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AUTH. NAME AUTHOR AFFILIATION
SAMPSON, J.R. Indiana Michigan Power Co.
RECIP. NAME RECIPIENT AFFILIATION
Records Management Branch (Document Control Desk)

SUBJECT: Provides info requested in 980114 RAI & notes of withdrawal of relief request number seven, performing full-vee exam from vessel side in lieu of performing half-vee exam from both sides of pressurizer surge nozzle-to-vessel weld.

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July 8, 1998

AEP:NRC:0969BK

Docket Nos.: 50-315
50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, D.C. 20555-0001

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2
ADDITIONAL INFORMATION REGARDING
THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN

References:

1. Letter AEP:NRC:0969AJ, "Donald C. Cook Nuclear Plant Units 1 and 2, RELIEF REQUESTS FOR THE THIRD 10-YEAR INSERVICE INSPECTION PLAN", dated January 25, 1996.
2. Letter, John B. Hickman, NRC, to E. E. Fitzpatrick, Indiana Michigan Power Company, "REQUEST FOR ADDITIONAL INFORMATION REGARDING THE D.C. COOK NUCLEAR PLANT, UNITS 1 AND 2 THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN AND ASSOCIATED REQUESTS FOR RELIEF (TAC NOS. M94871 AND M94872)", dated January 14, 1998.

Cook Nuclear Plant's third 10-year inservice inspection plan, together with its associated relief request, was transmitted to the NRC in reference 1. Subsequent to this submittal, reference 2 transmitted a request for additional information regarding the test plan and the relief requests.

Attachment 1 to this letter provides the requested information and notes that we are withdrawing relief request number seven, performing a full-vee examination from the vessel side in lieu of performing half-vee examinations from both sides of the pressurizer surge nozzle-to-vessel weld. During a review of our program, we identified additional issues to be addressed. These issues are identified in items B, E, and I of attachment 1.

Sincerely,

A handwritten signature in dark ink, appearing to read 'John R. Sampson', written over a horizontal line.

J. R. Sampson
Site Vice President

/vlb

Attachments

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U.S. Nuclear Regulatory Commission
Page 2

AEP:NRC:1285A

c: J. A. Abramson
M. T. Anderson - INEEL
MDEQ - DW & RPD
NRC Resident Inspector
C. J. Paperiello

ATTACHMENT 1 TO AEP:NRC:0969BK

REQUEST FOR ADDITIONAL INFORMATION
THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM
AND ASSOCIATED CODE RELIEF REQUESTS

The following presents the questions proposed by Idaho National Engineering and Environmental Laboratory's (INEEL) request for additional information (RAI), based on their review of Cook Nuclear Plant's third 10-year interval inservice inspection (ISI) program and associated code relief requests. Each question is followed by our response.

Item A

"Request for Relief No. 2 proposes ultrasonic examination of the full examination volume of the recirculation loop nozzle-to-safe end welds in lieu of the Code-required surface examination. The request states, "Mockups of this area have been fabricated and the capability of the ultrasonic examination technique and procedure to detect outside surface indications has been demonstrated." Confirm that the ultrasonic examination technique has been demonstrated using outside surface connected cracks, and not notches. In addition, provide documentation and/or details including when and where the demonstration was performed, who performed it, and who, if anyone, from the NRC witnessed the demonstration."

Response to Item A

Southwest Research Institute (SwRI) personnel performed the demonstration in San Antonio, Texas, at the SwRI facilities on February 29, 1996, to permit Cook Nuclear Plant to use this examination alternative during the last unit 1 and 2 second 10-year interval outages. In attendance were two Cook Nuclear Plant employees and the authorized nuclear inspector (ANI) for the plant. In accordance with IWA-2240 of the ASME Section XI Code, 1983 Edition, 1983 Summer Addenda, this technique and procedure was demonstrated to the satisfaction of the ANI. This demonstration was conducted on existing calibration blocks and employed notches to depict surface flaws. These notches were sized such that both the depth and length of the notches were smaller than the calculated planar flaws provided in tables IWB-3514-1 and -2. The notches and performance of the demonstration were in accordance with the requirements of ASME Section XI. A letter from the ANI approved this alternate examination based on the results of the demonstration in San Antonio.

No NRC personnel witnessed the demonstration.

Item B

"Relief Request No. 4 states that limited access to the reactor vessel closure and lower head dollar plate welds prevent any examination of either weld. Considering that no volumetric examination will be performed on these welds, describe how reasonable assurance of their structural integrity will be provided? Are there other RPV circumferential head welds that are being examined? What percentage of the intersecting meridional welds can be examined? In the licensee's proposed alternative, it is stated that the accessible length of one closure head meridional weld be examined. The Code requires examination of all head welds, is this a typographical error?"

Response to Item B

Examination access to both the lower and closure head dollar plate welds is limited by the control rod drive penetrations and core

shroud on the closure head and lower head instrument penetrations. There are no other circumferential head welds in either of these heads. Assurance of the structural integrity of these welds is provided by the availability of the reactor coolant system leakage detection system and the VT-2 examination conducted during refueling outages at system pressure. Access to the intersecting meridional and dollar plate welds for the closure head is not possible due to the location of the core shroud and the control rod drive mechanism penetrations and the unacceptable radiation exposure associated with the removal and re-installation of this equipment to perform this examination. Access to the lower head dollar plate welds is not feasible due to the instrument penetrations that enter on both sides of the dollar plate weld. We have reviewed this examination with our ISI Vendor, who performed our first and second 10-year ISI reactor pressure vessel examinations, and it is their opinion that examination of dollar plate welds, even at the intersecting welds, is not feasible. It is also their experience that this is true, not only for our plant vessels, but for the majority of pressurized water reactor units.

Code relief request no. 4 for both units did state that one of the meridional welds is volumetrically examined during the inspection interval as a means of ensuring structural integrity. However, the third 10-year interval ISI program indicates that the accessible lengths of all meridional welds are scheduled for examination during the third inspection interval in accordance with the code requirements. An amendment to AEP:NRC:0969AJ, code relief request no. 4 for units 1 and 2, will be submitted by August 31, 1998, to correct this mis-statement.

Item C

"Requests for Relief Nos. 5 and 6 are for Class 2 welds within penetrations. However, relief cannot be granted on a generic basis. Identify each weld for which relief is requested."

Response to Item C

Requests for relief nos. 5 and 6 requested approval to not perform examination of containment penetration welds that were inaccessible due to design. Each unit has four feedwater and eight main steam penetrations that are designed with the flued-head penetration that does not permit access to weldment. These are listed in table 1.

TABLE 1
WELD LOCATIONS

Item	Unit	Summary #	Identification	Description
1	1	311030	1-FW-11-01S	Pipe to Flued head
2	1	311480	1-FW-13-01S	Pipe to Flued Head
3	1	311830	1-FW-16-01S	Pipe to Flued Head
4	1	312200	1-FW-18-01S	Pipe to Flued Head
5	1	313310	1-MS-1-10F	Pipe to Flued Head
6	1	313320	1-MS-1-12F	Pipe to Flued Head
7	1	313790	1-MS-6-10F	Pipe to Flued Head
8	1	313810	1-MS-6-12F	Pipe to Flued Head
9	1	314260	1-MS-10-09F	Pipe to Flued Head
10	1	314280	1-MS-10-11F	Pipe to Flued Head
11	1	314740	1-MS-14-09F	Pipe to Flued Head
12	1	314760	1-MS-14-11F	Pipe to Flued Head

Item	Unit	Summary #	Identification	Description
13	2	319165	2-FW-74-16S	Pipe to Flued Head
14	2	319325	2-FW-75-16S	Pipe to Flued Head
15	2	319486	2-FW-76-16S	Pipe to Flued Head
16	2	319626	2-FW-77-16S	Pipe to Flued Head
17	2	320610	2-MS-89-11F	Pipe to Flued Head
18	2	320630	2-MS-89-13S	Pipe to Flued Head
19	2	321060	2-MS-91-09F	Pipe to Flued Head
20	2	321080	2-MS-91-11F	Pipe to Flued Head
21	2	321510	2-MS-93-09F	Pipe to Flued Head
22	2	321530	2-MS-93-11S	Pipe to Flued Head
23	2	321990	2-MS-95-09F	Pipe to Flued Head
24	2	322010	2-MS-95-11S	Pipe to Flued Head

Item D

"Relief Request No. 7 seeks authorization to perform a full-vee examination from the vessel side in lieu of performing half-vee examinations from both sides of the pressurizer surge nozzle-to-vessel weld. Generally, full-vee path examinations are difficult to perform on clad vessels. What is the level of confidence in the effectiveness of this examination and what portion of the Code-required volume can be examined? Can the circumferential scans be performed to the extent required by the Code? Provide coverage plots or a technical discussion summarizing volumetric coverage obtained for pressurizer nozzle-to-vessel Weld 2-RC-21."

Response to Item D

This code relief request is withdrawn. During the last unit 2 refueling outage, we conducted a best effort examination and were able to obtain 92% coverage. By invoking code case N-460, we are justified in withdrawing this code relief request because the code case allows coverages greater than 90%, but less than 100%, without requesting code relief. We attribute the change in coverages between the first and second 10-year intervals and the results obtained recently in 1997 to an improved examination technique.

Item E

"The licensee has requested authorization to implement Code Case N-509, "Alternative Rules for the Selection and Examination of Class 1, 2, and 3 Integrally Welded Attachments". The NRC has allowed the use of Code Case N-509 provided the licensee's commit to examine a minimum of 10% of the total number of non-exempt piping, pump, and valve integral attachments distributed among the Class 1, 2, and 3 systems. Confirm that this condition will be met."

Response to Item E

We have reviewed this question with our contractor who prepared the third 10-year interval ISI long term plan and have determined that for class 1 and 2 integral attachments, we are in compliance with the code case and the provisions designated in Regulatory Guide 1.147. We have not yet determined whether class 3 integral attachment examination requirements have been adequately met. Based on a review of our program plan, we have found that some component supports for class 3 have not been identified in the third 10-year interval and suspect that some integral attachments

may also not be identified. We are in the process of completing this review and will either change our third 10-year interval ISI program to reflect our program commitments, if not in agreement, or submit code relief requests that seek NRC approval for alternative examinations. We plan to complete this activity by August 31, 1998.

Item F

"IWA-2441(a) requires that the inservice inspection plan identify the Code cases that will be used during the interval. In the licensee's September 10, 1996 response to the NRC's RAI, Code Case N-481 is the only Code Case listed. Based on the difference between relief requests submitted with the second interval program plan and those submitted with the third interval program plan, it appears that there are other Code Cases being implemented at D. C. Cook (e.g., N-460). Provide a list of all the Code Cases being used at Donald C. Cook, Units 1 and 2, that are included in Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability ASME Section XI, Division 1".

Response to F

The following code cases will be used for the third 10-year ISI interval program plan: Code cases N-416-1, N-460, N-498-1, N-509, N-491-1, N-522, N-521 and N-524.

We have previously requested code relief in our letter AEP:NRC:0969AA to use nuclear code cases N-491-1, N-509, N-521, and N-524. N-460 is listed in Regulatory Guide 1.147, and the NRC has approved the use of N-416-1, N-498-1, and N-522.

As additional code cases are approved for use by the NRC during the third interval, we will review these for applicability to Cook Nuclear Plant and submit revisions to the plan, as required.

Item G

"The licensee must state the specific paragraph of 10 CFR 50.55a under which the request is submitted and provide supporting justification as discussed below.

The Regulations allow a licensee to propose an alternative to CFR or ASME requirements in accordance with 10 CFR 50a(a)(3)(I), or 10 CFR 50a(a)(3)(ii). Pursuant to 10 CFR 50.55a(a)(3)(i), the proposed alternative must be shown to provide an acceptable level of quality and safety, i.e., essentially be equivalent to the original requirement in terms of quality and safety. Pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee must show that compliance with the original requirement results in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Examples of hardship and/or unusual difficulty include, but are not limited to, excessive radiation exposure, disassembly of components solely to provide access for examination, and development of sophisticated tooling that would result in only minimal increases in examination coverage.

A licensee may also submit a request for relief from ASME Code requirements, in accordance with 10 CFR 50.55a(g)(5)(iii), if a licensee determines that conformance with certain Code requirements is impractical for its facility, the licensee shall notify the

Commission and submit, as specified in §50.4, information to support that determination. When a licensee determines that an inservice inspection requirement is impractical, e.g., the system would have to be redesigned or a component would have to be replaced to enable inspection, the licensee should cite 10 CFR 50.55a(g)(5)(iii). The NRC may, giving due consideration to the burden placed on the licensee, impose an alternative examination requirement.

Provide the appropriate references to the Code of Federal Regulations for the following requests:

- Requests 1 through 7, which were submitted without reference to a specific paragraph of the Code of Federal Regulations.
- Requests provided in the letter dated November 7, 1996, which are referred to as alternatives to Code requirements."

Response to G

The following table identifies the code of federal regulations part 50 reference for each of the code relief requests per your request.

AEP:NRC Document No.	Code Relief Request No.	Description	10 CFR 50.55a Reference
AEP:NRC:0969AJ	1	Augment RPV shell weld exam U1/2	10 CFR 50.55a (g) (5) (iii)
AEP:NRC:0969AJ	2	Class 1 nozzle to safe end welds U1/2	10 CFR 50.55a (a) (3) (i)
AEP:NRC:0969AJ	3	RPV shell to flange weld deferral U1/2	10 CFR 50.55a (a) (3) (i)
AEP:NRC:0969AJ	4	RPV closure and lower dollar plate welds U1/2	10 CFR 50.55a (g) (5) (iii)
AEP:NRC:0969AJ	5	Class 2 pipe to flued head penetration welds U1/2	10 CFR 50.55a (g) (5) (iii)
AEP:NRC:0969J	6	Class 2 pipe to flued head welds on the whip restraint of MS penetrations U1/2	10 CFR 50.55a (g) (5) (iii)
AEP:NRC:0969AJ	7	Unit 2 - pressurizer surge nozzle exam	Withdrawn
AEP:NRC:0969AA	Attach 1	U1/2 Code Case N 521	10 CFR 50.55a (a) (3) (i)
AEP:NRC:0969AA	Attach 2	U1/2 Code Case N 491-1	10 CFR 50.55a (a) (3) (i)
AEP:NRC:0969AA	Attach 3	U1/2 Code Case N 509	10 CFR 50.55a (a) (3) (i)
AEP:NRC:0969AA	Attach 4	U1/2 Code Case N 524	10 CFR 50.55a (a) (3) (i)

Item H

"In the November 7, 1996, submittal, the licensee stated that approval to use Code Case N-498-1 was provided by letter dated July 5, 1995. Was NRC authorization to use this code case for the third 10-year interval obtained? If so, provide a copy of the NRC Safety Evaluation Report authorizing the use of Code Case N-498-1 for the third 10-year ISI interval. If not, a new request for authorization must be submitted for the third 10-year ISI interval."

Response to Item H

The letter and the safety evaluation report dated July 5, 1995, to E. E. Fitzpatrick from the NRC, authorizes the use of code case N-498-1 for Cook Nuclear Plant, until the code case is published in a future revision of Regulatory Guide 1.147. The approval provided in this document is independent of the ISI interval, and therefore, we do not need to supply a code relief request for the third 10-year ISI interval. The approval cover letter is included as attachment 2.

Item I

"ASME Section XI, paragraph IWB-2420 states that the sequence of component examinations established during the first interval shall be repeated during each successive inspection interval to the extent practical. In the NRC RAI, the licensee was requested to provide a detailed technical discussion regarding why the successive examination requirement could not be met. In the September 10, 1996, submittal, the licensee stated that the requirements of IWB-2420 were met to the extent practical and provided a list of welds that did not meet this requirement. A majority of the welds listed were shifted from the first period to the third period during the third interval. This deviation from IWB-2420 does not meet the intent of the Code and has not been adequately justified. To find this acceptable, a request for relief (or proposed alternative) must be submitted for staff review with the appropriate technical and regulatory basis."

Response to Item I

We have reviewed this issue in our submittal AEP:NRC:0969AW, and with our third 10-year interval ISI program plan contractor, and offer the following. In all but one case, the rescheduling of class 1 and 2 piping was necessitated by the change in requirements specified in IWB-2412 and IWC-2412 that requires that examinations in each "examination category" be completed in accordance with tables IWB-2412-1 and IWC-2412-1. The second 10-year interval code requirements specified that the required examinations (collectively all categories) meet table IWB-2412-1 for successive inspection intervals. We could not meet both code requirements (IWB and IWC-2420, "Successive Inspections for Class 1 and 2 Components", and IWB and IWC 2412) simultaneously, and therefore, chose to redistribute examinations with the least impact for the third 10-year ISI interval to agree with tables IWB and IWC-2412-1 in the 1989 edition of the Section XI Code.

The one case where the examination was moved from the second to the third period was to correspond with other examinations that required common scaffolding, examination equipment, and personnel.

The purpose of this change was to reduce radiation dose exposure by consolidating examinations. We agree that this change in schedule will require a code relief request. This change will be re-evaluated for impact. If we choose to perform the examination as specified in the period in the third 10-year interval, we will submit a code relief request. If not, the examination will be changed to the schedule specified in the first and second 10-year intervals, and the plan will be changed accordingly. This action will be completed by July 31, 1998.

Item J

"In accordance with 10 CFR 50.55a(g)(6)(ii)(A), all licensees must implement once, as part of the inservice inspection interval in effect on September 8, 1992, an augmented volumetric examination of the reactor pressure vessel (RPV) welds specified in Item B1.10 of Examination Category B-A of the 1989 Edition of the ASME Code, Section XI. Examination Category B-A, Items B1.11 and B1.12 require volumetric examination of essentially 100% of the RPV circumferential and longitudinal shell welds, as defined by Figures IWB-2500-1 and -2, respectively. Essentially 100%, defined by 10 CFR 50.55a(g)(6)(ii)(A)(2), is greater than 90% of the examination volume of each weld. Licensees unable to satisfy the requirements of 10 CFR 50.55a(g)(6)(ii)(A) must propose an alternative to the examination requirements, which may be used when authorized by the Director of the Office of Nuclear Reactor Regulation. Based on the table provided by the licensee in Request for Relief No. 1, there are six welds that could not be examined to the extent required by the Regulations. Have the Regulations been satisfied by the submission of a proposed alternative? If so, provide the dates of the submittals and the subsequent NRC Safety Evaluation Report. If not, a proposed alternative must be submitted and authorized before the limited examinations for the RPV shell welds can be evaluated for the third 10-year ISI interval."

Response to Item J

Our letter AEP:NRC:0969AO, dated April 30, 1996, provided additional information to our original relief request, letter AEP:NRC:0960AI, dated July 28, 1995, based on the results of a best effort examination on unit 1. A revised estimate on unit 2 was also provided, based on unit 1 results and similarity of RPV design. Our letter AEP:NRC:0969AP, dated May 6, 1996, officially revised the original code relief request for unit 1.

NRC correspondence (TAC No. M93613), dated July 26, 1996, to Mr. E. E. Fitzpatrick, concluded that the unit 1 augmented RPV examination conducted during the second 10-year ISI interval, maximized examination coverage to the extent practical, and that imposing additional examinations would have resulted in considerable hardship without a compensating increase in the level of quality and safety. The safety evaluation report for the unit 1, second 10-year ISI interval augmented vessel examination alternative states that, "Based on the information submitted, the INEEL staff concludes that, pursuant to 10 CFR 50.55(g)(6)(ii)(A), the licensee's proposed alternative to the augmented RPV examination requirements, i.e., examination of the accessible volume from the inside diameter surface provides an acceptable level of quality and safety." Cook Nuclear Plant has, therefore, satisfied the regulations for unit 1.

Our letter AEP:NRC:0969AR, dated July 29, 1996, revises our original code relief request for the unit 2 augmented RPV examination, based on the unit 2 examinations conducted during the second 10-year ISI interval. The examination coverages obtained for unit 2 were considerably higher than those obtained for unit 1, mainly attributable to the vessel manufacturer's design differences. Since we have satisfactory closure to the regulations for unit 1, and the examination coverages for the unit 2 augmented RPV examination are higher, we anticipate that the proposed alternative for unit 2 will also satisfy the regulations.

Item K

"Request for Relief No. 1 regards limited examinations for six RPV shell welds and four RPV nozzle-to-vessel welds for Unit 1, and four shell welds and four nozzle-to-vessel welds in Unit 2. A note with the Unit 2 table states that coverage estimates are based on the Unit 1 10-year ISI examination results. Considering that Unit 2 is in the third 10-year interval, actual coverage information from previous examinations should be available and provided. In addition, the coverage obtained appears low for some of the welds and has not been adequately justified. Provide a detailed technical discussion describing the limitations and the coverage obtained."

Response to Item K

A code relief was submitted for unit 2 in our letter AEP:NRC:0969AR, dated July 29, 1996. As reported in the previous answer (Item J), the coverage for unit 2 was considerably higher. The detailed technical discussion describing the limitations and coverages are provided in this code relief request.

ATTACHMENT 2 TO AEP:NRC:0969BK
APPROVAL LETTER FOR CODE CASE N-498-1

I
July 5, 1995

Mr. E. E. Fitzpatrick, Vice President
Indiana Michigan Power Company
c/o American Electric Power Service Corporation
1 Riverside Plaza
Columbus, Ohio 43215

SUBJECT: D.C. COOK, UNITS 1 AND 2, REQUESTING APPROVAL OF CODE CASE N-498-1
AS AN ALTERNATIVE TO THE REQUIRED HYDROSTATIC PRESSURE TEST (TAC
NOS. M91783 AND M91784)

Dear Mr. Fitzpatrick:

The staff reviewed and evaluated the information provided by Indiana Michigan Power Company (IMPCo) in its letter dated February 27, 1995, related to relief from IMPCo's Inservice Inspection program.

IMPCo requested approval for use of the alternative rules of ASME Section XI Code Case N-498-1, dated May 11, 1994, "Alternative Rules for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems" for 10-year hydrostatic testing on Class 1, 2, and 3 systems. Based on the information submitted, IMPCo's alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) as compliance with the specified requirements of this Section XI would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. IMPCo's alternative, use of Code Case N-498-1, is authorized until such time as this code case is published in a future revision of Regulatory Guide 1.147. At that time if IMPCo intends to continue to implement this code case, it is to follow all provisions in Code Case N-498-1 with limitations issued in Regulatory Guide 1.147, if any.

The staff's evaluation and conclusions are contained in the enclosed safety evaluation. Should you have any questions please contact John B. Hickman at (301) 415-3017.

Sincerely,

Cynthia A. Carpenter, Acting Director
Project Directorate III-I
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation