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AUTH. NAME AUTHOR AFFILIATION
MCGAUGHY, R. W. Iowa Electric Light & Power Co.
RECIP. NAME RECIPIENT AFFILIATION
DENTON, H. Office of Nuclear Reactor Regulation, Director (post 851125

SUBJECT: Provides summary listing of ASME Section XI Class 1 welds scheduled for examination during next refueling outage to begin mid-Mar 1987. Requests NRC review listed references 3 - 7 re post-installation weld overlay insp results.

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Iowa Electric Light and Power Company

March 4, 1987
NG-87-0551

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Plans for Inspection of Reactor Coolant Pressure Boundary Piping During Cycle 8/9 Refueling Outage

Reference:
1) Letter, D. Vassallo (NRC) to L. Liu (Iowa Electric) dated July 9, 1985
2) Letter, R. W. McGaughy (Iowa Electric) to H. R. Denton (NRC) dated November 3, 1986 (NG-86-3518)
3) Safety Evaluation Report, D. Vassallo (NRC) to L. Liu (Iowa Electric) dated August 6, 1985
4) Letter, R. W. McGaughy (Iowa Electric) to H. R. Denton (NRC), dated June 14, 1985 (NG-85-2845)
5) Letter, R. W. McGaughy (Iowa Electric) to H. R. Denton (NRC), dated June 7, 1985 (NG-85-2743)
6) Letter, R. W. McGaughy (Iowa Electric) to H. R. Denton (NRC), dated May 24, 1985 (NG-85-2480)
7) Letter, R. W. McGaughy (Iowa Electric) to H. R. Denton (NRC), dated May 3, 1985 (NG-85-1901)

File: A-107a, A-286, B-31c, SpF-118

Dear Mr. Denton:

In a letter dated July 9, 1985 (Reference 1), the NRC staff stated they had reviewed our piping inspection and repair program for the Duane Arnold Energy Center (DAEC) which was conducted during the Cycle 7/8 refueling outage. (The Cycle 7/8 refueling outage began February 2, 1985 and concluded on July 23, 1985). In addition, the Staff also requested that we apprise them of our plans for future inspections and/or modifications.

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During the Cycle 7/8 refueling outage, a total of 177 welds in the reactor coolant piping system were ultrasonically inspected. In addition, 104 large-diameter welds in the recirculation piping system were treated with the induction-heating-stress-improvement (IHSI) procedure. Eleven recirculation piping welds were found to have reportable indications which were repaired by the weld overlay process. Nine weld overlays were used to repair the eleven indications. Following the weld overlay process, the overlays were manually flapped to facilitate inspection. The personnel utilized during the inspection process for examining stainless steel and dissimilar metal welds and the weld overlays were EPRI-qualified ultrasonic examiners. Subsequent to the review of the above information on the inspection process and the repairs performed, and our response to NRC Generic Letter 84-11, the Staff concluded the DAEC could be operated for at least one additional operating cycle.

As requested via Reference 1, Attachment 1 to this letter provides a summary listing of the ASME Section XI Class 1 welds which are scheduled for examination during our next refueling outage which is scheduled to begin in mid-March of 1987. This attachment and transmittal letter supersedes information previously provided in Reference 2 to incorporate Generic Letter 84-11 guidance, address NRC staff comments as a result of a previous telephone conversation and provide clarifying information. To aid in your review, the attached listing delineates the systems to be inspected, piping diameter or weld type, method of non-destructive examination which will be employed and piping material. Examiners used during the 1987 refueling outage for examining stainless steel and dissimilar metal welds and the weld overlays will be qualified in accordance with the upgraded performance capability test conducted at the EPRI NDE Center.

We also request that the NRC staff again review References 3 through 7, which provided post-installation weld overlay inspection results, as we intend to seek NRC approval to continue operating with the weld overlays in place. It is our understanding that other facilities have requested and received similar approval. The weld inspections described in the attachment, which includes the weld overlays, should be completed by April 25, 1987. The results of these inspections will be formally transmitted to you shortly thereafter. For planning purposes, this schedule will allow the Staff approximately two weeks to review our request for continued operation prior to our mid-May restart date. We will continue to keep the Staff informed of our progress regarding the weld overlay inspection results and will provide information, as needed, to facilitate the Staff review of our request for continued operation with the weld overlays in place.

Should you require further information, please contact this office.

Very truly yours,

R. W. McGaughy

Richard W. McGaughy
Manager, Nuclear Division

RWM/MSG/pjv*
Attachment: 1) Summary of Welds to be Examined During Cycle 8/9 Outage

cc: M. Grim
L. Liu
L. Root
B. Gilbert
A. Bert Davis (R-III)
NRC Resident Office
Commitment Control No. 850195

1987 REFUELING OUTAGE INSERVICE INSPECTION SCHEDULE
CLASS 1 WELDS

ITEM / SYSTEM NAME	SEAM OR PIPE DIAM.	CARBON STEEL			STAINLESS STEEL			DISSIMILAR METAL		
		TOTAL CS WELDS	QTY. SCHEDULED FOR EXAMINATION		TOTAL SS WELDS	QTY. SCHEDULED FOR EXAMINATION		TOTAL DS WELDS	QTY. SCHEDULED FOR EXAMINATION	
			VOL. (UT)	SURF. (MT)		VOL. (UT)	SURF. (PT)		VOL. (UT)	SURF. (PT)
REACTOR PRESSURE VESSEL										
TOP HEAD MERIDIONAL	Seam		1.7 FT							
HEAD FLANGE	Seam		17.4 FT	17.4 FT						
CIRCUMFERENTIAL	Seam		13.3 FT							
SHELL TO FLANGE WELD	Seam		17.4 FT							
REACTOR VESSEL NOZZLES										
Vessel Instrumentation	2"	6	1							
Head Vent	4"	1	1							
RHR - Headspray	6"	1	1							
Recirculation Inlet (4)		8	4							
Feedwater (1)	10"	4	1							
Recirculation Outlet	22"	2	1							
Footnote 1, 2, 3,										
MAIN STEAM "A"										
	2"	2								
	6"	4								
	20"	17	2	2						
	20"LS*	10								
	LUGS**	3		1						
MAIN STEAM "B"										
	2"	4								
	6"	4								
	20"	21	2	2						
	20"LS*	12	4	4						
	LUGS**	5		2						
FEEDWATER "A" & "B" (COMMON)										
	10"	23	2	2						
	16"	10	1	1						
CORE SPRAY "A" Footnote 4	8"	17	1	1	1	1	1	3	3	3
CORE SPRAY "B" Footnote 5	8"	19	1	1	1	1	1	3	3	3
HPCI - STEAM	10"	14	1	1						

1987 REFUELING OUTAGE INSERVICE INSPECTION SCHEDULE
CLASS 1 WELDS (CONTINUED)

ITEM / SYSTEM NAME	SEAM OR PIPE DIAM.	CARBON STEEL			STAINLESS STEEL			DISSIMILAR METAL		
		TOTAL CS WELDS	QTY. SCHEDULED FOR EXAMINATION		TOTAL SS WELDS	QTY. SCHEDULED FOR EXAMINATION		TOTAL DS WELDS	QTY. SCHEDULED FOR EXAMINATION	
			VOL. (UT)	SURF. (MT)		VOL. (UT)	SURF. (PT)		VOL. (UT)	SURF. (PT)
HPCI-WATER	12"	5	1	1						
REACTOR WATER CLEAN-UP-SUCTION										
Footnote 6	4"				18	5	5			
RHR-HEADSPRAY	4"	35	3	3						
	6"	2								
	LUGS**	1								
RHR - 18B										
Footnote 7,8	4"				1					
	18"	14	1	1	1	1		1	1	
	18"WOL				1	1	1			
	18"LS*				1					
RHR - 20A										
Footnote 9	20"	16	1	1	1	1	1	1	1	
	20"LS*				1					
RHR - 20B										
Footnote 9	20"	16	1	1	1	1		1	1	
	20"LS*				1					
RECIRCULATION PUMP "A"										
Footnote 10	1"				3					
	1-1/4"				1					
	2"				5					
	4"				2					
	22"				17	17	1	1	1	1
	22"LS*				20	1	1			
	LUGS**	1		1	4		1	2		
BYPASS (RECIRC. PUMP "A")										
Footnote 11	4"				10	3	3			

1987 REFUELING OUTAGE INSERVICE INSPECTION SCHEDULE
CLASS 1 WELDS

ITEM / SYSTEM NAME	SEAM OR PIPE DIAM.	CARBON STEEL			STAINLESS STEEL			DISSIMILAR METAL		
		TOTAL CS WELDS	QTY. SCHEDULED FOR EXAMINATION		TOTAL SS WELDS	QTY. SCHEDULED FOR EXAMINATION		TOTAL DS WELDS	QTY. SCHEDULED FOR EXAMINATION	
			VOL. (UT)	SURF. (MT)		VOL. (UT)	SURF. (PT)		VOL. (UT)	SURF. (PT)
RECIRC. MANIFOLD "A" RISERS "E" THROUGH "H"										
Footnotes 12, 13, 14	1"				4					
	10"				24	24	1	8	8	4
	10"WOL				4	4	4			
	10"LS*				4					
	16"				4	4				
	16"LS*				2					
	22"				1	1	1			
	LUGS**				2					
RECIRCULATION PUMP B										
Footnote 15	1"				1					
	2"				10					
	4"				1					
	22"				19	19	1	1	1	
	22"LS*				20	1	1			
	LUGS**	2		2	4		1	1		
BYPASS (RECIRC.PUMP "B")										
Footnote 16					10	4	4			
RECIRC. MANIFOLD "B" RISERS "A" THROUGH "D"										
Footnotes 17, 18, 19	3/4"				1					
	1"				4					
	10"				24	24	1	8	8	4
	10"WOL				4	4	4			
	10"LS*				4	1	1			
	16"				4	4				
	16"LS*				2					
	LUGS**				2					
	22"				1	1				

1987 REFUELING OUTAGE INSERVICE INSPECTION SCHEDULE
CLASS 1 WELDS

ITEM / SYSTEM NAME	SEAM OR PIPE DIAM.	CARBON STEEL			STAINLESS STEEL			DISSIMILAR METAL		
		TOTAL CS WELDS	QTY. SCHEDULED FOR EXAMINATION		TOTAL SS WELDS	QTY. SCHEDULED FOR EXAMINATION		TOTAL DS WELDS	QTY. SCHEDULED FOR EXAMINATION	
			VOL. (UT)	SURF. (MT)		VOL. (UT)	SURF. (PT)		VOL. (UT)	SURF. (PT)
HEAD VENT	4"	1	1	1						
STANDBY LIQUID CONTROL	3/4"				2					
	1"				1					
	1-1/2"				25	2	2	1		
VESSEL INSTRUMENTATION	2"							1		1
	2-1/2"				2		1			
MAIN STEAM DRAIN - COMMON	3/4"	1								
	3"	7	1	1						
FEEDWATER NOZZLE IN-VESSEL (PT) Footnote 20										
CONTROL ROD DRIVE RETURN LINE Footnote 21	2-1/2"				1	1		2	2	
JET PUMP "A" Footnote 22	4"				1	1	1	1	1	1
JET PUMP "B" Footnote 22	4"				1	1	1	1	1	1
TOTALS		288	36	30	279	128	39	36	31	18

FOOTNOTES:

1 RPV Carbon Steel Nozzles are stainless steel cladded.

2 Area of interest for ultrasonic examinations of RPV nozzles includes the nozzle to vessel weld and the nozzle inside radius sections.

3 Three 10-inch diameter Recirculation Inlet Nozzle ultrasonic examinations and one 22-inch diameter Recirculation Outlet Nozzle ultrasonic examinations are augmented.

4 Core Spray "A", one 8-inch diameter dissimilar metal weld, one 8-inch diameter stainless steel weld augmented in accordance with NUREG-0313, Rev.2 (PT also scheduled) (two remaining 8-inch diameter dissimilar metal welds are being examined in accordance with the ISI program)

5 Core Spray "B" three 8-inch diameter dissimilar metal welds and one 8-inch diameter stainless steel weld augmented in accordance with NUREG-0313, Rev. 2 (UT and PT)

6 Four 4-inch diameter stainless steel welds augumented in accordance with Generic Letter 84-11.

7 Weld Overlay repair weld (18-inch diameter line). The Weld Overlay Repair covers one weld. Augmented inspection in accordance with NUREG-0313, Rev.2.

8 One 18-inch diameter dissimilar metal weld augmented in accordance with NUREG-0313, Rev. 2 (PT also scheduled).

9 One 20-inch diameter stainless steel weld and one 20-inch diameter dissimilar metal weld augmented in accordance with NUREG-0313, Rev. 2.

10 Sixteen 22-inch diameter ultrasonic examinations augmented in accordance with NUREG-0313, Rev. 2 (dissimilar metal weld also to be PT'd)(100% of stainless and dissimilar metal welds scheduled for UT).

11 Two 4-inch diameter welds augmented in accordance with Generic Letter 84-11.

12 The weld overlay repairs cover eight welds (two welds each). Ultrasonic indications were detected in four welds only. (One under each overlay.) Augmented inspections are in accordance with NUREG-0313, Rev. 2.

13 One set of lugs is scheduled for visual examination.

14 Twenty-three 10-inch diameter stainless steel welds, four 10-inch diameter dissimilar metal welds and four 16-inch diameter stainless steel welds are augmented in accordance with NUREG-0313, Rev. 2. (100% of the 10-inch and 22-inch diameter stainless steel and dissimilar metal welds are scheduled for UT.)

15 Eighteen 22-inch diameter stainless steel welds are augmented in accordance with NUREG-0313, Rev. 2. (100% of the 22-inch diameter stainless steel welds and dissimilar metal welds are scheduled for UT)

16 Two 4-inch diameter stainless steel welds are augmented in accordance with NUREG-0313, Rev. 2.

17 Four 10-inch diameter dissimilar metal welds, twenty-three 10-inch diameter stainless steel welds, four 16-inch diameter stainless steel welds and one 22-inch diameter stainless steel weld are augmented in accordance with NUREG-0313, Rev. 2. (100% of the 10-inch, 16-inch and 22-inch diameter stainless steel and dissimilar metal welds are scheduled for UT.)

18 The weld overlay repairs cover six welds (two welds each). (See footnote 19 for single weld overlay.) Ultrasonic indications were detected in five of the six welds. Augmented inspections are in accordance with NUREG-0313, Rev. 2.

19 The weld overlay covers one weld in which ultrasonic indications were detected. Augmented inspections are in accordance with NUREG-0313, Rev. 2.

20 Change in schedule (deletion of four PT's and three UT's). Ref. NRC letter of 12/16/86 (D. Muller (NRC) to L. Liu (Iowa Electric)) "A" Loop Feedwater Nozzle Is Scheduled For Ultrasonic Examination.

21 Augmented inspection in accordance with NUREG-0619.

22 Augmented in accordance with Generic Letter 84-11.

* LS = Longitudinal seam weld
** LUGS = Shock lugs, Support lugs (welded attachment)