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IES UTILITIES

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Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-37
Washington, DC 20555-0001

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Second Ten-Year Inservice Inspection (ISI) Interval
Requests for Relief

File: A-107a, A-286a, B-31c

The Duane Arnold Energy Center (DAEC) concluded its second ten-year inservice inspection (ISI) interval on October 31, 1996. IES Utilities has reviewed the examinations performed during that interval to ensure compliance with Section XI of the ASME Code, 1980 Edition through Winter 1981 Addenda.

Pursuant to 10 CFR 50.55a(g)(5), if a licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. Pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and impose alternative requirements. Subparagraph 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

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In accordance with the requirements of 10 CFR 50.55a, IES Utilities hereby submits relief requests for those examination requirements determined to be impractical to perform during the second ten year interval (attachment).

Should you have any questions regarding the attached information, please contact this office.

Sincerely,

Kenneth E. Peveler
Manager, Regulatory Performance

Attachment

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IES UTILITIES INC.
DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-022

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

HEA-CB-2 Residual Heat Removal System (RHR) Heat Exchanger Nozzle Inner Radius

EXAMINATION CATEGORY C-B, ITEM(S) C2.22

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWC-2500-1 Category C-B, Item C2.22 requires a volumetric examination which includes essentially 100% of the inner radius once during the ten year interval. The examination volume is defined in Fig. IWC-2500-4.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from the performance of the volumetric examination of essentially 100% of the nozzle inner radius as described in Fig. IWC-2500-4 for RHR Heat Exchanger Weld HEA-CB-2.

IV BASIS FOR RELIEF

This weld is a nozzle to shell configuration which limits the volumetric (UT) coverage to a one-sided exam. In addition, the nozzle is located next to the tube sheet flange which limits the volumetric examination coverage. This results in approximately 75% UT coverage of the inner radius.

It is not possible to perform a radiography of these welds and be able to detect potential flaws. Performing radiography would require the Residual Heat Removal System to be drained and either the pipe or tube sheet opened to provide access to the inside diameter. (Removal of the tube sheet is not an option because several tubes would be required to be removed along with the tube sheet.) Draining the pipe increases the dose rates in the area by a factor of 1.7 (20 mr/hr vs 12 mr/hr). This results in additional personnel exposure of 50 mr, including the installation and removal of insulation and shielding. In addition, removing the pipe from the nozzle would require the pipe to be cut in two places and then rewelded which would take approximately 102 hours. Additional examinations would then be required for the welds that reattach the pipe to the system. The total dose for the project would be approximately 2R.

The additional 25% coverage would provide only a small potential for increasing plant safety while greatly increasing expenditures of plant manpower and radiation exposure.

V ALTERNATE EXAMINATIONS

IES Utilities Inc. proposes to perform volumetric examination of approximately 75% of the nozzle inner radius. The alternative examination coverage of 90% as allowed by Code Case N-460 will also be used.

VI JUSTIFICATION FOR THE GRANTING OF RELIEF

The volumetric examination of approximately 75% of the nozzle inner radius provides reasonable assurance that significant degradation, if present, would have been detected. Examining the additional 25% of inner radius would require draining the Residual Heat Removal System and removing the pipe. This would greatly increase personnel radiation exposure while providing only a small potential for increasing plant safety.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented in support of the 2nd Ten Year Interval. This examination was included in the Refueling Outage (RFO) 14 Summary Report.

IES UTILITIES INC.
DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-023

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

HCC-C001 Reactor Pressure Head to Flange Weld
VCB-C005 Reactor Pressure Vessel to Flange Weld

EXAMINATION CATEGORY B-A, ITEM(S) B1.30, B1.40

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWB-2500-1 Category B-A, Item B1.30 and B1.40 requires a volumetric examination which includes essentially 100% of the weld once during the ten year interval. The examination volume is defined in Fig. IWB-2500-4 and -5.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing a volumetric examination of essentially 100% of the vessel to flange weld (VCB-C005) and head to flange weld (HCC-C001).

IV BASIS FOR RELIEF

These welds are vessel to flange and head to flange welds which limit the volumetric (UT) coverage to a one-sided exam. In addition, the weld configuration limits the one-sided exam to approximately 42.7% and 36.8% UT coverage respectively. It is not possible to perform a radiography of these welds and be able to detect potential flaws. Performing a surface examination would also not detect the type of flaws that would be expected (i.e. within the volume of the weld). In accordance with 10 CFR 50.55a(6)(i), relief requests may be granted when the examination is shown to be impractical.

V ALTERNATE EXAMINATIONS

IES Utilities Inc. proposes to perform volumetric examination of approximately 42.7% of the vessel to flange weld and 36.8% of the head to flange weld. The alternative examination coverage of 90% as allowed by Code Case N-460 will also be used.

VI JUSTIFICATION FOR THE GRANTING OF RELIEF

The vessel to flange and head to flange weld configurations do not provide for any alternative examination method or the ability to achieve expanded coverage.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented in support of the 2nd Ten Year Interval. This exam was included in the Refueling Outage (RFO) 14 Summary Report

IES UTILITIES INC.
DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-024

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

VSW-0 Reactor Pressure Vessel Stabilizer Weld
VSW-90 Reactor Pressure Vessel Stabilizer Weld
VSW-180 Reactor Pressure Vessel Stabilizer Weld
VSW-270 Reactor Pressure Vessel Stabilizer Weld

EXAMINATION CATEGORY B-H, ITEM(S) B8.10

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWB-2500-1 Category B-H, Item B8.10 requires a surface examination which includes essentially 100% of the weld once during the ten year interval. The examination surface is defined in Fig. IWB-2500-15.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing a surface examination of essentially 100% of the vessel stabilizer integral attachment welds (VSW-0, -90, -180, and -270).

IV BASIS FOR RELIEF

These welds integrally attach lugs to the vessel by a "V groove" weld. The lugs are used to connect the vessel stabilizers to the vessel. The stabilizers prevent the necessary access to perform the surface examination of the bottom side of the lug. In addition, the close proximity of the lug to the vessel prevents access. The vessel stabilizers would require disassembly in order to provide the access necessary to complete the examination of 100% of the bottom weld. The stabilizers were installed and tensioned with a Biach Industries 500,000# tensioner. After a 24 hour period, the stabilizers were rechecked for a 290 kips residual load. Disassembly of the vessel stabilizers to provide access to the bottom weld would require extensive manpower and exposure. Examining the bottom weld would provide only a small potential for increasing plant safety while greatly increasing expenditures of plant manpower and radiation exposure. In accordance with 10 CFR 50.55a(6)(i), relief requests may be granted when the examination is shown to be impractical.

V ALTERNATE EXAMINATIONS

IES Utilities Inc. proposes to perform surface examination of approximately 60% of the vessel stabilizer attachment welds which includes the top and sides of each stabilizer lug.

VI JUSTIFICATION FOR THE GRANTING OF RELIEF

The surface examination of approximately 60% of the vessel stabilizer attachment welds provides reasonable assurance that significant degradation, if present, would have been detected. Disassembly of the vessel stabilizers is impractical; the configuration of the attachment lugs does not provide an alternative examination in expanding the coverage.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented in support of the 2nd Ten Year Interval. VSW-0 was examined in RFO 9. VSW-90 was examined in RFO 10. VSW-180 and VSW-270 were examined in RFO 14.

IES UTILITIES INC.
DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-025

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

Nozzle-to-vessel welds

EXAMINATION CATEGORY B-D, ITEM(S) B3.90

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWB-2500-1 Category B-D, Item B3.90 requires a volumetric examination which includes essentially 100% of the weld once during the ten year interval. The examination volume is defined in Fig. IWB-2500-7(b).

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing volumetric examination of essentially 100% of the nozzle-to-vessel weld volume for those nozzles affected. (See Section VII.)

IV BASIS FOR RELIEF

Due to the design of these welds, it is not feasible to effectively perform a volumetric examination of 100% of the volume described in IWB-2500-7(b). The nozzle-to-vessel welds are accessible from the vessel side, but examination cannot be performed from the nozzle side because of the taper. In accordance with 10 CFR 50.55a(6)(i), relief requests may be granted when the examination is shown to be impractical.

V ALTERNATE EXAMINATIONS

IES Utilities Inc. proposes to perform volumetric examination from the vessel side of the nozzle-to-vessel welds which are included in the attached list. Because of the design of the nozzle-to-vessel welds, there are no alternative examination techniques currently available to increase the examination volume.

VI JUSTIFICATION FOR THE GRANTING OF RELIEF

There are no alternative examination techniques currently available that will increase the volume. IES Utilities will continue to review future examination techniques and their application on nozzle-to-vessel welds.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented in support of the 2nd Ten Year Interval. The following list indicates the period when each nozzle-to-vessel weld was examined.

Nozzle ID	Period Examined	Remarks
CRA-D001	2	Control Rod Drive
CSA-D001	1	Core Spray
CSB-D001	1	Core Spray
FWA-D001	1	Feedwater
FWB-D001	3	Feedwater
FWC-D001	3	Feedwater
FWD-D001	3	Feedwater
HDA-D001	Exempt	Contained within the CRD array
HSB-D001	2	Head Spare
HVA-D001	1	Head Vent
JPA-D001	2	Jet Pump
JPB-D001	3	Jet Pump
LCA-D001	3	Standby Liquid Control
MSA-D001	1	Main Steam
MSB-D001	2	Main Steam
MSC-D001	3	Main Steam
MSD-D001	3	Main Steam
RCA-D001	2	Recirculation Outlet
RCB-D001	1	Recirculation Outlet
RHA-D001	1	Head Spray
RRA-D001	1	Recirculation Inlet
RRB-D001	1	Recirculation Inlet
RRC-D001	1	Recirculation Inlet
RRD-D001	1	Recirculation Inlet
RRE-D001	1	Recirculation Inlet
RRF-D001	2	Recirculation Inlet
RRG-D001	3	Recirculation Inlet
RRH-D001	1	Recirculation Inlet
VIA-D001	2	Vessel Instrumentation
VIB-D001	3	Vessel Instrumentation
VIC-D001	2	Vessel Instrumentation
VID-D001	2	Vessel Instrumentation
VIE-D001	1	Vessel Instrumentation
VIF-D001	2	Vessel Instrumentation

IES UTILITIES INC.
DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-026

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

Vessel Closure Head Threads in Flange

EXAMINATION CATEGORY B-G-1, ITEM(S) B6.40

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWB-2500-1 Category B-G-1, Item B6.40 requires a volumetric examination which includes 1 inch around the vessel bushing (when installed) as referenced in Figure IWB-2500-12 once during the ten year interval.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing volumetric examination of essentially 100% of the 1 inch annular area required by IWB-2500-12.

IV BASIS FOR RELIEF

The 1 inch annular area required by IWB-2500-12 to be examined encompasses the flange sealing surface area. This ligament examination is limited due to the proximity of the flange sealing surface. A total of approximately 77.1% of the examination volume can be achieved. The sealing surface does not allow examination of a 4 inch and 4.3 inch area on both sides of the stud which interfaces with the sealing surface. This is due to the flange configuration and the O-ring groove. In accordance with 10 CFR 50.55a(6)(i) relief requests may be granted when the examination requirements are shown to be impractical.

V ALTERNATE EXAMINATIONS

IES Utilities Inc. proposes to perform volumetric examination of 77.1% of the flange ligament once per interval.

VI JUSTIFICATION FOR THE GRANTING OF RELIEF

There are no alternative examination techniques available that will increase the volume. The volumetric examination of approximately 77.1% of the flange ligament provides reasonable assurance that significant degradation, if present, would have been detected.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented in support of the 2nd Ten Year Interval.