

Commonwealth Edison One First National Plaza, Chicago, Illinois Address Reply to: Post Office Box 767 Chicago, Illinois 60690 - 0767

July 31, 1986

Mr. Harold R. Denton U.S. Nuclear Regulatory Commission Office of Nuclear Reactor Regulation Washington, DC. 20555

Subject: Braidwood Station Unit 1 Preservice Inspection Program Notes and Relief Requests NRC Docket No. 50-456

Dear Mr. Denton:

Enclosed is a comparison of the Note and Relief Request portion of the Braidwood Unit 1 Preservice Inspection (PSI) program to the Byron Unit 1 program. Included is a cross-reference between the Braidwood and Byron Notes and Relief Requests detailing any differences between the individual items. Also included are copies of the six notes and ten completed relief requests. Four relief requests dealing with cast stainless steel will be submitted by September 1, 1986. One relief request has been deleted.

Notes were written for the purpose of clarifying how the Braidwood PSI program meets the ASME Code. Relief Requests were written whenever an ASME Code requirement was impractical and could not be met. Whenever the full examination could not be completed the percentage completed was identified.

Please address any questions that you may have concerning this matter to this office.

One signed original and fifteen copies of this letter and enclosure are provided for your review.

Very truly yours,

anthony Miosi

A. D. Miosi Nuclear Licensing Administrator

8608050184 860731 PDR ADOCK 05000454 9

/klj cc: J. Stevens 1934K

Bra	idwood	d Unit	1
	Note	No.	

Note Description

Byron Unit 1 Note No.

1

2

3

Credit was taken for construction surface examinations in lieu of performing preservice surface examinations.

An independent contractor was hired exclusively to perform the required preservice examinations for Byron Unit 1. Commonwealth Edison decided to perform the preservice examinations for Braidwood Unit 1 itself. Contractor surface examination reports were reviewed by the Braidwood ANII to determine if the requirements of Subarticle IWB/IWC-2200 of ASME Section XI were met. If so, the examinations were not redone. No generic substitution was made.

Volumetric examination of Class 1 and 2 welds was limited due to component geometry or interference.

Byron listed the welds that had limited volumetric inspection due to geometric configuration/obstructions in separate notes. Braidwood listed any limited examination in their Note 2. The welds listed differ from Byron due to field conditions.

It is important to note that the welds listed in Note 2 received a volumetric examination consisting of axial and circumferential scans; this meets the ASME Code requirements. However it was attempted to complete an axial full V path scan, and this was not always attainable due to the listed obstructions/limitations.

Credit was taken for construction field examinations in lieu of performing Section XI visual (VT-3 and VT-4) examinations. Note No.

N/A

3,6,10,12

4

Bra	idwood	1 Unit	1
_	Note	No.	

4

Note Description

Code Case N-401, allowing the use of digitally encoded eddy current data, will be utilized as previously approved by the NRC.

In June, 1984, Commonwealth Edison received approval to utilize ASME Code Case N-401. This allowed the use of the ZETEC Model MIZ-18 eddy current instrument, which records digitized data on magnetic tape, for the preservice examination of the Braidwood steam generator tubes. Appendix IV to Section XI, Article IV-5000 requires that data from steam generator tube examinations be recorded on both magnetic tape and strip chart.

5

6

Credit was taken for shop examinations in lieu of field examinations on the reactor coolant pump flywheels.

This note also applied to the Byron Unit 1 Program, but was listed as part of the Program Plan, page 98 of 98. This is solely a format difference.

System pressure tests were not executed after Section III hydrostatic tests and prior to initial plant startup.

8064b

Byron Unit 1 Note No.

N/A

N/A

7

In some cases Section III, construction surface exams are being used in lieu of on site, preservice exams. The substitution program is not a generic one. Each surface report is reviewed by the on-site ANII to determine if the requirements of IWB/IWC 2200 are met.

The surface examination procedures have been reviewed and accepted for Section XI acceptability by Hartford Steam Boiler and the Commonwealth Edison Level III.

Volumetric	examination	coverage	of	the	below	listed	welds	were	limited
because of	component ge	eometry o	r i	nter	ference	ð.			

Weld #	Line #	Class	Reason for Limited Exam
1RC-16-2	1RY01C-4"	1	Elbow inner radius, reducer geometry
1RC-16-5	1RY01B-6"	1	Elbow inner radii
1RC-17-22	1RY01AA-4"	1	Elbow inner radius, reducer geometry
1RC-32-1	1RY03AA-6"	1	Elbow inner radius, nozzle geometry
1RC-32-6	1RY03BA-6"	1	Elbow inner radius, flange geometry
1RC-32-7	1RY03AB-6"	1	Elbow inner radius, nozzle geometry
1RC-32-12	1RY03BB-6"	1	Elbow inner radius, flange geometry
1RC-32-13	1RY03AC-6"	1	Elbow inner radius, nozzle geometry
1RC-35-1	1RY02A-6"	1	Elbow inner radius, nozzle geometry
1RC-35-3	1RY02A-6"	1	Sockolet, both sides of weld
1RH-01-20	1RY01AB-12"	1	Weldolets and valve geometry
1SI-02-37	1RC35AA-6"	1	Elbow inner radius, restraint
1SI-02-42	1RC04AA-12"	1	Tee geometry, gamma plug
1SI-06-10	1SI05DB-6"	1	Cable tray
1SI-09-4	1SI09BC-10"	1	Elbow inner radius, interfering pipe
1SI-10-11	1SI05DC-6"	1	Electrical panel
1SI-10-18A	1SI05DC-6"	1	Restraint
1SI-10-22	1SI05DC-6"	1	Elbow inner radius, tee geometry
1SI-13-1	1SI09BD-10"	1	Sockolet, valve geometry
1MS-01-1	1MS01AD-32"	2	Nozzle, gamma plug
1MS-02-7	1MS01BD-30.25"	2	Tee, weldolets
1MS-04-7	1MS01BA-30.25"	2	Weldolets, tee geometry
1FW-01-1	1FW86AD-16"	2	Branch connection, valve geometry
1FW-02-1	1FW86AA-16"	2	Branch connection, valve geometry
1FW-04-29	1FW03DC-16"	2	Elbow inner radius, nozzle geometry
1SI-04-28	1SI05CA-8"	2	Elbow inner radius, cable tray
1SI-04-29	1SI05CA-8"	2	Elbow inner radius, adjacent pipe
1SI-04-45	1SI05CA-8"	2	Obstructed by restraint
1SI-12-22	1SI04B-12"	2	Gamma plug, valve geometry
1SI-24BB-30	1SI06BB-24"	2	Obstructed by floor and wall
1SI-26-52	1SI05CB-8"	2	E'bow inner radii

These welds received an ultrasonic examination consisting of axial and circumferential scans; however, because of the listed limitations, the axial scan from one side could not guarantee complete coverage of the required volume.

Braidwood Station intends to use field installation data in lieu of on-site preservice exams for Class 1, 2, and 3 component supports.

4

Braidwood has requested and received NRC approval to use code case N-401.

The code case allows for digitally encoded eddy current data as an alternative to magnetic tape and strip chart recordings.

Braidwood intends to use shop examination reports in lieu of in field examinations on the reactor coolant pump fly wheels.

NOTE 6

All Class 1, 2 and 3 components have received acceptable Section III hydrostatic leak tests and since later, approved editions of Section XI (e.g. 1983) do not require a preservice leakage test, Braidwood does not intend to perform a preservice VT-2. VT-2 maminations will be performed, however, in those cases where a leak test is being substituted for a surface and/or volumetric examination.

Braidwood Unit 1 Relief Request No.

Relief Request Description

Byron Unit 1 Relief Request No.

1NR-1

Surface examinations on Class 2 welds were not performed due to locations under saddle plates.

The welds listed for Byron and Braidwood are the same. However, the Architect/Engineer renumbered some of the lines on the Braidwood drawings. Thus the lines listed in the Braidwood and Byron Relief Requests are in fact the same line though they are numbered differently. These Braidwood lines (with corresponding Byron lines in parentheses) are IMS07AA-28" (IMS07BA-28"), IMS07AB-28" (IMS07BB-28"), IMS07AC-28" (IMS07BC-28"), and IMS07AD-28" (IMS07BD-28"). The welds listed for each line number correspond in a one-to-one manner for each of the above lines.

Also, Byron has listed one weld for each of two SI lines and two RH lines, while Braidwood has two welds listed for each of two SI lines. They are the same welds, but occur at the intersection of the RH and SI lines, and the two stations elected to place them on different drawings. These Braidwood welds (with corresponding Byron welds in parentheses) are ISI-24-23BA(C-18), ISI-24-23ABA(C-1L on line 1RH01CA-16"), ISI-24-23BB(C-24), and ISI-24-23ABB(C-1L on line 1RH01CB-16").

1NR-2

Limited ultrasonic examinations were performed on cast stainless steel elbow-to-cast pump or valve welds.

NR-3

(To be provided at a later time.)

NR-2

Braidwood Unit Relief Request	1 No. Relief Request Description	Byron Unit 1 Relief Request No
1NR-3	Credit was taken for manufacturer's test data in lieu of performing visual (VT-1) examinations on Class 1 valve internals.	NR-7
INR-4	Ultrasonic examinations were not performed on pressurizer and steam generator primary nozzle inner radii due to geometric constraints.	NR-13
	The welds listed for 1RYO1S for Byron and Braidwood are the same welds, but only numbered differently. The welds correspond in an one-to-one fashion.	
1NR-5	Limited ultrasonic examinations were performed on cast stainless steel elbow- to-steam generator nozzle welds.	NR-4
	(To be provided at a later time.)	
1NR-6	Limited ultrasonic examinations were performed on cast stainless steel elbow, pump or valve-to-pipe welds.	NR-6
	(To be provided at a later time.)	
INR-7	Limited ultrasonic examinations were performed on cast stainless steel elbow- to-reactor vessel nozzle safe-end welds.	NR-8
	(To be provided at a later time.)	
1NR-8	Deleted	N/A

Braidwood Unit Relief Request	1 No. Relief Request Description	Byron Unit 1 Relief Request No
1NR-9	Limited ultrasonic examinations were performed on reactor pressure vessel circumferential welds due to inaccessibility.	NR-9
	Again a difference exists in the numbering of welds. The Braidwood welds, with the corresponding Byron welds in parentheses are RV-001 (RPVC-WR16) and RV-002 (RPVC-WR29).	I
	Byron was granted relief for their weld RPVC-WR7, but this weld was able to be examined at Braidwood. However, Braidwood could not complete the volumetric examination of two closure head welds, RVCH-001 and RVCH-002, because of the flange configuration.	
1NR-10	Limited ultrasonic examinations were performed on horizontal letdown heat exchanger shell circumferential weld due to inaccessibility.	NR-11
1NR-11	Limited ultrasonic examinations were performed on excess letdown heat exchanger shell weld due to inaccessibility.	NR-12
1NR-12	Limited ultrasonic and/or surface examinations were performed on steam generator and residual heat exchanger secondary nozzles due to geometric constraints.	NR-14

1NR-13 Surface and/or volumetric examinations on N/A Class 1 Reactor Coolant weld were not performed due to location under a permanent restraint.

> This is a site specific relief request that is required due to field conditions encountered at Braidwood.

Braidwood Unit 1 Relief Request No.

Relief Request Description

Pyron Unit 1 Relief Request No.

1NR-14

Surface and/or volumetric examinations were not performed on Class 2 welds due to inaccessibility or component-to-component orientation.

> This is a site specific relief request that is required due to field conditions encountered at Braidwood. Note that this list is comprised of Class 2 welds. To meet the Table IWC-2500-1 requirements of surface and/or volumetric inspection for 25% of the welds in all other systems not specifically listed in the Table, other welds may be substituted for those listed in this relief request.

1NR-15 Surface examination were not performed on Class 2 residual heat removal welds due to inaccessibility.

> This is a site specific relief request that is required due to field conditions encountered at Braidwood. Note that this list is comprised of Class 2 welds. The same reasoning presented for Relief Request 1NR-14 applies to this case also.

8064b

N/A

N/A

1. SYSTEM: Main Steam, Safety Injection, and Residual Heat Removal

2.	NUMBER OF ITEMS:	24
	Line Number	Weld Number
	1MS07AA-28"	MS-04-25, 1MS-04-26, 1MS-04-27, 1MS-04-28, 1MS-04-29
	1MS07AB-28"	1MS-06-43, 1MS-06-44, 1MS-06-45, 1MS-06-46, 1MS-06-47
	1MS07AC-28"	1MS-08-25, 1MS-08-26, 1MS-08-27, 1MS-08-28, 1MS-08-29
	1MS07AD-28"	1MS-02-37, 1MS-02-38, 1MS-02-39, 1MS-02-40, 1MS-02-41
	1SI06BA-24"	1SI-24-23BA, 1SI-24-23ABA
	1SI06BB-24"	1SI-24-23BB, 1SI-24-23ABB

- 3. A.S.M.E. CODE CLASS: 2
- 4. A.S.M.E. CODE SECTION XI REQUIREMENTS: Examination Category C-F, Items C5.31 and C5.32, require a surface examination of the volume described in Figure IWC-2500-9. The required volume is 100% of each circumferential weld requiring examination and 2.5t of the longitudinal weld at the intersecting circumferential weld. IWC-2200 states:
 - a. All examinations required by this article for those components initially selected for examination in accordance with Inspection Program A or Inspection Program B and not exempt from inservice examinations by IWC-1220 shall be completed prior to initial plant startup.
- <u>BASIS FOR RELIEF</u>: The above listed welds are inaccessible to surface examinations, due to the location of saddle plates over the pressure retaining welds.
- 6. <u>ALTERNATE TEST METHOD</u>: A surface examination, (liquid penetrant) and visual examination (leak test) will be performed on the saddle plate fillet welds in lieu of the required volumetric examinations for the pressure retaining welds listed above.
- 7. JUSTIFICATION: Performing a surface and visual examination of the saddle plate fillet welds provides an acceptable level of structural integrity for system operation. Radiographs performed on the branch pipe circumferential welds verify its structural integrity at the time of construction. Therefore, and adequate level of plant operational safety can be assured on these welds.

LIMITED ULTRASONIC EXAMINATIONS OF CAST STAINLESS STEEL ELBOW-TO-CAST PUMP OR VALVE WELDS

- SYSTEM: Reactor Coolant, Reactor Coolant Pressurizer, Safety Injection, and Residual Heat Removal.
- 2. NUMBER OF ITEMS: 41
- 3. A.S.M.E. CODE CLASS: 1
- 4. A.S.M.E. CODE SECTION XI REQUIREMENTS: Examination Category B-L-2, B-M-2, Item Bl2.40 requires a visual, (VT-1) examination of the valve body internal surfaces on valves exceeding 4 inches nominal pipe size. Examinations are limited to one valve within each group of valves that are of the same constructional design, e.g. globe, gate or check valve, manufacturing method and that are performing similar functions in the system e.g. containment isolation, system overpressure protection.
- 5. <u>BASIS FOR RELIEF</u>: The requirement to disassemble an operable valve for the sole purpose of performing a visual, (VT-1) of the internal pressure retaining boundary is impractical and not commensurate to the increased safety achieved by this inspection. Class 1 valves are installed in their respective systems and many have completed functional testing. To disassemble these valves would provide a very small potential for increasing plant safety margins with a very disproportionate impact on expenditures of plant manpower and resources.
- 6. <u>ALTERNATE TEST METHOD</u>: The manufacturers test data will be used in lieu of a preservice visual examination (VT-1). This includes documentation of examinations performed during fabrication and installation of the subject valves. The examinations performed may include volumetric, surface, and visual exams, as required by A.S.M.E. Section II, Material Specifications for Ferrous and Nonferrous materials.
- 7. JUSTIFICATION: The integrity of the pressure retaining boundary of both carbon steel and stainless steel valve bodies has been excellent. Class 1 valve bodies can not historically be linked to breaching of the pressure retaining boundary in plant systems. Class 1 valves are subjected to numerous types of nondestructive testing and a rigorous quality assurance program during all stages of fabrication, storage, and installation. These valves have been found acceptable by the Manufacturer, the A.S.M.E. Authorized Nuclear Inspector and Commonwealth Edison's Quality Assurance.

1. SYSTEM: Pressurizer Vessel and Steam Generator Vessel (Primary Side)

2. NUMBER OF ITEMS: 14

Line Number Weld Number

IRC01BA	Primary Nozzles (2)
IRC01BB	Primary Nozzles (2)
RC01BC	Primary Nozzles (2)
RCOIBD	Primary Nozzles (2)
RY01S	RY 1, 2, 3, 4A, 4B, 4C

- 3. A.S.M.E. CODE CLASS: 1
- 4. A.S.M.E. CODE SECTION XI REQUIREMENTS: Table IWB-2500-1, Examination Category B-D, Items B3.120 and B3.140 require volumetric examination of the regions described in Figure IWB-2500-7 for the inner radius of nozzles in the pressurizer and steam generators (primary side).

Subarticle IWB-2200, "Preservice Examination" states that:

- a. Examinations required by this article shall be completed prior to initial plant startup. In addition, the preservice examinations shall be extended to include essentially 100% of the pressure retaining welds in all Class 1 components except in those components exempted from examination by IWE-1220 (a), (b), or (c).
- 5. <u>BASIS FOR RELIEF</u>: The nozzles listed above all contain inherent geometric constraints and clad inner surfaces which limit the ability to perform meaningful volumetric examinations. In an attempt to develop a technique to locate flaws in the nozzle inner radii area, a mock-up was used with little success.
- ALTERNATE TEST METHOD: All pressure retaining components were hydrostatically tested to the requirements of A.S.M.E. Section III.
- JUSTIFICATION: In performing the hydrostatic test on all pressure retaining components, an adequate level of structural integrity is assured for plant operation.

LIMITED ULTRASONIC EXAMINATIONS OF CAST STAINLESS STEEL ELBOW-TO-STEAM GENERATOR NOZZLE WELDS

LIMITED ULTRASONIC EXAMINATIONS OF CAST STAINLESS STEEL ELBOW, PUMP OR VALVE-TO-PIPE WELDS

LIMITED ULTRASONIC EXAMINATIONS OF CAST STAINLESS STEEL ELBOW-TO-REACTOR VESSEL NOZZLE SAFE-END WELDS

.

DELETED

.

Rev. 2

- 1. SYSTEM: Reactor Pressure Vessel
- 2. NUMBER OF ITEMS: 4

Weld Number

Figu e Numbers

RV-001	4, 5,	6	
RV-002	1, 2,	3	
RVCH-001	8, 9,	11	
RVCH-002	7, 8,	10	

- 3. ASME CODE CLASS: 1
- 4. ASME CODE SECTION XI REQUIREMENTS:

Table IWB-2500-1, Examination Category B-A, Pressure Retaining Welds in Reactor Vessel, Item Numbers Bl.11, Bl.21, Bl.30, and Bl.40 require volumetric examination of the regions described in Figures IWB-2500-1, 3, 4, and 5 respectfully for welds in the reactor pressure vessel. In addition, examination Category B-P (All pressure retaining components), Item Bl5.10 requires a leakage test in accordance with IWB-5221 each refueling outage and Item 15.11 requires a hydrotest in accordance with IWB-5222 each interval for the reactor pressure vessel.

Article IWB-2200 "Preservice Examination" states that:

- a. Examinations required by this Article shall be completed prior to initial plant startup. In addition, the preservice examinations shall be extended to include essentially 100T of the pressure retaining welds in all Class 1 components except those components exempted from examination by IWB-1220 (a), (b), and (c).
- b. Shop and field examinations may serve in lieu of on-site preservice examination provided:
 - In the case of vessels only, the examination is performed after the hydrostatic test required by Section III has been completed;
 - 2) Such examinations are conducted under conditions and with equipment and techniques equivalent to those that are expected to be employed for subsequent inservice inspections; and
 - 3) The shop and field examination records are, or can be documented and identified in a form consistent with those required in IWA-6000.

5. BASIS FOR RELIEP

- a. Lower Shell Course-to-Dutchman weld RV-002 has six core support guide lugs welded to the interior surface of the reactor vessel approximately 3.50" above the weld. These lugs restricted the automated inspection tool from inspecting the required volume in the areas of the lugs, shown in Figure 1. All of the weld and heat affected zone received 100% coverage from at least one direction, however the required base metal was not fully inspected in the area of the core support guide lugs. Figures 2 and 3 show exactly what was inspected. Note that the dimensions used for actual coverage are for transducer position, not volume inspected.
- b. Lower Disk-to-Dutchman weld RV-001 has 58 instrument tubes which physically obstruct the search unit and/or search unit positioning device. Figures 5 and 6 give a detailed diagram of the areas inspected and those which were obstructed by the tubes. Note the dimensions used for the actual coverage are for transducer position.
- c. Dutchman Forging-to-Closure Head Dome Weld RVCH-002 has 6 lift lugs which physically obstruct the ultrasonic transducer from performing the required scan. Figures 7 and 8 show the position of the weld and lifting lugs. A detailed diagram of the transducer position for actual and required coverage is shown in Figure 10.
- d. Closure Head Flange-to-Dutchman Forging Weld RVCH-001 has the flange which physically obstructs the ultrasonic transducer from performing the required scan area. Part of the three larger lifting lugs also fall in the required scan area. Figures 8 and 9 show the position of the weld and flange. A detailed diagram of the transducer position for actual and required coverage is shown in Figure 11.
- 6. ALTERNATE TEST METHOD: None.
- 7. JUSTIFICATION: Completion of the remaining portions of the required examination is impractical and would result in undue hardship without a compensating increase in safety. The limited Section XI examination, the volumetric examination performed during fabrication, and the hydrostatic test demonstrate an acceptable level of preservice structural integrity.



DIMENSIONS FOR INFORMATION ONLY

C

FIGURE I





0

AREA SCANNED





AREA SCANNED

TRANSDUCERS SHOULING

1



ORST	RII	CT	in	NIC
0001		CI	i U	142

NQ	PIVOL	ROTATION	NO	PIVOT	ROTATION
1_	5.75	10	9	575	10*
2	1056	10*	10	7.00	9°
3	1200	15°	11	11.05	9°
4_	10.56	15*	12	5.75	9.
5	529	17.	13	1007	10°
6	7.00	10.	14	11.52	10*
7	6.24	10	15	7.00	10
8	LL1.52°	10*	16	95	9.

FIGURE 5

CONVERSION FACTORS HORZ 100-150" VERT 100-154"

NOT TO SCALE DIMENSIONS FOR INFORMATION ONLY







NOT TO SCALE DIMENSIONS FOR INFORMATION UNLY



INFORMATION CALLY

AT OBSTRUCTION



 \bigcirc

.

NOT TO SCALE DIMENSIONS FOR INFORMATION UNLY

FIGURE IO

с ж.

O

[]OBSTRUCTION

0



.

0

NOT TO SCALE DIMENSIONS FOR INFORMATION UNLY

FIGUREII

Rev. 0

RELIEF REQUEST 1NR-10

1. SYSTEM: Chemical and Volume Control, Horizontal Letdown Heat Exchanger

2. NUMBER OF ITEMS: 1

Component	Number	Weld	Number
1004	A	HLHD	C-01

- 3. ASME CODE CLASS: 2
- ASME CODE SECTION XI REQUIREMENTS: Table IWC-2500-1, Examination Category C-A, Item Cl.10 requires a volumetric examinantion of the regions described in Figure IWC-2520-1 for shell circumferential welds.

Mandatory Appendix III, Article III - 4000 requires examination for:

a. Reflectors parallel to the weld seam.

The angle beam examination for reflectors parallel to weld seam shall be performed by a full V path from one side or a one-half V path from two sides of the weld, where practicable.

- b. Reflectors transverse to the weld seam.
 - The angle beam examination for reflectors transverse to the weld seam shall be performed on the weld crown on a single scan path to examine the weld root by one-half V path in two directions along the weld.
 - For inservice examination, only those welds showing reportable preservice indications need be examined for transverse reflectors.

- 5. <u>BASIS FOR RELIEF</u>: The above listed weld was inspected volumetrically by the radiographic method to meet the ASME Section III requirements. In addition, an ASME Section XI volumetric inspection was performed in the axial direction for reflectors parallel to the weld seam. The circumferential scan for reflectors transverse to the weld seam could not be performed due to the flange bolting extending over the weld crown. The ASME Section III radiographs could be used to meet the preservice examination requirements except it is not our intent to use radiography inservice.
- ALTERNATE TEST METHODS: In lieu of the required ultrasonic examination for reflectors transverse to the weld seam, a surface examination by the liquid penetrant method will be performed.
- 7. <u>JUSTIFICATION</u>: Per ASME Section III, radiography and hydrostatic tests have been completed on this weld. Per ASME Section XI, an ultrasonic inspection for reflectors parallel to the weld seam and an alternate surface examination have been completed. Based upon the results of the above examinations, an adequate level of structural integrity exists for plant operations.

1. <u>SYSTEM</u>: Chemical and Volume Control, Excess Letdown Heat Exchanger

2. NUMBER OF ITEMS: 1

Component Number Weld Number

1CV01AA ELHXC-03

 ASME CODE SECTION XI REQUIREMENTS: Table IWC-2500-1, Examination Category C-A, Items Cl.10 and Cl.20 require volumetric examination of the regions described in Figure IWC-2520-1 for shell and head circumferential welds.

Mandatory Appendix III, Article III - 4000 requires examination for:

a. Reflectors parallel to the weld seam.

The angle beam examination for reflectors parallel to the weld seam shall be performed by a full V path from one side or a one-half V path from two sides of the weld, where practicable.

- b. Reflectors transverse to the weld seam.
 - The angle beam examination for reflectors transverse to the weld seam shall be performed on the weld crown on a single seam path to examine the weld root by one-half V path in two directions along the weld.
 - For inservice examination, only those welds showing reportable preservice indications need be examined for transverse refractors.
- 5. <u>BASIS FOR RELIEF</u>: Wei <u>AC-03</u> received radiographic examination to meet the requirements of ASME Section III. These examinations could be used to meet the requirements of ASME Section XI. However, we do not intend to use radiography as our inservice test method.

Ultrasonic examination of weld ELHXC-03 was limited for approximately 70% of the weld length due to four branch connections welded to the vessel.

- ALTERNATE TEST METHOD: In lieu of the required ultrasonic inspection a surface examination utilizing the liquid penetrant test will be performed on the above welds.
- 7. JUSTIFICATION: The ASME Section III radiograph and hydrostatic test along with the limited ultrasonic examination and alternate surface examination will provide an adequate level of structural integrity for plant operation.

- 1. <u>SYSTEM</u>: Steam Generator Vessel (Secondary Side) Nozzles, Residual Heat Exchanger Nozzles
- 2. NUMBER OF ITEMS: 10

Component Number	Nozzle Number	Restricted Exam
IRCOIBA	SGN-02,03	Inner radii
IRCOIBC	SGN-02,03	Inner radii
IRCOIBC	SGN-02.03	Inner radii
IRCOIBD	SGN-02.03	Inner radii
IRHO2AB	RHXN-01,02	Inner radii and nozzle to

- 3. ASME CODE CLASS: 2
- 4. ASME CODE SECTION XI REQUIREMENTS: Table IWC-2500-1, Examination Category, C-B. Item C2.20 requires surface and volumetric examination of the areas described in figure IWC-2500-4 for nozzles in vessels over 1/2 inch in nominal thickness. This figure requires volumetric examination of the nozzle to vessel weld and, for pipe sizes over 12 inches, an examination of the nozzle inner radii.
- 5. <u>BASIS FOR RELIEF</u>: The nozzles listed above contain inherent geometric constraints which limit the ability to perform meaningful ultrasonic examinations. The main steam nozzles (SGN-03's) have an internal multiple venturi type flow restrictor. This design does not have a nozzle inner radii as described in Figure IWC-2500-4. This nozzle has seven individual inner radii, corresponding to each venturi, none of which could be examined by ultrasonic examination. The main feedwater nozzles (SGN-02's) also have an internal multiple venturi type flow restrictor but have a thermal sleeve in addition. This design could not be examined due to the geometry of the nozzles internal design.

The Residual Heat Removal Heat Exchanger is approximately 7/8 in. nominal wall thickness with nozzles of 14 inch diameter and approximately 3/8 in. in nominal wall thickness. The configuration is best characterized as a fillet welded nozzle using an internal reinforcement pad and, thereby, is not analogous to a full penetration butt welded nozzle as shown in Figure 1WC-2520-4. In addition, the inner radius of the reinforcement pad would be representative of the nozzle inner radius required for inspection. The inherent geometric constraints of the nozzle design prevent the performance of the required ultrasonic examinations of the nozzle the nozzle inner radius.

6. <u>ALTERNATE TEST METHOD</u>: Ultrasonic examination of the above listed nozzle inner radii is not practicable and the inner radii is not accessable to direct contact for surface examination or even remote visual examination. However, the Steam Generator (Secondary Side) Nozzles have been examined at the point of attachment to the vessel by radiography per ASME Section III, and by surface examination per ASME Section XI. In addition, a system hydrostatic test, at 125% of the design pressure, has been performed in accordance with ASME Section III and a system leakage test, at 100% of the system nominal operating pressure, will be performed each inspection period in accordance with ASME Section XI.

7. JUSTIFICATION: The above listed main steam and main feedwater nozzles are designed with multiple venturi type flow restrictors to limit flow during a Main Steam line or Main Feedwater line break. This design thus enhances the plant's inherent level of safety but does not allow meaningful ultrasonic examination of the nozzles inner radii. However, the increased safety margin afforded by these nozzles makes them a desireable part of plant design. In performing the ASME Section III inspections and the ASME Section XI ultrasonic and/or surface examinations of the point of attachment to the vessel, along with the inservice leakage test, an adequate level of structural integrity for these nozzles is assured for plant operation.

- 1. SYSTEM: Reactor Coolant
- 2. NUMBER OF ITEMS: 4

Line Number	Weld Number	Interfering Condition
IRC21AD-8"	1RC-15-13	Permanent Restraint
1RY018-6"	1RC-16-1	Nozzle - Reducer
ISIA4B-8"	1SI-02-35	Reducer - Valve
15104D-8"	1SI-11-22	Reducer - Valve

- 3. A.S.M.E. CODE CLASS: 1
- A.S.M.E. SECTION XI REQUIREMENTS: Table IWB-2500-1, Examination Category B-J. Item B9.11 requires volumetric and surface examination of the areas described in Figure IWB-2500-8.
- <u>BASIS FOR RELIEF</u>: 1RC-15-13 is encased in a permanent whip restraint making a preservice ultrasonic examination impractical. The geometry of 1RC-16-1, 1SI-02-35 and 1SI-11-22 prohibit meaningful ultrasonic examination.
- ALTERNATE TEST METHOD: A visual examination (VT-2, leak test) is proposed in lieu of the volumetric and surface examination requirements for IRC-15-13. A surface examination is proposed for IRC-16-1, 1SI-02-35 and ISI-11-22.
- 7. JUSTIFICATION: In performing a visual examination (leak test) on IRC-15-13 and surface examination on IRC-16-1, ISI-02-35 and ISI-11-22, an acceptable level of structural integrity for system operation is provided. Austenitic stainless steel type 304 possesses a high degree of toughnass. Crack propagation through this material is slow and leak testing is a viable method of identifying flaws prior to weld failure in this type of material. In addition, acceptable surface and volumetric (radiography) examinations were performed on these welds during construction. Therefore, an adequate level of safety can be assured on this weld both now and during unit life.

RELITS REQUEST INR 14

1. SYSTEM: Main Steam, Feedwater, Safety Injection

2. MINGER OF ITTHE: 18

.....

LINS NUMDER	Weld Mumber	Reason for Limited Exam
116313AD-6" 116313AA-8" 116313AA-8" 116313AB-8" 116313AB-8" 116313AC-8" 116313AC-8" 116303DB-16" 117003DB-16" 117003DB-16" 115105CA-8" 115106BA-24" 115106BB-24" 115105CB-8"	1ME-02-34 1ME-04-43 1ME-05-7 1ME-06-40 1ME-06-40 1ME-08-43 1FW-03-11 1SI-04-12 1SI-04-12 1SI-24EA-33E 1SI-24EA-34 1SI-24EB-30E 1SI-24EE-30E 1SI-24EE-30A 1SI-24EE-30A 1SI-26-1 1SI-26-1	Reducer-Valve Reducer-Valve Permanent Restraint Reducer-Valve Reducer-Valve Inaccessible Permament Restraint Reducer-Valve Reducer-Valve Inaccessible Reducer-Valve Inaccessible Reducer-Valve Reducer-Valve Reducer-Valve
		KEONGEL-AFTAC

- 3. A.S.H. H. CODE CLASS : 2
- A.S.N.E. SECTION XI REQUIREMENTS: Table INC-2500-1 Examination Category C-F. Items C5.21 and C5.22 require surface and volumetric examinations of the areas described in Figure INC-2520-7.
- BASIS FOR RELIEF: The above listed welds cannot be examined by the ultrasonic method: in addition, welds 1ME-05-7, 1FW-03-11, 1FW-02-8 and 181-24EE-28 cannot be examined by the surface or ultrasonic method.
- ALTERNATE TEST METHOD: The structural integrity of these welds will be verified by periodic VT-2 (leakage) tests performed inservice.
- 7. JUSTIFICATION: The requirements for Class 2 selection of welds for examination are based on a sample size of approximately 25% of the non high stress welds; therefore, other welds can be substituted for the inaccessible welds without comprising plant safety. All welds have received acceptable Section III examinations.

۰.

RELIEF REGIST 1ME-15

- 1. SYSTEM: Residual Heat Removal and Faedwater
- 2. MUNDER OF ITEM: 4

Line Mumber	Held Mumber	Interfering Condition
18H02AA-\$" 18H02AA-\$" 18H02AA-\$" 18H02AA-\$" 19H087CB-6"	1204-05-123 1204-05-13 1204-05-13A 1204-05-13A	Inaccessible Inaccessible Inaccessible Inaccessible

- 3. A.S.H.E. CODE CLASS: 2
- A.S.H.E. SECTION XI REQUIREDCENTS: Table INC-2500-1 Examination Category C-F. Items C5.11 and C5.12 require surface examination of the areas described in Figure INC-2520-7.
- 5. BASIS FOR RELIEF: The above listed welds cannot be examined by the surface method.
- ALTERNATE THAT METHOD: The structural integrity of these welds will be verified by periodic VT-2 (leakage) tests performed inservice.
- 7. JUSTIFICATION: The requirements for Glass 2 selection of welds for examination are base on a sample size of approximately 25% of the non high stress welds; therefore, other welds can be substituted for the 3 inaccessible welds without compromising plant safety. All welds have received acceptable Section III examinations.