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SUBJECT: Requests relief from criteria of 10CFR50.55a(g)(6)(ii)(A)(2) for augmented exams of RPV welds at plant.Relief requested from listed ASME B&PV Code,Section XI,requirements for final insp period of first 20 year insp interval.

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MAY

Carolina Power & Light Company
PO Box 165
New Hill NC 27562

William R. Robinson
Vice President
Harris Nuclear Plant

DEC 1 6 1997

SERIAL: HNP-97-217
10 CFR 50.55a

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
ASME BOILER AND PRESSURE VESSEL CODE, SECTION XI
INSERVICE INSPECTION PROGRAM RELIEF REQUEST
REACTOR PRESSURE VESSEL

Dear Sir or Madam:

In accordance with 10 CFR 50.55a(a)(3), Carolina Power & Light Company (CP&L) hereby requests relief from the criteria of 10 CFR 50.55a(g)(6)(ii)(A)(2) for augmented examinations of reactor pressure vessel (RPV) welds at the Harris Nuclear Plant (HNP). Specifically, relief is requested from the following American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, requirements for the final inspection period of the first 10-year inspection interval:

- "Essentially 100%" (i.e., > 90%) volumetric coverage for each reactor pressure vessel shell weld in accordance with Table IWB-2500-1, Examination Category B-A, Item Number B1.11 (one weld).

- "Essentially 100%" (i.e., >90%) volumetric coverage for each reactor pressure vessel weld (other than shell welds) in accordance with Table IWB-2500-1, Examination Category B-A, Item Numbers B1.21 (one weld), B1.22 (one weld) and B1.30 (one weld); Examination Category B-D, Item Number B3.90 (three welds); and Examination Category B-F, Item Number B5.10 (two welds).

The required 10-year Inservice Inspection (ISI) examinations performed on the RPV welds in accordance with ASME B&PV Code 1983 Edition, with Addenda through Summer 1983, Section XI, were completed in May 1997. All examinations were performed to the maximum extent possible utilizing automated examination equipment, techniques, and data recording/analysis systems. The RPV welds were volumetrically (UT) examined using procedures qualified in accordance with Appendix VIII of Section XI, as implemented by the utility Performance Demonstration Initiative. In addition, the welds were subject to visual

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(VT-2) examinations. As a result of the examinations, six recordable indications were detected, but were within the allowable Code limits. By letter dated August 29, 1997 (HNP-97-169), CP&L forwarded the HNP ISI Summary Report documenting the inspections performed during Cycle 7 operations, including Refueling Outage No. 7 (RFO-7).

As stated in the CP&L letter to the NRC dated March 11, 1997 (HNP-97-060), CP&L committed to notify the NRC if the augmented examinations conducted during RFO-7 could not obtain "essentially 100%" volumetric coverage for each RPV weld. Due to RPV design configuration obstructions and/or limitations, several welds did not receive "essentially 100%" volumetric coverage examination. Therefore, CP&L is requesting relief from the "essentially 100%" volumetric coverage requirement for these welds.

The detailed request for relief number R1-011 is provided in Attachment 1 to this letter. This relief request indicates the specific components for which relief is requested, the basis for requesting relief, the alternate examinations performed, and the justification that an acceptable level of quality and safety has been achieved. Attachment 2 to this letter provides the results of the 1997 automated inservice examination of the RPV and adjacent piping welds at HNP.

Please refer any questions regarding this submittal to Mr. J. H. Eads at (919) 362-2646.

Sincerely,

AEC/aec
Attachments (2)

c: Mr. J. B. Brady (NRC Senior Resident Inspector)
Mr. L. A. Reyes (NRC Regional Administrator, Region II)
Mr. V. L. Rooney (NRR Project Manager, HNP)

bc: Ms. D. B. Alexander
Mr. T. C. Bell
Mr. H. K. Chernoff (RNP)
Mr. B.H. Clark
Mr. G. W. Davis
Mr. J. W. Donahue
Mr. W. J. Dorman (BNP)
Mr. W. J. Hindman
Mr. W. D. Johnson
Mr. R.M. Krich
Ms. W. C. Langston (PE&RAS File)
Mr. C. W. Martin (BNP)
Mr. R. D. Martin
Mr. P. M. Odom (RNP)
Mr. W. S. Orser
Mr. R. F. Saunders
Mr. D. L. Tibbitts
Mr. C. A. VanDenburgh
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ATTACHMENT 1 TO SERIAL: HNP-97-217

REQUEST FOR RELIEF NO. R1-011
PRESSURE RETAINING WELDS IN REACTOR VESSEL

ATTACHMENT 1 TO SERIAL HNP-97-217
REQUEST FOR RELIEF NO. R1-011
PRESSURE RETAINING WELDS IN REACTOR VESSEL

COMPONENTS FOR WHICH RELIEF IS REQUESTED:

B1.11	STHW-RV-04	Lower shell to bottom head	(Table 1)
B1.21	CHW-RV-17	Bottom Head Dome	(Table 2)
B1.22	MHW-RV-16	Meridional @45°	(Table 2)
B1.30	FTSW-RV-01	Flange to Upper Shell	(Table 2)
B3.90	RVNOZBO-N-02	Outlet Nozzle @265°	(Table 2)
B3.90	RVNOZCO-N-04	Outlet Nozzle @145°	(Table 2)
B3.90	RVNOZAO-N-06	Outlet Nozzle @25°	(Table 2)
B5.10	RVNOZAI-N-01-SE	Safe End to Inlet Nozzle @335°	(Table 2)
B5.10	RVNOZBO-N-02-SE	Outlet Nozzle to Safe End @265°	(Table 2)

Table 1 provides the results of the augmented RPV examinations for the RPV shell welds. Table 2 provides the results of the RPV examinations for RPV welds other than shell welds.

INSERVICE INSPECTION REQUIREMENTS:

ASME Section XI, 1983 Edition with Addenda through Summer 1983.
Examination Category B-A, Item Number B1.11, B1.21, B1.22, B1.30
Examination Category B-D, Item Number B3.90
Examination Category B-F, Item Number B5.10

CODE RELIEF REQUEST:

Relief is requested from 100 percent volumetric (UT) examination coverage due to pressure retaining welds not being 100 percent accessible over the entire length. The examinations are limited because of physical obstructions and surface geometry such as instrumentation tubes, support lugs, weld transition, integral extension and counterbore geometry.

BASIS FOR REQUESTING RELIEF:

The subject welds received limited examination coverage due to physical obstructions and nonconducive geometric surface conditions. The obstructions physically prevent 100 percent examination coverage of the subject weld volume. The nonconducive geometric surface conditions prevent sufficient sound propagation into the weld examination volume at specific locations, therefore 100 percent examination coverage is not achievable. Attempting to perform supplemental examinations from the outside surface would have required extensive surface preparation and expended unwarranted dose without a commensurate increase in the level of reliability, quality, or safety.

ALTERNATE EXAMINATIONS:

The Reactor Pressure Vessel (RPV) pressure retaining welds are volumetrically (UT) examined to the maximum extent possible in accordance with the Inservice Inspection Program schedule. In addition, the welds are subject to visual (VT-2) pressure tests during each refueling outage.

TECHNICAL JUSTIFICATION FOR REQUESTING RELIEF:

Pressure retaining welds in the RPV have been volumetrically (UT) examined to the maximum extent possible during preservice and first interval inservice examinations with no rejectable indications noted. The design configuration introduces obstructions and nonconducive surface conditions that prevent 100 percent volumetric examination coverage. The minimal number and magnitude of indications recorded during the preservice examinations and first interval inservice examinations indicate that the majority of the vessel examination volume is free of detrimental discontinuities. Therefore, the likelihood of the limited areas not examined due to physical obstructions having a rejectable indication is minimal. The RPV examinations have been performed utilizing the state of the art examination equipment, techniques and data recording/analysis systems. Additionally, Performance Demonstration Initiative procedures, qualified personnel and techniques were utilized as a conservative measure to incorporate the current industry practice and technology.

CONCLUSION

Approval of this relief request will have no impact on overall plant quality, safety or reliability, since the welds have been subject to extensive construction code, preservice, and inservice examinations. In addition, the pressure retaining welds are subject to visual (VT-2) pressure tests during refueling outages.

Table 1: Results of Harris Augmented Reactor Pressure Vessel Examinations 1st 10-Year Interval

WELD	ITEM NO.	DESCRIPTION	COVERAGE	LIMITATION
CSW-RV-02	B1.11	Upper Shell to Intermediate Shell	100%	N/A
CSW-RV-03	B1.11	Intermediate Shell to Lower Shell	100%	N/A
STHW-RV-04	B1.11	Lower Shell to Bottom Head	80%	Radial Support Lugs and Weld Transition
LSW-RV-05	B1.12	Upper Shell Longitudinal	91%	Noz. AON-06 and Flange Taper (>90%)
LSW-RV-06	B1.12	Upper Shell Longitudinal	96%	Noz. BIN-03 and Flange Taper (>90%)
LSW-RV-07	B1.12	Intermediate Shell Longitudinal	100%	N/A
LSW-RV-08	B1.12	Intermediate Shell Longitudinal	100%	N/A
LSW-RV-09	B1.12	Lower Shell Longitudinal	100%	N/A
LSW-RV-10	B1.12	Lower Shell Longitudinal	100%	N/A

Table 2: Results of Harris Reactor Pressure Vessel Examinations
1st 10-Year Interval

WELD	ITEM NO.	DESCRIPTION	COVERAGE	LIMITATION
CHW-RV-17	B1.21	Bottom Head Dome	67%	Instrumentation Tubes
MHW-RV-11	B1.22	Meridional @345°	94%	Instrumentation Tubes and Radial Support Lug (>90%)
MHW-RV-12	B1.22	Meridional @285°	94%	Instrumentation Tubes and Radial Support Lug (>90%)
MHW RV-13	B1.22	Meridional @225°	95%	Instrumentation Tubes (>90%)
MHW-RV-14	B1.22	Meridional @165°	95%	Radial Support Lug (>90%)
MHW-RV-15	B1.22	Meridional @105°	91%	Instrumentation Tubes and Radial Support Lug (>90%)
MHW-RV-16	B1.22	Meridional @45°	90%	Instrumentation Tubes
FTSW-RV-01	B1.30	Flange to Upper Shell	67%	ID Surface Taper
RVNOZAI-N-01	B3.90	Inlet Nozzle @335°	93%	Nozzle Inner Radius (>90%)
RVNOZBO-N-02	B3.90	Outlet Nozzle @265°	80%	Integral Extension
RVNOZBI-N-03	B3.90	Inlet Nozzle @215°	93%	Nozzle Inner Radius (>90%)
RVNOZCO-N-04	B3.90	Outlet Nozzle @145°	80%	Integral Extension
RVNOZCI-N-05	B3.90	Inlet Nozzle @95°	93%	Nozzle Inner Radius (>90%)
RVNOZAO-N-06	B3.90	Outlet Nozzle @25°	80%	Integral Extension
RVNOZAO-N-01-IRS	B3.10	Inlet Nozzle @335°	100%	N/A
RVNOZBO-N-02-IRS	B3.10	Outlet Nozzle @265°	100%	Integral Extension
RVNOZBI-N-03-IRS	B3.10	Inlet Nozzle @215°	100%	N/A

Table 2: Results of Harris Reactor Pressure Vessel Examinations
1st 10-Year Interval

WELD	ITEM NO.	DESCRIPTION	COVERAGE	LIMITATION
RVNOZCO-N-04-IRS	B3.10	Outlet Nozzle @145°	100%	Integral Extension
RVNOZCI-N-05-IRS	B3.10	Inlet Nozzle @95°	100%	N/A
RVNOZAO-N-06-IRS	B3.10	Outlet Nozzle @25°	100%	Integral Extension
RVNOZAI-N-01-SE	B5.10	Safe End to Inlet Nozzle @335°	74%	ID Surface Counterbore
RVNOZBO-N-02-SE	B5.10	Outlet Nozzle to Safe End @265°	76%	ID Surface Counterbore
RVNOZBI-N-03-SE	B5.10	Safe End to Inlet Nozzle @215°	95%	No Relief Requested (>90%)
RVNOZCO-N-04-SE	B5.10	Outlet Nozzle to Safe End @145°	94%	No Relief Requested (>90%)
RVNOZCI-N-05-SE	B5.10	Safe End to Inlet Nozzle @95°	92%	No Relief Requested (>90%)
RVNOZAO-N-06-SE	B5.10	Outlet Nozzle to Safe End @25°	99%	No Relief Requested (>90%)

ATTACHMENT 2 TO SERIAL: HNP-97-217

1997 AUTOMATED INSERVICE EXAMINATION OF THE REACTOR PRESSURE VESSEL AND ADJACENT PIPING WELDS AT THE HARRIS NUCLEAR PLANT