UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 8, 2025

Mr. Ken J. Peters
Executive Vice President and
Chief Nuclear Officer
Attention: Regulatory Affairs
Vistra Operations Company LLC
Comanche Peak Nuclear Power Plant
6322 N FM 56
P.O. Box 1002
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNIT NO. 2 - RELIEF REQUESTS B-1, B-2, B-3, B-4, C-1 AND C-2 FOR THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL (EPID L-2024-LLR-0053, EPID L-2024-LLR-0054, EPID L-2024-LLR-0055, EPID L-2024-LLR-0056, EPID L-2024-LL4-0057, AND EPID L-2024-LLR-0058)

Dear Mr. Peters:

By letter dated August 13, 2024, as supplemented by letter dated February 18, 2025, Vistra Operations Company LLC (the licensee), submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for relief from certain American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, requirements at Comanche Peak Nuclear Power Plant, Unit No. 2 (Comanche Peak Unit 2)

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(5)(iii), the licensee requested relief and to use alternative requirements for inservice inspection (ISI) items on the basis that the Code requirement is impractical. The licensee submitted Relief Requests B-1, B-2, B-3, B-4, C-1 and C-2 for inspections performed on specified welds in the reactor pressure vessel, steam generator, heat exchangers, and piping during the third 10-year ISI interval, which began on August 3, 2014, and ended on August 2, 2023.

The NRC staff has reviewed the subject requests and based on the enclosed safety evaluation, the staff concludes that it is impractical for the licensee to comply with the ASME Code, Section XI, requirement and that the proposed examinations provide reasonable assurance of structural integrity or leak tightness of the subject welds. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(5)(iii). The NRC staff further concludes that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Therefore, the NRC staff grants Relief Requests B-1, B-2, B-3, B-4, C-1 and C-2 at Comanche Peak Unit 2, for the third 10-year ISI interval.

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

If you have any questions, please contact the Comanche Peak Project Manager, Dennis Galvin at (301) 415-6256 or by email at Dennis.Galvin@nrc.gov.

Sincerely,

TONY NAKANISHI

Digitally signed by TONY NAKANISHI
Date: 2025.05.08 18:24:40 -04'00'

Tony Nakanishi, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-446

Enclosure:
Safety Evaluation

cc: Distribution via Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUESTS B-1, B-2, B-3, B-4, C-1 AND C-2

THIRD 10-YEAR INSERVICE INSPECTION INTERVAL

VISTRA OPERATIONS COMPANY LLC

COMANCHE PEAK NUCLEAR POWER PLANT, UNIT 2

DOCKET NO. 50-446

1.0 INTRODUCTION

By letter dated August 13, 2024 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML24226A120), as supplemented by letter dated February 18, 2025 (ML25049A361), Vistra Operations Company LLC (the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC, the Commission) for relief from certain American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (ASME Code), Section XI, requirements at Comanche Peak Nuclear Power Plant, Unit No. 2 (Comanche Peak Unit 2).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(5)(iii), "ISI program update: Notification of impractical ISI Code Requirements," the licensee requested relief and to use alternative requirements for inservice inspection (ISI) items on the basis that the Code requirement is impractical. The licensee submitted Relief Requests (RRs) B-1, B-2, B-3, B-4, C-1 and C-2 for inspections performed on specified welds in the reactor pressure vessel (RPV), steam generator, heat exchangers (HXs), and piping during the third 10-year ISI interval, which began on August 3, 2014, and ended on August 2, 2023.

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(g)(4), "Inservice inspection standards requirement for operating plants," ISI of ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulation requires that ISI examinations of ASME Code Class 1, 2 and 3 components and system pressure tests conducted during the first 10-year ISI interval and subsequent ISI intervals must comply with the latest edition and addenda of the ASME Code, Section XI, that was incorporated by reference in 10 CFR 50.55a(a)(1)(ii), 18 months prior to the start of the 120-month (10-year) interval and subject to the limitations and modifications listed therein.

The regulation in 10 CFR 50.55a(g)(5)(iii) states, in part, that if a licensee has determined that conformance with a ASME Code requirement is impractical for its facility, the licensee must notify the NRC and submit, as specified in 10 CFR Section 50.4, information to support its determination. Determinations of impracticality in accordance with this section (regulation) must be based on the demonstrated limitations experienced when attempting to comply with the ASME Code requirements during the ISI interval for which the request is being submitted. Requests for relief made in accordance with this section are required to be submitted for approval by the Director of the NRC's Office of Nuclear Reactor Regulation no later than 12 months after the expiration of the initial or subsequent 120-month (10-year) inspection interval for which relief is sought.

The regulation in 10 CFR 50.55a(g)(6)(i), "Impractical ISI requirements: Granting of relief," states that,

> The Commission will evaluate determinations under paragraph (g)(5) of [10 CFR 50.55a] that [ASME Code] requirements are impractical. The Commission may grant such relief and may impose such alternative requirements as it determines are authorized by law, will not endanger life or property or the common defense and security, and are otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

3.0 TECHNICAL EVALUATION

3.1 Relief Request B-1

3.1.1 ASME Code Components Affected

The affected component is the ASME Code Class 1 head-to-tubesheet weld in steam generator No. 2-01.

Code Category No.	Item No.	Description	Component/Weld No.	Percent Coverage Obtained
B-B	B2.40	Steam Generator 2-01 head-to-tubesheet weld	TCX-1-3100-1-1	72

3.1.2 Applicable Code Edition and Addenda

The 2007 Edition through 2008 Addenda of the ASME Code, Section XI.

3.1.3 Applicable Code Requirements

The licensee stated that the ASME Code, Section XI, 2007 Edition through 2008 Addenda, figure IWB-2500-6 (Design B) requires a minimum volumetric examination of the weld volume extending 1/2t (t = wall thickness of the component) into the base metal on the steam generator head side and tubesheet side of the head-to-tubesheet weld (ASME Code Item B2.40).

The licensee stated that the Comanche Peak Unit 2, third 10-year interval ISI program plan also implements ASME Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1," which the NRC has approved for use in Regulatory

Guide (RG) 1.147, “Inservice Inspection Code Case Acceptability ASME Section XI, Division 1,” Revision 21 (ML23291A003). ASME Code Case N-460 states, in part, that ,”…when the entire examination volume or area cannot be examined due to interference by another component or part geometry, a reduction in examination coverage on any Class 1 or Class 2 weld may be accepted provided the reduction in coverage for that weld is less than 10%.”

NRC Information Notice (IN) 98-42, “Implementation of 10 CFR 50.55a(g) Inservice Inspection Requirements” (ML031040543), defines a reduction in coverage of less than 10 percent to be “essentially 100 percent.” IN 98-42 states, in part, that, “The NRC has adopted and further refined the definition of ‘essentially 100 percent’ to mean ‘greater than 90 percent’….” This definition is applicable to all examinations of welds or components required by the ASME Code, Section XI.

3.1.4 Licensee’s Impracticality and Burden

The licensee stated that the examination of the subject weld is limited by the presence of four 24-inch by 24-inch steam generator support pads and seventeen 2.5-inch by 2.5- inch welded pads as shown in figures B-1-1 and B-1-2 of attachment 1 to the submittal dated August 13, 2024. The licensee performed examinations in accordance with its procedure TX-ISI-210, “Ultrasonic Examination Procedure for Welds in Ferritic Steel Vessels.” The licensee used 45 degree shear and 60 degree longitudinal transducers with angle beams to scan the subject weld. As shown on figure B-1-3 of attachment 1 to the submittal, the 45 degree transducer was not able to examine 23 percent of the weld volume, and the 60 degree transducer was not able to examine 29 percent of the weld volume. The licensee stated that considering the worst-case limitation, it achieved a maximum 71 percent examination coverage of the required volume for the subject weld.

The licensee stated that the design configuration restrictions of the subject weld make the ASME Code required examination coverage for the weld volume impractical. The licensee further stated that plant modifications or replacements of components to allow for complete coverage would be needed to meet the Code requirements and would cause considerable burden. The licensee concluded that RR B-1 does not cause undue risk to the public health and safety.

3.1.5 Licensee’s Proposed Alternative Inspections and Basis for Use

The licensee proposed in RR B-1 the following alternative inspections in lieu of the ASME Code required examination coverage of essentially 100 percent:

- Performed ultrasonic testing (UT) of the subject weld to the maximum extent practical during the third 10-year ISI interval.

- Performed pressure test with associated VT-2 visual examinations as required by the ASME Code, Section XI, Examination Category B-P, during the third 10-year ISI interval. No evidence of leakage was identified for this component.

The licensee stated that the alternative inspections provide the best examination coverage practical within the limitations of the current configuration. The licensee further stated that based on the percentage of the examination volume completed and no indications identified during the examination, there is a high level of confidence in the continued structural integrity of the weld.

3.1.6 NRC Staff Evaluation

Based on figures B-1-1, B-1-2, and B-1-3 of attachment 1 to the August 13, 2024, submittal, the NRC staff confirmed that the licensee inspected the subject weld in accordance with the requirements of the ASME Code, Section XI, table IWB-2500-1, Examination Category B-B, Item B2.40, and the weld volume of the ASME Code, Section XI, figure IWB-2500-6 (Design B).

The NRC staff verified that the licensee examined the subject weld using a combination of UT 45 degree shear wave and 60 degree longitudinal wave transducers. The NRC staff also confirmed that figure B-1-1 in RR B-1 illustrated that the examination of the subject weld was obstructed by the following steam generator shell components located in the proximity of the weld: (1) the presence of 4 steam generator shell supports pads and 17 steam generator welded pads located in the vicinity of the subject weld, and (2) the presence of steam generator shell support collar that is located in the vicinity of the subject weld. The NRC staff observed that the licensee performed the required UT inspection of the subject weld to the maximum extent possible under the requirements of the ASME Code, Section XI, table IWB-2500-1.

In request for additional information (RAI) B-1-1 by email dated December 18, 2024 (ML24353A200), the NRC staff requested clarifications on the examination coverage calculations for the subject weld provided in figure B-1-1 of attachment 1 to the submittal dated August 13, 2024. By letter dated February 18, 2025, the licensee provided a detailed calculation to derive the examination volume of the subject weld based on the examined volume of the 45 degree shear wave and 60 degree longitudinal wave scans. The NRC staff noted that the licensee reported a 71 percent examination coverage in the August 13, 2024, submittal, whereas the licensee reported a 72 percent examination coverage in the February 18, 2025, supplement. The NRC staff determined that the difference between the two examination coverages is minor and is not related to changes in the examination effort. As such, the NRC staff accepts the examination coverage of 72 percent in lieu of 71 percent for the subject weld.

In its review of the licensee’s examination coverage diagrams and calculations, the NRC staff verified that the subject weld is obstructed by the presence of the steam generator shell support pads, welded pads, and support collar that precluded the licensee from achieving the minimum 90 percent weld coverage by volume criterion established in ASME Code Case N-460.

The NRC staff noted that the licensee did not detect any indications in the portions of the subject weld and adjacent base metal regions that were examined. The NRC staff recognized that the licensee performed a system leakage test and associated VT-2 visual examination in accordance with the ASME Code, Section XI, table IWB-2500-1, Examination Category B-P. The licensee did not identify any reactor coolant leakage from the subject weld, which demonstrated the leak tightness and structural integrity of the subject weld.

The NRC staff has determined that compliance with ISI requirements of the ASME Code, Section XI, table IWB-2500-1, is impractical because the presence of obstruction in the vicinity of the subject weld limited inspection accessibility. The NRC staff has also determined that compliance with the applicable ASME Code requirements would place an unnecessary burden on the licensee because the licensee would need to modify the design of either the subject weld or the design of the adjacent shell support pads, welded pads and support collar.

The NRC staff has determined that, with the 72 percent examination coverage achieved as shown in the supplement dated February 18, 2025, no indications being detected in the weld, and no leakage being detected in the system leak test, the inspection coverage achieved on the

subject weld provides for a certain level of quality and safety in lieu of achieving greater than 90 percent examination coverage.

3.2 Relief Request B-2

3.2.1 ASME Code Components Affected

The affected components are the ASME Code Class 1 pipe-to-valve welds.

Code Category No.	Item No.	Description	Component/Weld No.	Percent Coverage Obtained
R-A	R1.11	Pipe-to-valve weld on the reactor coolant alternate charging line	TCX-1-4105-6	50
R-A	R1.11	Pipe-to-valve weld on the pressurizer relief line	TCX-1-4504-11	50

3.2.2 Applicable Code Edition and Addenda

The 2007 Edition through 2008 Addenda of the ASME Code, Section XI.

3.2.3 Applicable Code Requirements

ASME Code, Section XI, 2007 Edition through 2008 Addenda, figure IWB-2500-8(c) requires a volumetric examination of at least the inner one-third of the pipe wall thickness (1/3 t). This examination must extend into the base metal of the piping for a minimum distance of ¼ inch beyond the weld crown edge for pipes with a nominal pipe size of 4 inches or larger. The risk-informed inservice inspection (RI-ISI) program further extends this required examination volume. Specifically, if no counterbore is present, the examination extends ⅓ inch past the weld crown edge. If a counterbore exists, the required examination covers a distance of ¼ inch on either side of the counterbore.

The licensee stated that the Comanche Peak Unit 2 third 10-year interval ISI program plan also implements ASME Code Case N-460, which the NRC has approved for use in RG 1.147, Revision 21. ASME Code Case N-460 states, in part, that "…when the entire examination volume or area cannot be examined due to interference by another component or part geometry, a reduction in examination coverage on any Class 1 or Class 2 weld may be accepted provided the reduction in coverage for that weld is less than 10%."

NRC IN 98-42 defines a reduction in coverage of less than 10 percent to be "essentially 100 percent." IN 98-42 states, in part, that, "The NRC has adopted and further refined the definition of 'essentially 100 percent' to mean 'greater than 90 percent'…." This definition has been applied to all examinations of welds or components required by the ASME Code, Section XI.

3.2.4 Licensee's Impracticality and Burden

The licensee stated TCX-1-4105-6 is an austenitic stainless steel weld between SA-376 Type 316, 3-inch schedule 160 pipe to a valve on the reactor coolant alternate charging line. Due to the presence of the valve, the examination of this component is restricted to one side. Volumetric testing was conducted using shear wave search units with nominal angles of 45, 60,

and 75 degrees and examination coverage is limited to 50 percent because of the valve configuration.

Similarly, TCX-1-4504-11 is an austenitic stainless steel weld connecting an SA-376 Type 316, 3-inch schedule 160 pipe to a valve on the pressurizer relief line. The examination of this component is also restricted to one side due to the valve attachment. Volumetric examinations were performed using shear wave search units at nominal angles of 45, 60, and 75 degrees and coverage is limited to 50 percent due to the valve configuration.

The licensee stated that the design constraints of the component make it impractical to achieve the Code required examination coverage for the weld volume. To fully comply with Code requirements, modifications or component replacements would be necessary, which would impose a significant burden.

3.2.5 Licensee's Proposed Alternative Inspections and Basis for Use

The licensee proposed in RR-B-2 the following alternative inspections in lieu of the required examination coverage of essentially 100 percent:

- Performed UT of the subject weld to the maximum extent practical during the third 10-year ISI interval.

- Performed pressure test with associated VT-2 visual examinations as required by the ASME Code, Section XI, Examination Category B-P, during the third 10-year ISI interval. No evidence of leakage was identified for this component.

The licensee stated that the alternative inspections provide the best examination coverage possible within the limitations of the current design configuration. The ultrasonic examination was performed using a system (procedures, personnel, and equipment) qualified in accordance with the ASME Code, Section XI.

3.2.6 NRC Staff Evaluation

For the subject Examination Category R-A welds, the licensee obtained 50 percent volumetric examination coverages using ASME Code, Section XI qualified procedures, equipment, and personnel. Due to geometric, material, and physical limitations, the licensee achieved less than the required volumetric examination coverage. Achieving full coverage would require major modifications to the associated components, imposing a significant burden on the licensee. The NRC staff finds the stated limitations to be an acceptable basis for impracticality of conforming to the requirements and finds the modification necessary to achieve the required coverage constitutes a burden upon the licensee.

The licensee examined the subject welds to the maximum extent practical using volumetric and surface examination. However, due to the noted limitations, the licensee was not able to achieve the required volumetric examination for the subject welds. The predominant limitation was the valve-to-pipe configuration, which allowed ultrasonic scanning only from the pipe side of the weld. The NRC staff confirmed that this design limited the use of UT in improving coverage. The licensee achieved maximum practical coverage using angle beam transducers in axial and circumferential scanning directions, resulting in an effective total of 50 percent coverage. The staff notes that the primary degradation concern of Item R1.11 classified welds is thermal fatigue cracking, which usually initiates as many small cracks, with one becoming predominant

and propagates from the inner surface of the weld, often on the thinner side the weld joint. The licensee examined volume included the most susceptible regions where degradation typically initiates, specifically, the thinner side of the weld, and this area was fully examined. The NRC staff noted that any significant service-induced degradation would likely have been detected by the examination performed.

In addition to the ultrasonic examination, the licensee conducted pressure test VT-2 visual examinations as required by the Code Category B-P during the third 10-year ISI interval, and as a result no evidence of leakage was identified for these components. The NRC staff concluded that these additional efforts provide further assurance of structural integrity and leak tightness.

Based on the above discussion, the NRC staff determined that obtaining the ASME Code required examination volume coverage for the subject R-A welds is impractical because of the stated limitations and that the modifications necessary to obtain the required coverage would impose a burden upon the licensee. The NRC staff also determined that the volumetric examination performed to the maximum extent practical provides reasonable assurance of the structural integrity and leak tightness of the subject weld because: (1) the licensee identified no recordable indications; and (2) evidence of significant service-induced degradation in the welds, if it were to occur, would likely have been detected by the volumetric examination coverage obtained by the licensee, because the examined weld volume includes the most susceptible regions, is the same material as the unexamined volume, is under the same loading conditions, and is exposed to the same environment.

3.3 Relief Request B-3

3.3.1 ASME Code Components Affected

The affected component is the ASME Code Class 1 pipe-to-elbow weld.

Code Category No.	Item No.	Description	Component/Weld No.	Percent Coverage Obtained
R-A	R1.16	Pipe-to-elbow weld	TCX-1-4301-10	76.5

3.3.2 Applicable Code Edition and Addenda

The 2007 Edition through 2008 Addenda of the ASME Code, Section XI.

3.3.3 Applicable Code Requirements

ASME Code, Section XI, 2007 Edition through 2008 Addenda, figure IWB-2500-8(c), requires a volumetric examination of at least the inner one-third of the pipe wall thickness (1/3 t). This examination must extend into the base metal of the piping for a minimum distance of ¼ inch beyond the weld crown edge for pipes with a nominal pipe size of 4 inches or larger. The RI-ISI program further extends this required examination volume. Specifically, if no counterbore is present, the examination extends ⅓inch past the weld crown edge. If a counterbore exists, the required examination covers a distance of ¼ inch on either side of the counterbore.

The licensee stated that the Comanche Peak Unit 2 third 10-year interval ISI program plan also implements ASME Code Case N-460, which the NRC has approved for use in RG 1.147, Revision 21. ASME Code Case N-460 states, in part, that "…when the entire examination

volume or area cannot be examined due to interference by another component or part geometry, a reduction in examination coverage on any Class 1 or Class 2 weld may be accepted provided the reduction in coverage for that weld is less than 10%."

NRC IN 98-42 defines a reduction in coverage of less than 10 percent to be "essentially 100 percent." IN 98-42 states, in part, that, "The NRC has adopted and further refined the definition of 'essentially 100 percent' to mean 'greater than 90 percent'…." This definition has been applied to all examinations of welds or components required by the ASME Code, Section XI.

3.3.4 Licensee's Impracticality and Burden

The licensee stated TCX-1-4301-10 is an austenitic stainless steel weld between SA-376 Type 316, 10-inch schedule 140 pipe to an elbow on the safety injection line. Examination of this weld was limited by the proximity of safety injection system structural restraints attached to the steam generator lower beam, which restricted access to portions of the weld volume. Volumetric examinations were conducted using shear wave search units with nominal angles of 45 degrees in axial and circumferential directions. Minimum coverage obtained for TCX-1-4301-10 was 76.5 percent.

The licensee considered other welds to achieve full coverage but determined this was not feasible. The safety injection system has twelve welds across four segments classified under risk category 5a, with a medium consequence and a degradation mechanism of intergranular stress corrosion cracking (IGSCC). Identical configurations exist across the four loop rooms. Four welds are at valves with single sided examination limitations, while the remaining eight welds have similar structural support constraints. After reviewing the piping layout, the licensee selected TCX-1-4301-9 and TCX-1-4301-10 for examination, as they provided the most achievable coverage. Weld TCX-1-4301-9 achieved 100 percent coverage, while TCX-1-4301-10 achieved 76.5 percent coverage.

The licensee stated that the design constraints of the component make it impractical to achieve the Code required examination coverage for the weld volume. To fully comply with Code requirements, modifications or component replacements would be necessary, which would impose a significant burden.

3.3.5 Licensee's Proposed Alternative Inspections and Basis for Use

The licensee proposed in RR B-3 the following alternative inspections in lieu of the required examination coverage of essentially 100 percent:

- Performed UT of the subject weld to the maximum extent practical during the third 10-year ISI interval.

- Performed pressure test with associated VT-2 visual examinations as required by the ASME Code, Section XI, Examination Category B-P, during the third 10-year ISI interval. No evidence of leakage was identified for this component.

The licensee stated that the alternative inspections provide the best examination coverage possible within the limitations of the current design configuration. The ultrasonic examination was performed using a system (procedures, personnel, and equipment) qualified in accordance with the ASME Code, Section XI.

3.3.6 NRC Staff Evaluation

For the subject Examination Category R-A welds, the licensee obtained volumetric examination coverages using ASME Code, Section XI qualified procedures, equipment, and personnel. Due to geometric, material, and physical limitations, the licensee achieved less than the required volumetric examination coverage. Achieving full coverage would require major modifications to the associated components, imposing a significant burden on the licensee. The NRC staff finds the stated limitations to be an acceptable basis for impracticality of conforming to the requirements and finds the modification necessary to achieve the required coverage constitutes a burden upon the licensee.

The licensee examined the subject weld to the maximum extent practical using volumetric and surface examination. However, due to the noted limitations, the licensee was not able to achieve the required volumetric examination for the subject weld. The predominant limitation was the structural restraints attached to the steam generator lower beam, which prevented scanning of about 8 inches of the circumferential weld. As a result, the weld length examined was 26 inches of the total 34-inch circumferential weld. The NRC staff confirmed that this design limited the use of UT in improving coverage. The licensee achieved maximum practical coverage using angle beam transducers in axial and circumferential scanning directions, resulting in an effective total of 76.5 percent coverage.

The NRC staff noted that the primary degradation concern for the subject weld is IGSCC, which is commonly associated with austenitic stainless steel materials. This type of degradation typically initiates in regions subject to higher stresses, such as the weld root and the heat-affected zone near the inner diameter surface of the joint. The licensee examined volume included the most susceptible regions where degradation typically initiates. The NRC staff noted that any significant service-induced degradation would likely have been detected by the examination performed.

In addition to the ultrasonic examination, the licensee conducted pressure test VT-2 visual examinations as required by the Code Category B-P, during the third 10-year ISI interval and as a result no evidence of leakage was identified for these components. The NRC staff concluded that these additional efforts provide further assurance of structural integrity and leak tightness.

Based on the above discussion, the NRC staff determined that obtaining the ASME Code required examination volume coverage for the subject R-A welds is impractical because of the stated limitations, and that the modifications necessary to obtain the required coverage would impose a burden upon the licensee. The NRC staff also determined that the volumetric examination performed to the maximum extent practical provides reasonable assurance of the structural integrity and leak tightness of the subject weld because: (1) the licensee identified no recordable indications; and (2) evidence of significant service-induced degradation in the welds, if it were to occur, would likely have been detected by the volumetric examination coverage obtained by the licensee, because the examined weld volume includes the most susceptible regions, is the same material as the unexamined volume, is under the same loading conditions, and is exposed to the same environment.

3.4 Relief Request B-4

3.4.1 ASME Code Components Affected

The affected component is the ASME Code Class 1 RPV lower shell-to-bottom head weld.

Code Category No.	Item No.	Description	Component/Weld No.	Percent Coverage Obtained
B-A	B1.11	RPV lower shell-to-bottom head weld	TCX-1-1100-4	79.2

3.4.2 Applicable Code Edition and Addenda

The 2007 Edition through 2008 Addenda of the ASME Code, Section XI.

3.4.3 Applicable Code Requirements

The licensee stated that the ASME Code, Section XI, 2007 Edition through 2008 Addenda, figure IWB-2500-1 (Design B) requires a minimum volumetric examination of the weld volume extending ½ t. The "t" is the thickness on each side of the weld on the vessel shell head joint (Code Item B 1.11).

The licensee stated that the Comanche Peak Unit 2, third 10-year interval ISI program plan also implements ASME Code Case N-460, which the NRC has approved for use in RG 1.147, Revision 21. ASME Code Case N-460 states, in part, that "…when the entire examination volume or area cannot be examined due to interference by another component or part geometry, a reduction in examination coverage on any Class 1 or Class 2 weld may be accepted provided the reduction in coverage for that weld is less than 10%."

NRC IN 98-42 defines a reduction in coverage of less than 10 percent to be "essentially 100 percent." IN 98-42 states, in part, that, "The NRC has adopted and further refined the definition of 'essentially 100 percent' to mean 'greater than 90 percent'…." This definition has been applied to all examinations of welds or components required by the ASME Code, Section XI.

3.4.4 Licensee's Impracticality and Burden

The licensee stated that the examination of the subject weld is limited by the proximity of the six core support lugs at 0, 60, 120, 180, 240, and 300 degrees as shown in figure B-4-1 of attachment 4 to the August 13, 2024, submittal. The licensee UT scanned between and below the core support lugs with scan boundaries maximized by visually assisted positioning of the examination head. The licensee stated that it achieved coverage to the maximum extent practical by using solid modeling to design the robot scan routines around the limitation. In addition, the licensee included additional transducers in the examination sled to maximize coverage. The licensee calculated the final examination coverage to be 79.2 percent for the weld as shown in figure B-4-2 of attachment 4 to the submittal. The licensee stated that it performed examinations in accordance with procedure PDI-ISI-254, "Remote Inservice Inspection of Reactor Vessel Shell Welds." The licensee explained that this examination was last performed in the first ISI interval as shown in the B-9 alternative request dated March 4, 2009 (ML090720583), which approved a 10-year exemption for these examinations by a letter from the NRC dated December 22, 2009 (ML092870637). The licensee stated that the previous

examination in the first ISI interval, during Unit 2 refueling outage 6(2RF06) indicated a 91.7 percent combined coverage as shown in figure B-4-3 of attachment 4 to the August 13, 2024, submittal.

The licensee stated that the design configuration restrictions of the subject component make the ASME Code required examination coverage for the weld volume impractical. The licensee claimed that plant modifications or replacements of components designed to allow for complete coverage would be needed to meet the Code requirements and that this would cause considerable burden to Comanche Peak Unit 2.

3.4.5 Licensee's Proposed Alternative Inspections and Basis for Use

The licensee proposed in RR B-4 the following alternative inspections in lieu of the required examination coverage of essentially 100 percent:

- Performed UT of the subject weld to the maximum extent practical during the third 10-year ISI interval.

- Performed pressure test with associated VT-2 visual examinations as required by the ASME Code, Section XI, Examination Category B-P, during the third 10-year ISI interval. No evidence of leakage was identified for this component.

The licensee stated that the alternative inspections provide the best examination coverage practical within the limitations of the current configuration. The licensee further stated that based on the percentage of the examination volume completed and no indications identified during the examination, there is a high level of confidence in the continued structural integrity of the weld and no undue risk to the public health and safety presented by RR B-4.

3.4.6 NRC Staff Evaluation

Based on figures B-4-1, B-4-2, and B-4-3 of attachment 4 to the August 13, 2024, submittal, the NRC staff observed that the licensee performed the required UT inspection of the subject RPV weld in accordance with the ISI requirements of the ASME Code, Section XI, table IWB-2500-1, Examination Category B-A, Item B1.11, and the weld volume defined in the ASME Code, Section XI, figure IWB-2500-1(b).

The NRC staff confirmed that the provisions in Code Case N-460 (which the NRC has approved for use in RG 1.147, Revision 21) define "essentially 100 percent of the examination volume" as any volumetric inspection of the subject weld that results in achievement of a greater than 90 percent of the required weld volume.

The NRC staff verified that the licensee inspected the subject RPV weld using a combination of 45 degree single longitudinal wave, 45 degree dual longitudinal wave, and 45 degree shear wave UT transducers as shown in figures B-4-2 and B-4-3 of the submittal. The NRC staff also confirmed that the subject RPV weld was obstructed by the presence of six RPV core support lugs that are located in the vicinity of the weld. The NRC staff noted that information in figure B-4-2 of the submittal confirms that the licensee performed the required UT inspection of the subject RPV weld to the maximum extent possible under the requirements of the ASME Code, Section XI, table IWB-2500-1, Examination Category B-A, Item B1.11. As such, the NRC staff confirmed that the information in figure B-4-2 indicated that the licensee achieved a weld coverage of 79.2 percent coverage for the RPV weld during the third 10-year ISI interval. The

NRC staff verified that the licensee reported that the UT inspections performed on the RPV weld did not detect any flaw indications in the portions of the RPV weld and adjacent RPV base metal that were accessible and inspected.

The NRC staff also verified that the licensee performed a system leakage test and associated VT-2 visual examination in accordance with the ASME Code, Section XI, table IWB-2500-1, Examination Category B-P and did not identify any reactor coolant leakage from the subject RPV weld.

The NRC staff noted that the licensee was not required to perform a UT inspection of the subject RPV weld during the second 10-year ISI interval as shown in the staff's safety evaluation of the letter dated December 22, 2009 (ML092870637).

The NRC staff noted that section 4 of RR B-4 identifies that the licensee achieved an examination coverage of 91.7 percent of the weld volume during the first 10-year ISI interval. However, the licensee achieved an examination coverage of 79.2 percent of the weld volume in the third 10-year ISI interval. In RAI B-4-1, the NRC staff requested clarification on the significant difference in the examination coverage of the subject RPV weld between the inspections performed during the first and third 10-year ISI intervals.

In the response to RAI B-4-1, dated February 18, 2025, the licensee stated that it used the same UT probes, scan pattern, and techniques to examine the subject weld in the first and third 10-year ISI intervals. The licensee stated that in the first 10-year ISI interval, the coverage calculation was broken down into weld covered and volume covered. The licensee clarified that when averaging the weld covered and volume covered values together with the 100 percent of the weld volume, the calculation appears to have artificially increased the coverage estimate. The licensee explained that if only the ASME Code required volume (figure IWB-2500-1 vessel shell circumferential weld joints) is considered, the coverage estimate essentially agrees with the third 10-year ISI interval. The licensee stated that reactor vessel weld examination coverage calculations are no longer separated by weld covered and volume covered. The licensee further stated that there was a difference in the lower RPV head thickness identified between the first 10-year interval and the third 10-year ISI interval scan plan. In 2021, the scan plans were based on the as-built drawings to achieve a more accurate thickness. The licensee stated that the more accurate lower head thickness measurements used in 2021 reduced the Code required examination volume in the coverage calculation. This reduction in calculated Code required volume reduced the percentage of inspectable areas credited for the scan. This reduced the perceived Code-coverage required when comparing the 2002 and 2021 data because they were crediting a larger required volume for the scan. The NRC staff determined that the difference in examination coverage achieved between the first and third 10-year ISI intervals, is caused by the calculation method, not by the UT hardware or scan methods. The NRC staff finds that the issue in RAI B-4-1 is resolved.

The NRC staff has determined that compliance with inspection requirements of the ASME Code, Section XI, table IWB-2500-1 (as subject to the criteria defined in Code Case N-460) are impractical because the licensee demonstrated that the presence of the RPV core support lugs pads in the vicinity of the subject RPV weld obscures the examination accessibility. The NRC staff has also determined that compliance with the ASME Code examination coverage requirements would place an unnecessary burden on the licensee because the licensee would need to modify the design of either the subject RPV weld or the design of the adjacent RPV core support lugs.

The NRC staff has determined that, with the actual examination coverage, no indications were detected and no leakage was observed during the system leak test. The 79.2 percent examination coverage achieved on the subject RPV weld provide for an alternate level of quality and safety in lieu of complying with the greater than 90 percent examination coverage.

3.5 Relief Request C-1

3.5.1 ASME Code Components Affected

The affected component is the ASME Code Class 2 shell weld of the containment spray HX CP2-CTAHCS-01.

Code Category No.	Item No.	Description	Component/Weld No.	Percent Coverage Obtained
C-A	C1.10	Shell weld of the containment spray HX CP2-CTAHCS-01	TCX-2-1180-1-2	79.2

3.5.2 Applicable Code Edition and Addenda

The 2007 Edition through 2008 Addenda of the ASME Code, Section XI.

3.5.3 Applicable Code Requirements

The licensee stated that the ASME Code, Section XI, 2007 Edition through 2008 Addenda, figure IWC-2500-1(a) requires a minimum volumetric examination of the weld volume extending ½ inches into the base metal on the vessel and flange sides for the circumferential weld (Code Item C 1.10).

The licensee stated that the Comanche Peak Unit 2, third 10-year interval ISI program plan also implements ASME Code Case N-460, which the NRC has approved for use in RG 1.147, Revision 21. ASME Code Case N-460 states, in part, that "…when the entire examination volume or area cannot be examined due to interference by another component or part geometry, a reduction in examination coverage on any Class 1 or Class 2 weld may be accepted provided the reduction in coverage for that weld is less than 10%."

NRC IN 98-42 defines a reduction in coverage of less than 10 percent to be "essentially 100 percent." IN 98-42 states, in part, that, "The NRC has adopted and further refined the definition of 'essentially 100 percent' to mean 'greater than 90 percent'…." This definition has been applied to all examinations of welds or components required by the ASME Code, Section XI.

3.5.4 Licensee's Impracticality of Compliance

The licensee stated that the examination of the subject component weld is limited by the configuration of the flange design and the proximity of two welded support plates on the shell side of the HX. The licensee further stated that as shown in figures C-1-1 and C-1-2 of attachment 5 to the August 13, 2024, submittal, the proximity of the welded supports and the flange configuration limit the parallel scans (circumferential) and the perpendicular (axial scans) are limited mainly by the welded supports on the shell side of the subject weld and bolting on the flange side of the subject weld. This yields a composite coverage of 40.05 percent of the

required examination volume. The licensee stated that it performed examinations in accordance with procedure TXISI-214, “Ultrasonic Examination Procedure for Welds in Piping Systems and Vessels.” The licensee used angle beams (45 degree shear and 70 degree longitudinal) scans to achieve the weld volume obtained.

The licensee stated that the design configuration restrictions of the subject component make the Code required examination coverage for the weld volume impractical. According to the licensee, plant modifications or replacements of components designed to allow for complete coverage would be needed to meet the Code requirements and would cause considerable burden.

3.5.5 Licensee’s Proposed Alternative Inspections and Basis for Use

The licensee proposed in RR C-1 the following alternative inspections in lieu of the required examination coverage of essentially 100 percent:

- Performed UT of the subject component weld to the maximum extent practical during the third 10-year ISI interval.

- Performed pressure test and associated VT-2 visual examinations, as required by the ASME Code, Section XI, Examination Category C-H, during the third 10-year ISI interval. No evidence of leakage was identified for this component.

The licensee stated that the alternative inspections provides the best examination coverage practical within the limitations of the current configuration. The licensee explained that based on the percentage of the examination volume completed and with no indications identified during the examination, there is a high level of confidence in the continued structural integrity of the weld. The licensee claimed that there is no undue risk to the public health and safety presented by RR C-1.

3.5.6 NRC Staff Evaluation

Based on figures C-1-1 and C-1-2 of attachment 5 to the submittal dated August 13, 2024 , the NRC staff observed that the licensee performed the required UT inspection of the subject containment spray HX weld in accordance with the ISI requirements of the ASME Code, Section XI, table IWC-2500-1, Examination Category C-A, Item C1.10, and the weld volume of the ASME Code, Section XI, figure IWC-2500-1(a).

The NRC staff confirmed that the provisions in ASME Code Case N-460, which the NRC has approved for use in RG 1.147, Revision 21, define “essentially 100 percent of the examination volume” as any volumetric inspection of the subject weld that results in achievement of a greater than 90 percent of the required weld volume. Thus, the NRC staff finds that the ASME Code, Section XI requirements and code case referenced in the RR C-1 are acceptable because they are consistent with those identified by the licensee and confirmed by the staff for the examination of the subject containment spray HX weld.

The NRC staff verified that the licensee performed its required UT inspections of the subject containment spray HX shell weld using a combination of 45 degree shear wave and 70 degree longitudinal wave UT transducers. The NRC staff also confirmed that figure C-1-1 in RR C-1 shows that the inspection of the containment spray HX weld was obstructed by the presence of the HX flange and two welded support plates on the HX shell that are located in the vicinity of the weld. The NRC staff noted that the licensee inspected the containment spray HX weld to the

maximum extent possible under the requirements of the ASME Code, Section XI, table IWC-2500-1, Examination Category C-A, Item C1.1 as subject to the alternate weld coverage criteria in ASME Code Case N-460.

The NRC staff also verified that figure C-1-1 in RR C-1 provides calculations that demonstrated that the licensee can only achieve 40.05 percent of coverage because of the presence of HX flange and support plates. In RAI C-1-1, the NRC staff requested clarifications regarding the details of the calculations provided in figure C-1-1 of RR C-1. In the licensee's response to RAI C-1-1 dated February 18, 2025, the licensee explained that in reviewing the guidance from Performance Demonstration Initiative (PDI) on austenitic stainless steel examinations for single-sided examination, only 50 percent ASME Code credit is taken if no other limitation exists. The licensee stated that the examination of the containment spray HX weld is considered a single-sided examination on stainless steel with additional limitations. The licensee further stated that it used the 45 degree shear and 70 degree refracted longitudinal transducers to examine the subject weld as much as possible on the shell side. In addition, the licensee used 70 degree refracted longitudinal transducer to interrogate the weld as much on the flange side as possible with no Code credit taken for the flange side. The length of the subject weld is 138.3 inches. Two welded support plates exist on the shell with lengths of 28.8 inches and 28.7 inches. For the axial scans, the combined length of the two support plates of 57.5 inches limits the shell side examination of the weld to 80.8 inches (138.3 – 57.5). For the circumferential scans, the licensee was able to achieve 100 percent coverage of the weld from the vessel side. However, the licensee could not obtain any coverage of the weld from the flange side because of obstruction by the flange. This resulted in a 50 percent coverage based on the circumferential scans. The NRC staff noted that combining the axial and circumferential scans, the overall coverage is 40.02 percent of weld volume.

The NRC staff determined that the licensee has adequately clarified the examination coverage achieved of the subject weld, considering the obstructions. The NRC staff recognized that the limited coverage was caused by the existence of the flange and the welded support plates. The NRC staff determined that the issue in RAI C-1-1 is resolved.

The NRC staff verified that the UT inspections performed on the containment spray HX weld did not identify flaw indications in the portions of the subject weld and adjacent portions of the HX flange-side and shell-side base metal regions.

The NRC staff also verified that the licensee performed system leakage test and associated VT-2 visual examination in accordance with the ASME Code, Section XI, table IWC-2500-1, Examination Category C-H. The NRC staff noted that the licensee did not identify any reactor coolant leakage from the subject containment spray HX weld.

The NRC staff has determined that compliance with ISI requirements of the ASME Code, Section XI, table IWC-2500-1, is impractical because the presence of the HX flange and welded support plates in the vicinity of the containment spray HX weld obscures the weld such that the licensee was not able to achieve greater than 90 percent examination coverage. The NRC staff has also determined that compliance with the applicable ASME Code requirements would place an unnecessary burden on the licensee, as the licensee would need to modify the design of either the containment spray HX weld or the design of the adjacent HX flange or welded support pads.

The NRC staff has determined that, with the actual UT inspection coverage, no indications were detected, and no leakage was observed during the system leak test. The 40.02 percent

inspection coverage achieved on the containment spray HX weld provides for an alternate level of quality and safety in lieu of complying with greater than 90 percent examination coverage.

3.6 Relief Request C-2

3.6.1 ASME Code Components Affected

The affected components are the ASME Code Class 2 shell welds on the residual heat removal (RHR) HX TCX-RHAHRS-01 as shown below.

Code Category No.	Item No.	Description	Component/Weld No.	Percent Coverage Obtained
C-A	C1.10	RHR HX head-to-shell weld	TCX-2-1120-1-1	74.6
C-A	C1.10	RHR HX shell-to-flange weld	TCX-2-1120-1-2	31.5
C-B	C2.21	RHR HX inlet nozzle-to-shell weld	TCX-2-1120-1-3	75
C-B	C2.21	RHR HX outlet nozzle-to-shell weld	TCX-2-1120-1-4	75

3.6.2 Applicable Code Edition and Addenda

The 2007 Edition through 2008 Addenda of the ASME Code, Section XI.

3.6.3 Applicable Code Requirements

The licensee stated that the ASME Code, Section XI, 2007 Edition through 2008 Addenda, figure IWC-2500-1(a) requires a minimum volumetric examination of the weld volume extending ½ inches into the base metal on the vessel and flange sides of the circumferential weld.

The licensee stated that the Comanche Peak Unit 2, third 10-year interval ISI program plan also implements ASME Code Case N-460, which the NRC has approved for use in RG 1.147, Revision 21. ASME Code Case N-460 states, in part, that "…when the entire examination volume or area cannot be examined due to interference by another component or part geometry, a reduction in examination coverage on any Class 1 or Class 2 weld may be accepted provided the reduction in coverage for that weld is less than 10%."

NRC IN 98-42 defines a reduction in coverage of less than 10 percent to be "essentially 100 percent." IN 98-42 states, in part, that, "The NRC has adopted and further refined the definition of 'essentially 100 percent' to mean 'greater than 90 percent'…." This definition has been applied to all examinations of welds or components required by the ASME Code, Section XI.

3.6.4 Licensee's Impracticality and Burden

The licensee stated that the examination of the subject component welds is limited by the configuration of welded supports, bolt flange, and the HX vessel. As shown on figures C-2-1 and C-2-2 of attachment 6 to the submittal, the proximity of the welded supports, the flange configuration limits the parallel (circumferential) and perpendicular (axial) scans. The table below Identifies the limitations for specific welds.

Component/Weld No.	Limitation	Percent Coverage Obtained
TCX-2-1120-1-1	Weld supports	74.6
TCX-2-1120-1-2	Bolts flange and weld supports	31.5
TCX-2-1120-1-3	One sided exam due to HX vessel	75
TCX-2-1120-1-4	Once sided exam due to HX vessel	75

The licensee stated that the design configuration restrictions of the subject components make the Code-required examination coverage for the weld volume impractical, as shown in the table above and figures C-2-1 and C-2-2 of attachment 6 to the August 13, 2024, submittal. According to the licensee, plant modifications or replacements of components to allow for full examination coverage would be needed to meet the Code requirements. This would cause a considerable burden to Comanche Peak Unit 2.

3.6.5 Licensee's Proposed Alternative Inspections and Basis for Use

The licensee proposed in RR C-2 the following alternative inspections in lieu of the required examination coverage of essentially 100 percent:

- Performed UT of the subject component weld to the maximum extent practical during the third 10-year ISI interval.

- Performed pressure test and associated VT-2 visual examinations, as required by the ASME Code, Section XI, Examination Category C-H, during the third 10-year ISI interval. No evidence of leakage was identified for this component.

- Performed required surface examinations with required coverage on welds TCX-2-1120-1-3 and TCX-2-1120-1-4 in accordance with the ASME Code, Section XI, Examination Category C-B, Item C2.21 welds. No indications were detected.

The licensee stated that the alternative inspections provide the best examination coverage practical within the limitations of the current configuration. The licensee further stated that based on the percentage of the examination volume completed, no indications identified during either examination and the additional weld inspected with similar configuration, there is a high level of confidence in the continued structural integrity of the weld. The licensee claimed that there is no undue risk to the public health and safety presented by RR C-2.

3.6.6 NRC Staff Evaluation

Based on figures C-2-1 and C-2-2 of attachment 6 to the August 13, 2024, submittal, the NRC staff observed that the licensee inspected (1) the RHR HX shell/flange welds in accordance with the ISI requirements of the ASME Code, Section XI, table IWC-2500-1, Examination Category C-A, Item C1.10, and (2) the RHR HX inlet/outlet nozzle welds in accordance with the ISI requirements in the ASME Code, Section XI, table IWC-2500-1, Examination Category C-B, Item C2.21. The NRC staff further noted that the licensee inspected these welds in accordance with the weld volume of the ASME Code, Section XI, figure IWC-2500-1(a).

The NRC staff confirmed that the provisions in Code Case N-460, which the NRC has approved for use in RG 1.147, Revision 21, define "essentially 100 percent of the examination volume" as

any volumetric inspection of the subject welds that results in achievement of a greater than 90 percent of the required weld volume dictated for the examination.

Relief Request C-2 states that the ASME Code, Section XI, figure IWC-2500-1(a) and IWC-3510 apply to the subject RHR HX shell/flange welds. However, the NRC staff noted that RR C-2 is silent on the applicable ASME Code, Section XI figure that contains required examination volume applicable to the RHR HX inlet/outlet nozzle welds. In its response to RAI C-2-1 dated February 18, 2025, the licensee stated that for the Examination Category C-B, Item C2.2, the figure number that applies is the ASME Code, Section XI, IWC-2500-4(d). The NRC staff verified that the ASME Code, Section XI, figure IWC-2500-4(d) is applicable to the examination of the RHR HX inlet/outlet nozzle welds. Therefore, the NRC staff determined that the issue in RAI C-2-1 is resolved.

Section 1 of RR C-2 identifies that the RHR HX inlet/outlet nozzle welds are classified under the ASME Code, Section XI, Examination Category C-B, Item C2.21, which requires a surface and volumetric examination of the subject welds during each ISI interval. The NRC staff noted that RR C-2 provides the examination coverage for the volumetric examination but not for the surface examination of the RHR HX inlet/outlet nozzle welds. In its response to RAI C-2-2 dated February 18, 2025, the licensee stated that it performed liquid penetrant examinations for the RHR HX inlet to nozzle-to-shell welds during the third 10-year ISI interval. The surface examination of the subject welds was performed in accordance with the ASME Code, Section XI, figure IWC-2500-4(d). The flaw standard for the surface examination was based on paragraph IWC-3511.2 and table IWB-3514-2. The licensee stated that it revised RR C-2 (i.e., Revision 2) to correct the examination requirement to be IWA-2200(c) instead of Code Case N-460. The licensee reported that no limitations were noted on the surface examination data sheets and assumed that the surface examination of the RHR HX inlet to nozzle-to-shell welds was able to achieve 100 percent coverage.

The NRC staff noted that IWA-2200(c) defines the essentially 100 percent coverage the same as defined in Code Case N-460. Therefore, the NRC staff determined that the licensee's use of the examination coverage provisions in IWA-2200(c) is acceptable. In addition, the NRC staff confirmed that the licensee performed a surface examination of the RHR HX inlet to nozzle-to-shell welds, achieved 100 percent coverage, and did not detect any indications. Therefore, the NRC staff determined that the issue in RAI C-2-2 is resolved.

In RAI C-2-3, the NRC staff requested for clarifications on the types and scan directions of UT transducers, and the amount of examination coverage that was achieved for each type of UT scan. In its response to RAI C-2-3, the licensee stated that it revised RR C-2 (Revision 2) to include information related to UT examination information such as the use of 45 degree shear transducer, 60 degree shear, and 60 degree refracted longitudinal and various scan directions. The licensee stated that circumferential scan coverage 100 percent of the vessel side of the weld was inspected in the counterclockwise and clockwise directions. The licensee reported that 0 percent of the flange side of the weld was inspected and that 50 percent of the overall circumferential were obtained. The licensee also provided detailed calculations on the examination coverage for the subject welds.

The NRC staff finds that the licensee's response to RAI C-2-3, dated February 18, 2025, appropriately defines the types of UT transducers and the directions of UT scans that were performed on the subject welds. The NRC staff determined that the issue in RAI C-2-3 is resolved.

The NRC staff noted that in section 4 and table C-2-1 of RR C-2, the licensee identified the examination coverage to the RHR HX shell/flange welds and RHR HX inlet/outlet nozzle welds is limited by the presence of the following components located in the vicinity of the welds or by the actual design of the welds: (1) weld support in the vicinity of the RHR HX head-to-shell weld, (2) flange bolts and weld supports in the vicinity of the RHR HX shell-to-flange weld, and (3) one sided examination due to the weld design for the RHR HX inlet and outlet nozzle-to-shell welds.

The NRC staff has determined that compliance with ISI requirements of the ASME Code, Section XI, table IWC-2500-1, for the subject welds is impractical because the presence of the HX flange and welded support plates in the vicinity of the subject welds and one sided examination obscure the welds from being inspected to greater than 90 percent examination coverage. The NRC staff has also determined that compliance with the applicable requirements would place an unnecessary burden on the licensee, as the licensee would need to modify the design of the subject welds, HX flange, or welded supports in the vicinity of the subject welds.

The NRC staff verified that the UT inspections performed on the subject welds (to the extent practical for limitations inherent in the design) did not identify flaw indications in the inspected portions of the subject welds volume and adjacent portions of the base metal regions that were accessible and required to be inspected during the third 10-year ISI interval.

The NRC staff also verified that the licensee performed pressure test and associated VT-2 visual examination in accordance with the ASME Code, Section XI, table IWC-2500-1, Examination Category C-H, and did not identify any reactor coolant leakage from the subject welds.

In summary, the NRC staff determined that, with the actual UT inspection coverage achieved, no indications were detected, and no leakage was observed during licensee’s system leak test, the actual inspection coverage achieved on the subject welds provide for an alternative acceptable level of quality and safety in lieu of complying with greater than 90 percent examination coverage.

4.0 CONCLUSION

As set forth above, the NRC staff determines that compliance with the ASME Code, Section XI, requirement for essentially 100 percent volumetric examination of the subject welds are impractical. The NRC staff also determines that the licensee's limited-scope volumetric examinations along with the proposed alternative inspections that were performed on subject welds during the third 10-year ISI interval provide reasonable assurance of structural integrity and leak tightness for the subject welds.

Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(g)(5)(iii). The NRC staff further concludes that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Therefore, the NRC staff grants RR B-1. B-2. B-3. B-4. C-1. and C-2, as revised in the February 18, 2025, supplement at Comanche Peak Unit 2, during the third 10-year ISI interval..

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

Principal Contributors: James Medoff, NRR
John Tsao, NRR
Omar Khan, NRR

Date: May 8, 2025

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNIT NO. 2 - RELIEF REQUESTS B-1, B-2, B-3, B-4, C-1 AND C-2 FOR THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL (EPID L-2024-LLR-0053, EPID L-2024-LLR-0054, EPID L-2024-LLR-0055, EPID L-2024-LLR-0056, EPID L-2024-LL4-0057, AND EPID L-2024-LLR-0058) DATED MAY 8, 2025

DISTRIBUTION:

PUBLIC
RidsACRS_MailCTR Resource
RidsNrrDorlLpl4 Resource
RidsNrrLAPBlechman Resource
RidsNrrPMComanchePeak Resource
RidsRgn4MailCenter Resource
RidsNrrDnrlNphp Resource
RidsNrrDnrlNvib Resource
JTsao, NRR
OKhan, NRR
APatz, OEDO
AAlen, OEDO

ADAMS Accession No.: ML25120A321 concurrence *via eConcurrence; **via email

OFFICE	NRR/DORL/LPL4/PM*	NRR/DORL/LPL4/LA*	NRR/DNRL/NPHP/BC**
NAME	DGalvin	PBlechman	MMitchell
DATE	4/30/2025	5/5/2025	3/11/2025
OFFICE	NRR/DNRL/NVIB/BC**	NRR/DORL/LPL4/(A)BC*	
NAME	ABuford	TNakanishi	
DATE	3/11/2025	5/8/2025	

OFFICIAL RECORD COPY