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10 CFR 50.55a

RS-04-042

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

Quad Cities Nuclear Power Station, Units 1 and 2
Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Submittal of Proposed Relief Request CR-39 Regarding Inservice Inspection Program Examination Coverage for the Third Ten-Year Interval

References: (1) Letter from A. J. Mendiola (U. S. NRC) to O. D. Kingsley (Exelon Generation Company, LLC), "Quad Cities, Units 1 and 2 - Relief Request CR-32 For Third 10-Year Inservice Inspection Interval," dated September 6, 2000

(2) Letter from A. J. Mendiola (U.S. NRC) to J.L. Skolds (Exelon Generation Company, LLC), "Quad Cities Nuclear Power Station, Units 1 and 2 – Relief Request CR-35, Inservice Inspection Program Relief Regarding Examination Coverage For Third Inservice Inspection Program Interval," dated June 28, 2002

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (g)(5)(iv), Exelon Generating Company, LLC (EGC) hereby requests NRC approval of the following request for the Third 10-year Interval Inservice Inspection (ISI) program. The examination coverage for certain weld exams conducted during the Third Interval was less than the requirements specified in American Society of Mechanical Engineers (ASME), Section XI.

Exelon has determined that conformance with these requirements is impractical for Quad Cities Nuclear Power Station (QCNPS). Information supporting this determination is enclosed in accordance with 10CFR50.55a(g)(5)(iii). In References 1 and 2 listed above, the NRC approved similar relief requests for the Third 10-year Interval.

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Should you have any questions related to this letter, please contact Mr. Thomas G. Roddey at (630) 657-2811.

Respectfully,

Patrick R. Simpson

Patrick. R. Simpson
Manager - Licensing

Attachment: Relief Request CR-39

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

1. ASME CODE COMPONENTS AFFECTED

Code Classes:	1 2
References:	Subarticle IWB-2500 Subarticle IWC-2500
Examination Categories:	B-A, B-D, B-M-1 C-C
Item Numbers:	B1.22, B1.30, B1.40, B1.51, B3.90, B3.100, B12.40 C3.10, C3.20
Description:	Volumetric, Surface and Visual Examination Coverage
Component Numbers:	Various, see TABLE CR-39.1 and TABLE CR-39.2 for examinations during the Third (3rd) period of the Third (3rd) Interval

2. APPLICABLE CODE EDITION AND ADDENDA

1989 Edition of ASME, Section XI, No Addenda

3. APPLICABLE CODE REQUIREMENT

Subarticle IWB-2500 states, "Components shall be examined and tested as specified in Table IWB-2500-1." Table IWB-2500-1 requires a volumetric examination or a surface and volumetric examination be performed on the component based on Category and Item Number. The applicable examination area or volume and method required are as shown below from Table IWB-2500-1.

Examination Category	Item Number	Examination Requirements	Examination Method
B-A	B1.22	IWB-2500-3	Volumetric
B-A	B1.30	IWB-2500-4	Volumetric
B-A	B1.40	IWB-2500-5	Volumetric and Surface
B-A	B1.51	IWB-2500-1 and -2	Volumetric
B-D	B3.90	IWB-2500-7	Volumetric
B-D	B3.100	IWB-2500-7	Volumetric
B-M-1	B12.40	IWB-2500-17	Volumetric

Subarticle IWC-2500 states, "Components shall be examined and pressure tested as specified in Table IWC-2500-1." Table IWC-2500-1 requires a surface examination or a surface and volumetric examination be performed on the component based on Category and Item Number. The applicable examination area or volume and method required are as shown below from Table IWC-2500-1.

Examination Category	Item Number	Examination Requirements	Examination Method
C-C	C3.10	IWC-2500-5	Surface
C-C	C3.20	IWC-2500-5	Surface

4. IMPRACTICALITY OF COMPLIANCE

Relief is requested from performing a complete coverage examination of the entire volume or area required. ASME Section XI, Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1," defines the entire volume or area required. Code Case N-460 states, "...when the entire examination volume or area cannot be examined...a reduction in examination coverage...may be accepted provided the reduction in coverage for that weld is less than 10%." Information Notice (IN) 98-42, "Implementation of 10 CFR 50.55a(g) Inservice Inspection Requirements," termed the reduction in coverage of less than 10% to be "essentially 100 percent." IN 98-42 further refines the definition of "essentially 100 percent" to mean "greater than 90 percent."

Relief is requested from performing an examination of "essentially 100%" of the required volume or area as applicable for the identified components in TABLE CR-39.1 and TABLE CR-39.2.

Pursuant to 10 CFR 50.55a(g)(5)(iii), relief is requested on the basis that the required "essentially 100%" coverage examination is impractical due to physical obstructions and limitations imposed by design, geometry and materials of construction of the component.

5. BURDEN CAUSED BY COMPLIANCE

Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2, obtained Construction Permits on February 15, 1967 (CPPR-23 and CPPR-24, respectively). QCNPS piping systems and associated components were designed and fabricated before the examination requirements of ASME Section XI were formalized and published. Since this plant was not specifically designed to meet the requirements of ASME Section XI, literal compliance is not feasible or practical within the limits of the current plant design, inspection tools and procedures.

Physical obstructions imposed by design, geometry and materials of construction are typical of vessel appurtenances and sacrificial shield, insulation support rings, structural and component support members, adjacent component weldments in close proximity, unique component configurations and dissimilar metal welds.

To the extent practical, all components received the required examination(s) with the exception of those that could not be performed due to limited accessibility. The examinations confirmed satisfactory results with no unacceptable flaws present, even though "essentially 100%" coverage was not attained. Exelon Generation Company, LLC (EGC) has concluded that if any active degradation mechanisms were to exist in the subject welds, those degradations would have been identified in the examinations performed.

Performing additional examinations to achieve the greater than 90% coverage would incur unnecessary radiological exposure and would require significant vessel disassembly.

Additional Information Pertaining To CR-32

In Reference 8.1, the NRC denied a relief request for lack of examination coverage on a base metal weld repair associated with the original fabrication of the reactor pressure vessel (RPV) (i.e., RPV-BMR-01-2951). This request was denied due to insufficient information being provided. The following provides the necessary additional information related to this relief request.

The Unit 1 RPV Base Metal Repair, RPV-BMR-016-295, originally submitted in Relief Request CR-32 and inspected during the first period of the Third 10-Year Interval, is an example of limited accessibility. The base metal repair was performed during original fabrication of the RPV. Specifically, the reactor internals configuration limited the GERIS 2000 in-vessel inspection tooling from gaining access to volumetrically examine the base metal repair area. The jet pump riser brace at jet pumps 1 and 2, along with the guide rod at the 20^0 azimuth, preclude access to the area of RPV-BMR-016-295. In the case of RPV-BMR-016-295, the two adjacent base metal repair areas were accessible (RPV-BMR-018-310 with 62.6% coverage and RPV-BMR-017-318 with 100% coverage). These areas are located above the jet pump riser brace, whereas RPV-BMR-016-295 is located below the riser brace and was not physically accessible to the inspection tooling. Examinations of RPV-BMR-018-310 and RPV-BMR-017-318, which are in close proximity to RPV-BMR-016-295, concluded that there are no unacceptable flaws.

These results provide reasonable assurance of the acceptability of RPV-BMR-016-295 and that the underlying objectives of the examination requirements have been met. In Reference 8.2, the NRC provided a Safety Evaluation (SE) accepting a similar alternative examination of the RPV shell welds, which were performed utilizing the GERIS 2000 system. Manual supplemental examination of the area was not feasible due to the bioshield to vessel wall clearances. As indicated in CR-32, total examination coverage was zero percent (0%) during the Third Interval examination (RPV-BMR-016-295 is included in Table CR-39.1).

During the Fourth Interval, a more advanced inspection tool (that was not in existence when the exam was performed during the Third Interval) will be utilized and coverage is expected to exceed 0%.

6. PROPOSED ALTERNATIVE AND BASIS FOR USE

Since the examinations were completed to the extent practical, and the results showed no unacceptable flaws present, the underlying objectives have been met.

Additionally, a VT-2 examination on the subject components, performed each refueling outage during system pressure tests per examination category B-P, and performed each period per examination category C-H, provides additional assurance that the structural integrity of the subject components is maintained. EGC maintains continuing alliances with the Electric Power Research Institute (EPRI), the Performance Demonstration Initiative (PDI), Inservice Inspection (ISI) vendors and other industry sources to encourage the development and awareness of improved examination techniques that enhance coverage and flaw detection commensurate with radiation dose reduction.

No alternative provisions are proposed for this relief request. EGC will continue to evaluate the development of new or improved examination techniques with the intent of applying these techniques where practical to improve component examinations.

7. DURATION OF PROPOSED ALTERNATIVE

Relief is requested for the Third 10-Year Interval of the Inservice Inspection Program for QCNPS, Units 1 and 2.

8. REFERENCES

8.1 Letter from A. J. Mendiola (U. S. NRC) to O. D. Kingsley (Exelon Generation Company, LLC), "Quad Cities, Units 1 and 2 - Relief Request CR-32 For Third 10-Year Inservice Inspection Interval," dated September 6, 2000

8.2 Letter from S.A. Richards (U.S. NRC) to O. D. Kingsley (Nuclear Generation Group Commonwealth Edison Company), "Alternative to 10 CFR 50.55a(g)(6)(ii)(A) Augmented Reactor Pressure Vessel Examination for Quad Cities Nuclear Plant, Units 1 and 2," dated October 23, 1998

TABLE CR-39.1

UNIT 1 COMPONENTS WITH LESS THAN "ESSENTIALLY 100%" COVERAGE

Section XI Category & Item No.	Component System & Number	Component Description	Condition Limiting Coverage	Exam & Coverage Percent
B-A B1.30	RPV-CW-C4FLG	Vessel-Flange (Reactor Vessel)	Flange configuration	84.54
B-A B1.40	RPV-THHF	RPV Top Head Weld to Flange (Reactor Head)	Head to Flange configuration	70.59
B-A B1.51	RPV-BMR-016-295	RPV Weld Beltline Repair Area	RPV internal Jet Pump Riser braces & guide rod (refer to Section 5 above for additional details)	0
B-D B3.90	N3C NOZ	Vessel-Nozzle (Main Steam)	Nozzle configuration and thermocouples	62.4
B-D B3.90	N3D NOZ	Vessel-Nozzle (Main Steam)	Nozzle configuration	62.4
B-D B3.90	N5B NOZ	Vessel-Nozzle (Core Spray)	Nozzle configuration and insulation support ring	68.9
B-D B3.90	N6B NOZ	Head-Nozzle, Spare (Reactor Head)	Nozzle configuration	57.3
B-D B3.90	N9 NOZ	Vessel-Nozzle (CRD Return)	Nozzle configuration and insulation interference	47.7
B-D B3.100	N6B IRS	Head-Nozzle, Spare (Reactor Head)	Nozzle configuration	83.6
B-M-1 B12.40	1-203-3E-S1	ERV Body Weld (Main Steam)	Valve configuration	66
C-C C3.10	1003A-W-201A	Support welded to RHR Hx Ex (RHR)	29" of lower horizontal inaccessible due to I-Beam	79
C-C C3.10	1003A-W-202A	Support welded to RHR Hx Ex (RHR)	29" of lower horizontal inaccessible due to I-Beam	79
C-C C3.20	1008B-W-201A	VSC w/4 lugs welded to pipe (RHR)	Limited to 3 sides due to 18" clamp interference	84
C-C C3.20	1008A-W-203A	VSC w/4 lugs welded to pipe (RHR)	Limited to 3 sides due to 18" clamp interference	84
C-C C3.20	1008A-W-204A	VSC w/4 lugs welded to pipe (RHR)	Limited to 3 sides due to 18" clamp interference	84
C-C C3.20	2304-W-201.1A	VSC w/4 lugs welded to pipe (HPCI)	Limited to 3 sides due to 14" clamp interference	83

TABLE CR-39.2

UNIT 2 COMPONENTS WITH LESS THAN "ESSENTIALLY 100%" COVERAGE

Section XI Category & Item No.	Component System & Number	Component Description	Condition Limiting Coverage	Exam & Coverage Percent
B-A B1.22	RPV-THMS-0	RPV Top Head 0 Deg. Merid. Seam (Reactor Vessel)	Flange configuration and a Lifting Lug	85
B-A B1.22	RPV-THMS-180	RPV Top Head 180 Deg. Merid. Seam (Reactor Vessel)	Flange configuration and a Lifting Lug	85
B-A B1.30	RPV-CW-C4FLG	Vessel Flange (Reactor Vessel)	Flange configuration, Main Steam Nozzles & Thermal Couple Pads	73
B-A B1.40	RPV-THHF	RPV Top Head Weld to Flange (Reactor Head)	Head to Flange configuration	58
B-D B3.90	N1B NOZ	Vessel-Nozzle (Recirculation)	Nozzle configuration	15
B-D B3.90	N2F NOZ	Vessel-Nozzle (Recirculation)	Nozzle configuration	38
B-D B3.90	N2G NOZ	Vessel-Nozzle (Recirculation)	Nozzle configuration	38
B-D B3.90	N2H NOZ	Vessel-Nozzle (Recirculation)	Nozzle configuration	38
B-D B3.90	N2J NOZ	Vessel-Nozzle (Recirculation)	Nozzle configuration	38
B-D B3.90	N2K NOZ	Vessel-Nozzle (Recirculation)	Nozzle configuration	38
B-D B3.90	N5B NOZ	Vessel-Nozzle (Core Spray)	Nozzle configuration & Insulation Support Ring	39
B-D B3.90	N6B NOZ	Head-Nozzle, Spare (Reactor Head)	Nozzle configuration	43
B-D B3.90	N8B NOZ	Head-Nozzle, Spare (Reactor Head)	Nozzle configuration	89
B-D B3.90	N9 NOZ	Vessel-Nozzle (CRD Return)	Nozzle configuration	72
B-D B3.100	N6B IRS	Head-Nozzle, Spare (Reactor Head)	Nozzle configuration	43
C-C C3.20	1403-W-204A	Guide w/8 Lugs Welded to Pipe	Welded Bracket interference	43.2
C-C C3.20	1406-W-203A	Guide w/8 Lugs Welded to Pipe	Welded Box Support Interference	88.3
C-C C3.20	1009B-W-206A	Guide w/8 Lugs Welded to Pipe	Component configuration and Support Bracket interference	87.6
C-C C3.20	1009B-W-210A	Guide w/8 Lugs Welded to Pipe	Component configuration and Support Bracket interference	85.5