

May 2, 2001
NG-01-0601

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station 0-P1-17
Washington, DC 20555-0001

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Alternative Testing Number NDE-R041, Use of Later Code Edition,
ASME Section XI, Paragraph IWB-2430, IWC-2430, and IWD-2430
File: A-100, A-286

During the current refueling outage (RFO) 17, weld inspections are being performed at the Duane Arnold Energy Center (DAEC) in accordance with the DAEC Inservice Inspection (ISI) Program. As discussed in a conference call with the Staff on April 30, 2001, these inspections have identified an indication in a circumferential weld in the reactor head (Weld HCC-B002, Vessel Head Dollar Weld). The indication does not meet ASME Section XI IWB-3500 acceptance standards, but has been found acceptable per IWB-3600.

Paragraphs IWB-2430 and IWC-2430 require additional examinations to be performed when examinations reveal indications exceeding the applicable acceptance standards of Table IWB-3410-1 for Class 1 and of Article IWC-3000 for Class 2. The criteria for expansion of the examination sample as stated in IWB-2430 and IWC-2430 of the applicable ASME Code, Section XI, 1989 Edition, are not clear in regard to the number and the type of components. The 1992 Edition of the Code provides clarification in this regard.

As discussed in 10CFR50.55a(g)(4)(iv), inservice examinations may meet the requirements of portions of later Code editions incorporated by reference in 10 CFR 50.55a, subject to Commission approval and provided that all related requirements of the respective edition are met.

Pursuant to 10CFR50.55a(g)(4)(iv), the Nuclear Management Company, LLC (NMC) requests approval to use, as an alternative to the requirements of the 1989 Edition of ASME Section XI, the expansion criteria detailed in paragraphs IWB-2430, IWC-2430, and IWD-2430 (Additional Examinations) of the 1992 Edition of ASME Section XI for Class 1, Class 2, and Class 3 components, as appropriate, when examinations reveal indications exceeding the applicable acceptance standards.

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Attachment 1 contains Alternative Testing Number NDE-R041. Attachment 2 contains an evaluation of related requirements for the 1992 Edition, Paragraphs IWB-2430, IWC-2430, and IWD-2430. NMC requests approval of the attached relief request prior to May 9, 2001 to support the completion of ISI activities during the ongoing refueling outage.

Please contact this office should you require additional information regarding this matter.

Sincerely,



Kenneth S. Putnam
Manager, Nuclear Licensing

Attachment 1: Alternative Testing Number NDE-R041
Attachment 2: Evaluation of Related Requirements for the 1992 Edition of ASME
Section XI, Paragraphs IWB-2430, IWC-2430, AND IWD-2430

cc: G. Park (w/a)
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ALTERNATIVE TESTING NUMBER: NDE-R041

SYSTEM/COMPONENT(S) FOR WHICH ALTERNATIVE WILL BE USED

Code Class:	Code Class 1, 2, and 3
Reference:	ASME Section XI, Subsections IWB-2430, IWC-2430 and IWD-2430
Examination Category:	All
Item Number:	All
Description:	Alternative Requirements to Additional Examinations
Component Numbers:	All

CODE REQUIREMENT

Section XI (1989 Edition), IWB-2430 and IWC-2430 provides requirements for performing “Additional Examinations” if indications are revealed that exceed the acceptance standards of IWB-3410-1 for Class 1 and IWC-3000 for Class 2. There are no requirements specified in the 1989 Edition for Class 3 components.

BASIS FOR ALTERNATIVE

Paragraphs IWB-2430 and IWC-2430 require additional examinations to be performed when examinations reveal indications exceeding the applicable acceptance standards of Table IWB-3410-1 for Class 1 and of Article IWC-3000 for Class 2. The criteria for expansion of the examination sample as stated in IWB-2430 and IWC-2430 of the applicable ASME Code, Section XI, 1989 Edition, are not clear in regard to the number and the type of components. On the contrary, the 1992 Edition of the Code addresses the additional examination requirement under the same paragraphs based on the number of examinations scheduled during the inspection period. Further, the 1992 Code specifies that the additional examination be selected from welds, areas, or parts of similar material and service and may require inclusion of piping systems other than the one containing the flaws or relevant conditions. The 1989 Edition of Section XI does not address additional examinations of Class 3 components in IWD-2000, whereas, the 1992 Edition of the Code under paragraph IWD-2430 requires additional examination based on 20 percent of the number of examinations scheduled for the inspection interval with selection criteria similar to Class 2.

The related requirements have been evaluated and there were no provisions that would require a change to the DAEC ISI Program Plan.

ALTERNATIVE EXAMINATION

Pursuant to 10CFR50.55a(g)(4)(iv) the DAEC requests approval to use as an alternative to the requirements of the 1989 Edition of ASME Section XI, the expansion criteria detailed in paragraphs IWB-2430, IWC-2430, and IWD-2430 (Additional Examinations) of the 1992 Edition of ASME Section XI for Class 1, Class 2, and Class 3 components, as appropriate, using the schedule quantities detailed in the DAEC ISI Ten Year Plan, when examinations reveal indications exceeding the applicable acceptance standards.

IMPLEMENTATION SCHEDULE

Alternative is requested for the third ten-year interval of the Inservice Inspection Program for DAEC.

**EVALUATION OF RELATED REQUIREMENTS FOR THE 1992 EDITION OF
ASME SECTION XI, PARAGRAPHS IWB-2430, IWC-2430, AND IWD-2430**

1989 Edition	1992 Edition	Comments
<p>IWB/C-2430 “Additional Examinations”</p> <p>This paragraph provides the requirements for performing additional examinations if the examinations performed in accordance with Table IWB/C-2500-1 reveal indications that do not meet the acceptance standards of IWB/C-3410-1.</p> <p>IWD-2430 did not exist in the 1989 Edition.</p>	<p>IWB/C/D-2430 “Additional Examinations”</p> <p>This paragraph provides the requirements for performing additional examinations if the examinations performed in accordance with IWB/C/D -2500-1 reveal indications that do not meet the acceptance standards of IWB/C/D -3410-1.</p>	<p>IWB-2430, IWC-2430, IWD-2430 “Additional Examinations”</p> <p>This revision changes and clarifies the extent of additional examinations to be performed upon discovery of a flaw or relevant condition that exceeds the acceptance criteria. When such a flaw is discovered, the sample size is required to be increased. The change also adds requirements for additional examinations when flaws or relevant conditions are found in Class 3 components. For Class 1, the additional examinations must include an additional number of welds, areas, or parts included in the inspection item equal to the number of welds, areas, or parts included in the inspection item scheduled to be inspected in the current period. For Class 2 and 3, the additional examinations must include an additional number of welds, areas, or parts included in the inspection item equal to 20 percent of the number of welds, areas, or parts included in the inspection item scheduled to be performed during the interval.</p> <p>This is the change that is being submitted to use. (ref. NDE-R041)</p>
<p>Table IWB/C/D-2500-1 “Examination Categories”</p> <p>These tables identify the examination requirements for all class 1, 2 and 3 components.</p>	<p>Table IWB/C/D-2500-1 “Examination Categories”</p> <p>These tables identify the examination requirements for all class 1, 2, and 3 components.</p>	<p>IWB-2411(c), Table IWB-2412-1, Table IWB-2500-1, IWC-2411, Table IWC-2412-1, IWD-2411, Table IWD-2412-1 “Inspection Program”</p> <p>This revision deletes the 40 year limit on Inspection Programs A and B. The deletion of this limit provides continuing inservice inspection requirements for plants after they have been operating for 40 years.</p> <p>This change is unrelated to the Additional Examination Requirements of IWX-2430.</p> <p>IWB-2500(b), Table IWB-3410-1 Category B-D (Full Penetration Welded Nozzles in Vessels) This revision clarifies that the examination provisions apply to the specified areas of full penetration welded nozzles in vessels and are not restricted to only the welds.</p> <p>This change removed the word “of” to clarify the examination provisions. This is related to the examination volume required, however the DAEC follows the examination volume identified in figure IWB-2500-7 of the 1989 Edition which has not changed in the 1992 Edition.</p>

1989 Edition	1992 Edition	Comments
<p>Table IWB/C/D-2500-1 “Examination Categories”</p> <p>These tables identify the examination requirements for all class 1, 2 and 3 components.</p>	<p>Table IWB/C/D-2500-1 “Examination Categories”</p> <p>These tables identify the examination requirements for all class 1, 2, and 3 components.</p>	<p>Table IWB-2500-1, Table IWB-3410-1 Pressure Retaining Dissimilar Welds In Vessel Nozzles This revision clarifies that Examination Category B-F (Pressure Retaining Dissimilar Metal Welds in Vessel Nozzles) applies to dissimilar metal welds only in vessel nozzles, not in piping.</p> <p>This was deleted in the 1991 Addenda and reinstated in the 1992 Edition. The DAEC will implement according to the requirements of the 1989 Edition. The examination requirement is the same and under the “Parts Examined” column the component is specified. The DAEC does not have any other Class 1 vessel than the Reactor Pressure Vessel. This change also deleted Item numbers B5.130, B5.140, and B5.150.</p> <p>Table IWB-2500-1, Category B-G-1 Pressure Retaining Bolting Greater Than 2 Inches In Diameter This revision replaces the surface examination requirement for reactor vessel closure head nuts (Item B6.10) with a VT-1 visual examination meeting the acceptance criteria of IWB-3517. Prior to this revision, there was no acceptance criteria given for the surface examination.</p> <p>NDE-R017 was approved to utilize the change made in the 1989 addenda. (ref. NRC SE dated March 23, 1998.)</p> <p>Table IWB-2500-1 Category B-J (Pressure Retaining Welds in Piping), Table IWC-2500-1 Category C-F-2 (Pressure Retaining Welds in Carbon or Low Alloy Piping) Examination of Pressure Retaining Welds in Piping This revision clarifies that pressure retaining welds in carbon and low alloy steel piping are to be examined by ultrasonic examination for transverse indications only when reportable transverse indications were found during the preservice examination.</p> <p>The DAEC already uses the ultrasonic examination method for examining these welds. The DAEC understood this requirement prior to the change being made in the 1989 Addenda. The DAEC continues to perform the surface examinations as delineated in the IWB-2500 and IWC-2500 Tables.</p>

1989 Edition	1992 Edition	Comments
<p>Table IWB/C/D-2500-1 “Examination Categories”</p> <p>These tables identify the examination requirements for all class 1, 2 and 3 components.</p>	<p>Table IWB/C/D-2500-1 “Examination Categories”</p> <p>These tables identify the examination requirements for all class 1, 2, and 3 components.</p>	<p>Table IWD-2500-1 Category D-A (Welded Attachments for Vessels, Piping, Pumps, and Valves)</p> <p>Inaccessible Integral Attachments</p> <p>This revision adds provisions to exempt integral attachments that are inaccessible for inspection. The changes are made to accommodate the sampling plan added to Subsection IWF in the 1990 Addenda.</p> <p>The DAEC has identified integral attachments that are inaccessible for examination. If additional integral attachments are identified with limitations, requests for relief will be submitted, as needed.</p> <p>IWB-2411(a), IWB-2412(a), Table IWB-2500-1 Category B-A (Pressure Retaining Welds in Reactor Vessel), IWC-2412, IWD-2412 Inspection Programs</p> <p>This revision clarifies that under Inspection Program B it is permissible to defer inspection of shell-to-flange and head-to-flange welds to the end of each inspection interval.</p> <p>The DAEC will continue to examine these areas under the 1989 Edition of ASME Section XI. This change is unrelated to the Additional Examination requirements of IWX-2430.</p>

1989 Edition	1992 Edition	Comments
<p>Table IWB/C/D-2500-1 “Examination Categories”</p> <p>These tables identify the examination requirements for all class 1, 2 and 3 components.</p>	<p>Table IWB/C/D-2500-1 “Examination Categories”</p> <p>These tables identify the examination requirements for all class 1, 2, and 3 components.</p>	<p>IWB-2420, IWC-2420, IWD-2420 Successive Inspections</p> <p>This revision corrects the terminology in IWB-2420 and IWC-2420 to be consistent with IWB-3000 and IWC-3000. In addition, similar provisions for successive examinations are added for Class 3 components.</p> <p>The DAEC will continue to use the provisions identified in the 1989 Edition for successive examinations; the requirements are the same for the 1989 and the 1992 Editions.</p> <p>Table IWB-2500-1 Category B-P (All Pressure Retaining Components), Table IWC-2500-1 Category C-H (All Pressure Retaining Components), Table IWD-2500-1, Category D-B (Systems in Support of Emergency Core Cooling, Containment Heat Removal, Atmosphere Cleanup, and Reactor Residual Heat Removal) System Pressure Tests</p> <p>This revision clarifies the system pressure test requirements for Class 1, 2, and 3 systems and components. Most of the changes are editorial, but this revision replaces the system functional test and the system inservice test with the system leakage test. This change provides some significant benefits to Owners.</p> <p>Note: This revision adds new holding time requirements for system leakage tests.</p> <p>This change is unrelated to the Additional Examination requirements of IWX-2430. The DAEC will continue to use the pressure testing requirements delineated in the ISI Program.</p>

1989 Edition	1992 Edition	Comments
<p>Table IWB/C/D-2500-1 “Examination Categories”</p> <p>These tables identify the examination requirements for all class 1, 2 and 3 components.</p>	<p>Table IWB/C/D-2500-1 “Examination Categories”</p> <p>These tables identify the examination requirements for all class 1, 2, and 3 components.</p>	<p>IWD-2500(b), Table IWD-2500-1 Category D-C (Systems in Support of Residual Heat Removal From Spent Fuel Storage Pool) Examination Requirements</p> <p>This revision deletes Examination Category D-C, Systems in Support of Residual Heat Removal from Spent Fuel Storage Pool, because the provisions for attachments are already included in Category D-A and the provisions for pressure retaining components are included in Category D-B. The change also identifies Class 3 systems which are required to meet the inservice examination requirements of Section XI. This change is merely a clarification of existing requirements.</p> <p>This change is unrelated to the Additional Examination requirements of IWX-2430.</p>
<p>Table IWB-3410-1 “Acceptance Standards”</p> <p>This table identifies the specific acceptance standard to use based on the Examination Category Number.</p>	<p>IWB-3410-1 “Acceptance Standards”</p> <p>This table identifies the specific acceptance standard to use based on the Examination Category Number.</p>	<p>See above for changes.</p>
<p>IWB/C/D-2400 “Inspection Schedule”</p> <p>This provides the requirements for the inspection program and the percentages for each period.</p>	<p>IWB/C/D-2400 “Inspection Schedule”</p> <p>This provides the requirements for the inspection program and the percentages for each period.</p>	<p>IWB-2411(c), Table IWB-2412-1, Table IWB-2500-1, IWC-2411, Table IWC-2412-1, IWD-2411, Table IWD-2412-1 “Inspection Program”</p> <p>This revision deletes the 40 year limit on Inspection Programs A and B. The deletion of this limit provides continuing inservice inspection requirements for plants after they have been operating for 40 years.</p> <p>This change is unrelated to the Additional Examination Requirements of IWX-2430.</p>