table 1 and Table 2 depict these schedules for SQN Units 1 and 2 respectively, through the currently licensed period of extended operation. Because the UHI, CRD, and ICI weld examinations are required at a different frequency than the RPV head penetrations, and TVA prefers to perform these examinations remotely to reduce radiological exposure to inspection personnel. The specialized vendor examination personnel and robotic tooling must be deployed two to three times each inspection interval. The support activities for mobilization and deployment must also be repeated multiple times, resulting in unnecessary mobilization cost, additional radiological exposure, and outage schedule impacts.

To minimize this impact, TVA considered reducing the frequency of the RPV head volumetric examination to align with the Code Case N-770-2 examination frequency for the UHI welds. However, based on the data from previous RPV head volumetric examinations, it was determined this change would result in an increase in total radiological exposure, due to the addition of one volumetric head examination for each unit during the remaining life of the plant.

V. Proposed Alternative:

In lieu of performing volumetric examinations of the RPV head penetration-to-UHI piping dissimilar metal welds at the frequency specified in ASME Code Case N-770-2, Table 1, Item B (i.e., four welds every second Inservice Inspection period, not to exceed seven years), and volumetric examinations of two CRD and one ICI penetration-to-piping dissimilar metal welds at the frequency required by ASME Section XI Category B-O (i.e., three welds every ten-year interval), TVA proposes to perform remote volumetric examinations of the four UHI piping dissimilar metal welds and the two CRD and one ICI housing dissimilar metal welds, on a schedule that corresponds with the RPV head penetration volumetric examination required by ASME Code Case N-729-4. This proposed schedule is depicted in Table 1 and Table 2 for SQN Units 1 and 2, respectively.

For both SQN Units 1 and 2, the proposed examination frequency change will result in an increase in the number of CRD and ICI weld examinations from six to nine, and a reduction in the number of UHI welds examinations from 16 to 12 throughout the duration of the current plant license. This results in a net reduction of one RPV dissimilar metal housing weld examination per unit over the licensed period of extended operation.

Additionally, in lieu of selecting two of the peripheral CRD housing welds for examination as required by ASME Code Category B-O, Item Number B14.20, TVA will instead select two empty penetration housings from the population of 12 spare CRD housings. These spare penetrations are not located at the RPV head periphery, but are intermittently spaced throughout the RPV head interior. This location change is necessary because the qualified ultrasonic testing (UT) transducers for remote volumetric examination will only fit in open CRD housings.

All other examination requirements, such as examination techniques, procedures, personnel, and qualifications will continue to be implemented as required by the ASME Code and Code Case N-770-2.

VI. Basis for Use

In supporting TVA's effort to maintain radiological exposure ALARA, this proposed change will allow qualified remote volumetric examination techniques to be applied in a cost effective manner, utilizing the existing on-site personnel and tooling from the RPV head penetration volumetric examinations. With this change, the volumetric examinations of the RPV head and RPV head penetration welds will be performed remotely, eliminating the need to directly access the RPV head for manual UT. In addition, the total number of specialized vendor tooling deployments can be reduced from eight to three on SQN Unit 1, and from seven to three on SQN Unit 2, over the remaining life of the plant, resulting in further reductions in radiation exposure to both plant personnel and vendor contract personnel.

By performing all of the RPV head penetration DM butt weld volumetric examinations remotely and eliminating any manual UT above the RPV head, TVA estimates an avoidance of 14.8 rem of radiological exposure per unit throughout the current license of the plant. Aligning the examination schedules in accordance with this proposed examination plan will reduce the total accumulated radiological exposure by an additional 3.125 rem on SQN Unit 1 and 2.336 rem on SQN Unit 2 throughout the current license of the plant, while providing assurance that the RPV head penetration-to-pipe welds will continue to maintain structural integrity in accordance with the original plant design.

Design

Each RPV upper head at SQN contain 78 CRD and ICI penetrations (61 full length and part length CRDs, 12 spare penetrations, and five thermocouple instrument penetrations), four UHI penetrations, and one vent line penetration, for a total of 83 RPV head penetrations. The 83 RPV head penetrations are similarly fabricated from Inconel 600 (UNS No. N06600) piping material that is interference fit into pre-drilled holes in the RPV head, and welded to the underside of the RPV head using partial penetration J-groove welds. Each of these Inconel penetration sleeve adaptors are then welded to a Stainless Steel, Type 304 pressure retaining process pipe, using a full penetration ASME Section III Class 1 butt weld fabricated from Alloy 82/182 weld metal. The 78 CRD and ICI penetrations are identical in design and fabrication. The four UHI penetrations are also identical in design and fabrication, except for differences in the dimensions of the penetration sleeve. CRD and ICI penetration sleeves are 2.75" ID and 0.66" in wall thickness, while the UHI penetration sleeves are 4.38" ID and 0.53" thick. Per Westinghouse Report LTR-PCAM-04-26 Revision 00, "Location of Alloy 600 and Dissimilar Metal Alloy 82/182 Welds in the Reactor Coolant System Sequoyah Units 1 and 2, Watts Bar Unit 1," the operating temperature at the location of both the CRDM and UHI dissimilar metal welds are assumed to be the same as the cold leg temperature of 547°F.[1]

[1] This is Westinghouse Proprietary Class 2 document and can be made available for NRC inspection.

However, the subject welds are located at a distance above the RPV head such that the actual metal temperatures are much lower than the head temperature. Actual operating temperatures at these weld location have not been measured at SQN, but EPRI MRP-109 (Reference 1) states “Note that the weld connecting the reactor vessel head penetration tubes to the stainless steel CRDM tubing above the vessel is also Alloy 82/182… ”, but exempts the weld from evaluation because “the operating temperature is estimated to be about 200°F to 300°F too low for Primary Water Stress Corrosion Cracking (PWSCC) to be a concern, and so it has not been treated”.

PWSCC

As noted in International Atomic Energy Agency (IAEA) Report, NP-T-3.13 (Reference 2) PWSCC is an intergranular degradation mechanism that can occur in alloy 600 components when a high tensile stress, a high temperature aqueous environment (primary water), and a susceptible material microstructure are present. All three contributing factors must be present simultaneously, such that the susceptibility to PWSCC can be greatly reduced or eliminated by reduction of any one of the factors. Materials, microstructure, and residual tensile stresses have been shown to also play an important role in susceptibility to PWSCC crack initiation. However, industry experience and laboratory testing have shown the predominant factors for PWSCC susceptibility to be operating temperature and hydrogen concentration. In accordance with EPRI MRP-420 (Reference 3), crack growth rates are strongly dependent on operating parameters such as temperature and hydrogen concentration, as well as specific material parameters such as yield strength, stress intensity factor, and crack orientation.

In accordance with EPRI MRP-48 (Reference 4), the SQN RPV head temperatures are the lowest in the PWR fleet, with an operating temperature of 547°F. As stated above, the subject welds are located at a distance above the RPV head such that the actual metal temperatures are even lower than the head temperature. EPRI MRP-109 (Reference 1) excludes the subject welds from evaluation because “the operating temperature is estimated to be about 200°F to 300°F too low for PWSCC to be a concern.”

The SQN primary chemistry specifications limit RCS hydrogen concentrations to between 25 and 50 cubic centimeter per kilogram (cc/kg). Reference 1 indicates that the influence of hydrogen on crack initiation is relatively small in this range of concentrations.

In addition, nuclear power reactors perform volumetric and surface examinations of the pressure retaining RPV head housing welds on a ten-year frequency per ASME Code Category B-O. There has been no identified history of PWSCC occurring at the CRD and ICI penetration-to-piping butt weld, nor at the UHI penetration-to-piping butt weld. While it is acknowledged that there are still several unknown variables in the analysis of PWSCC crack initiation and crack growth rates, such as subtle alloy chemistry differences and variables in welding practices, the overall susceptibility to PWSCC at SQN is considered very low relative to the rest of the PWR fleet.

Examination Results

On SQN Unit 1, the most recent volumetric examinations have been performed on two periphery CRD housing welds during U1R14 in Spring 2006 and U1R18 in Spring 2012 in accordance with ASME Code Category B-O. The examinations were performed manually, from the top of the RPV head, using traditional non-encoded examination techniques. All four examinations obtained 100% coverage and identified no recordable indications. The four SQN Unit 1 UHI penetration welds were examined in U1R20 in Spring 2015, in accordance with

ASME Code Case N-770-1. The examinations were performed remotely, from under the head, using automated examination equipment. All four examinations obtained 100% coverage and identified no recordable indications.

On SQN Unit 2, the most recent volumetric examinations have been performed on two periphery CRD housing welds during U2R13 in Spring 2005 and U2R20 in Fall 2015 in accordance with ASME Code Category B-O. The examinations were performed manually, from the top of the RPV head, using traditional non-encoded examination techniques. All four examinations obtained 100% coverage and no recordable indications. The four SQN Unit 2 UHI penetration welds were examined in U2R20 in Fall 2015, in accordance with ASME Code Case N-770-1. The examinations were performed remotely, from under the head, using automated examination equipment. All four examinations obtained 100% coverage and identified no recordable indications.

Summary

The SQN Unit 1 and Unit 2 susceptibility to PWSCC and TGSCC is very low. Studies have shown the susceptibility to both PWSCC and TGSCC are primarily dependent on metal temperature and water chemistry. As stated above, the SQN RPV head temperatures are only 547°F. Additionally, the subject welds are located at a distance above the RPV head such that the actual metal temperatures are estimated to be much lower than the RPV head temperature. The SQN primary water chemistry is controlled in accordance with the EPRI PWR water chemistry guidelines and the recommendations of Reference 2.

The SQN CRD housing welds, incore thermocouple penetration welds, and the UHI penetration welds are essentially identically in design, construction, and operating environment. The materials, as-welded microstructure, and residual weld stresses are also similar. Therefore, the CRD housing welds, incore thermocouple penetration welds, and UHI penetration welds are considered to have an equivalent susceptibility to PWSCC crack initiation. While the design and operating parameters, and the resulting crack initiation susceptibility are virtually identical, the three different types of RPV head penetrations are examined at different frequencies.

Industry-operating experience has shown the partial penetration J-groove welds to be significantly more susceptible to crack initiation than full penetration butt welds fabricated from the same materials. However, under the SQN's current Alloy-600 program, the UHI butt welds are examined at a higher frequency than the CRD J-groove welds. The alternative proposed by this request will appropriately schedule all of the in-scope RPV head penetration dissimilar metal welds to align with the examination frequency of the partial penetration J-groove welds, as required by ASME Code Case N-729-4.

This proposed examination plan will significantly reduce the total accumulated radiological exposure to personnel, while providing assurance that the RPV head penetration-to-pipe welds will continue to maintain structural integrity in accordance with the original plant design.

VII. Conclusion

Code Case N-770-2, paragraph -1100(d), excludes the Category B-O dissimilar metal welds on each of the 78 CRD head penetrations, but does not include specific language to exclude the UHI nozzle welds. Although the UHI nozzles were designed to perform a different function from the CRD nozzles, the materials, welds, operating conditions, and the low susceptibility to PWSCC is nearly identical to the Category B-O dissimilar metal welds on the CRD head penetrations. Because of this similarity, TVA is proposing to reschedule the volumetric

examinations of in-scope SQN RPV head penetration dissimilar metal butt welds to align with the RPV head volumetric examinations required by ASME Code Case N-729-4. Manual volumetric examination of the UHI and CRD welds is not preferred, because this examination subjects worker to extremely high dose rates. Remote volumetric examination of the subject UHI welds can be performed for lower dose, but requires specialized vendor personnel, robotic tooling, and specialized NDE equipment that is costly to deploy. Rescheduling the in-scope RPV Head penetration dissimilar metal butt welds to the same frequency as the RPV head volumetric exams required by ASME Code Case N-729-4 presents a cost effective alternative examination plan that allows TVA to realize significant reductions in radiological exposure, while providing an acceptable level of quality and safety.

This proposed frequency change will yield an examination population of one less weld over the currently licensed plant life, while reducing the overall number of under-head deployments, and associated plant support activities from eight to three on SQN Unit 1 and from seven to three on SQN Unit 2, throughout the remaining life of the plant. This proposed examination plan will reduce the total accumulated radiological exposure by an estimated 17.93 rem on SQN Unit 1 and 17.14 rem on SQN Unit 2 throughout the currently licensed life of the plant, while continuing to provide assurance that the RPV head penetration-to-pipe welds and the RPV head penetration-to-UHI piping welds will maintain structural integrity, in accordance with the original plant design, for the remaining life of the plant.

Therefore, TVA requests this proposed alternative in accordance with 10 CFR 50.55a (z) (2), as compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

VIII. Duration of Proposed Alternative:

The proposed alternative is requested for the remainder of the current renewed operating licenses for SQN Units 1 and 2, as shown in Table 1 and Table 2, respectively.

IX. Precedents

This alternative request is similar in nature to the below alternative requests approved by the Nuclear Regulatory Commission with respect to authorizing alternative examination schedules as required by the ASME Section XI Code. However, the components described in this alternative request differ from those listed in the below precedents.

- Three Mile Island Nuclear Station, Unit 1 Request No. RR-10-01 (TAC NO. ME4882), dated August 8, 2011 (ML112061711). This alternative request authorized alternative examinations of welds on three non-peripheral CRD housings in lieu of the ASME Code Examination Category B-O, Item Number B14.10 required examinations of certain peripheral CRD housings.
- Oconee Nuclear Station, Units 1 and 2- Relief Request No. 17-0N-001 (EPID L-2017-LLR-0099), dated April 13, 2018 (ML18100A005). This alternative request authorized the use of an alternative to the examination frequency requirements of Section XI of the American and Code Case N-770 for reactor vessel core flood nozzle dissimilar metal butt welds (DMBWs). Specifically, this alternative extended the weld examination frequency required by Code Case N-770-2, Table 1, Item B for the Oconee 1 and 2 core flood nozzle DMBWs from "every second inspection period not to exceed 7 years" to "a maximum of 10 years from the previous examination."

X. References

1. EPRI MRP-109, Final Report (1009804), “Alloy 82/182 Pipe Butt Weld Safety Assessment for U.S. PWR Plant Designs,” dated April 2005
2. International Atomic Energy Agency Technical Report No. NP-T-3.13, “Stress Corrosion Cracking in Light Water Reactors: Good Practices and Lessons Learned,” dated September 2011
3. EPRI MRP-420, Revision 1 (3002014244), “Crack Growth Rates for Evaluating Primary Water Stress Corrosion Cracking (PWSCC) of Thick-Wall Alloy 600 Materials and Alloy 82, 182, and 132 Welds,” dated July 2018
4. EPRI MRP-48, Final Report (1006284), “PWR Materials Reliability Program Response to NRC Bulletin 2001-01,” dated August 2001

Table 1, Current and Proposed Examination Schedules for SQN Unit 1

	Fourth Interval (5/1/2016 through 4/30/2025)							Fifth Interval*										Sixth Interval*				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Current Schedule	RFO23		RFO24	RFO25		RFO26	RFO27		RFO28	RFO29		RFO30	RFO31		RFO32	RFO33		RFO34	RFO35		RFO36	RFO37
CRD and ICI Weld Exams (ASME Category B-O)						X										X						
UHI Weld Exams (N-770-2)			X						X							X						X
RPV Head Exams (N-729-4)				X								X							X			
Proposed Schedule																						
CRD and ICI Weld Exams (ASME Category B-O)				X								X							X			
UHI Weld Exams (N-770-2)				X								X							X			
RPV Head Exams (N-729-4)				X								X							X			

* Future Interval dates are shown for representation purposes only.

Table 2, Current and Proposed Examination Schedules for SQN Unit 2

	Fourth Interval (5/1/2016 through 4/30/2025)							Fifth Interval*									Sixth Interval*					
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Current Schedule		RFO23	RFO24		RFO25	RFO26		RFO27	RFO28		RFO29	RFO30		RFO31	RFO32		RFO33	RFO34		RFO35	RFO36		RFO37
CRD and ICI Weld Exams (ASME Category B-O)						X									X								
UHI Weld Exams (N-770-2)			X						X						X						X		
RPV Head Exams (N-729-4)			X								X							X					
Proposed Schedule																							
CRD and ICI Weld Exams (ASME Category B-O)			X								X							X					
UHI Weld Exams (N-770-2)			X								X							X					
RPV Head Exams (N-729-4)			X								X							X					

* Future Interval dates are shown for representation purposes only.