Commonwealth Edison Company
1400 Opus Place
Downers Grove, IL 60515-5701

ComEd

March 28, 1995

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Subject: Relief from Inservice Inspection Program Requirements for Pressurizer Surge Nozzle-to-Vessel Weld and Pressurizer Surge Nozzle Inner Radius Section

Byron Nuclear Power Station, Units 1 and 2
Facility Operating Licenses NPF-37 and NPF-66
NRC Docket Nos. 50-454 and 455

Braidwood Nuclear Power Station, Units 1 and 2
Facility Operating Licenses NPF-72 and NPF-77
NRC Docket Nos. 50-456 and 457

Commonwealth Edison Company (ComEd) proposes to revise Byron Nuclear Power Stations, Units 1 and 2 (Byron) and Braidwood Nuclear Power Station, Units 1 and 2 (Braidwood), Inservice Inspection (ISI) requirements by requesting exemption from the inservice Ultrasonic (UT) testing requirements specified in ASME Section XI, IWB-2500, in accordance with 10 CFR 50.55a(g)(iv). The First Ten Year Inspection (ISI) Interval for both Byron and Braidwood comply with the requirements of Section XI of the 1983 Edition, Summer 1983 Addenda, of the American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code (Code), as modified by United States Nuclear Regulatory Commission (USNRC) Staff approved relief.

Examination of the nozzle to vessel weld and the nozzle inner radius would result in limited examination coverage. Even if the insulation were removed, full ultrasonic examination coverage of the surge nozzle-to-vessel weld can not be achieved. Regarding the nozzle inner radius, only limited ultrasonic examination of nozzle inside radius section would be achievable from the outside surface with the insulation removed. The limited data obtained from these examinations does not provide a compensatory increase in quality and safety to justify the hazards of personnel radiation exposure incurred to obtain the data.

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* Labor estimates were obtained to estimate radiation exposure for the person-hours required to remove/install the insulation, disconnect/replace the pressurizer heater cables, erect/remove required scaffoldings, and to perform the examinations. These estimates indicate the dose exposure will be at least 154 person-rem to conduct the examination. These radiological conditions for the required nozzle to vessel and nozzle inner radius examinations would result in significant individual and cumulative radiation exposure and conflicts with Byron and Braidwood Stations' ALARA objectives.

ComEd respectfully requests that the USNRC Staff Review and approve the attached relief request no later than April 19, 1996, so that ComEd may take advantage of the requested relief during the Byron, Unit 1 Cycle 7, Refuel Outage currently scheduled to begin April 6, 1996. ComEd apologizes for the expedited nature of this request.

To the best of my knowledge and belief, the statements contained in this document are true and correct. In some respects these statements are not based on my personal knowledge, but on information furnished by other ComEd employees, contractor employees, and/or consultants. Such information has been reviewed in accordance with company practice, and I believe it to be reliable.

Please address any comments or questions regarding this matter to this office.

Very truly yours,

Marcia Lesniak

Marcia Lesniak
Nuclear Licensing Administrator

Signed before me
on this 25th day of March, 1996

by Mary Jo Yack.
Notary Public

OFFICIAL SEAL
MARY JO YACK
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 11/29/97

Attachment A: Byron Station Relief Request NR-19
Attachment B: Braidwood Station Relief Request NR-24

cc: H. J. Miller, Regional Administrator-RIII
G.F. Dick, Jr., Byron Project Manager-NRR
R. R. Assa, Braidwood Project Manger-NRR
H. Peterson, Senior Resident Inspector-Byron
C. J. Phillips, Senior Resident Inspector-Braidwood
Office of Nuclear Facility Safety-IDNS

ATTACHMENT A

BYRON UNITS 1 & 2

INSERVICE INSPECTION

RELIEF REQUEST NR-19

COMPONENT IDENTIFICATION

CODE CLASS(ES):	(1) One
REFERENCE(S):	Subsection IWB, Table IWB-2500-1
EXAMINATION CATEGORY(IES):	B-D
ITEM NUMBER(S):	B3.110 & B3.120
DESCRIPTION:	Pressurizer Surge Nozzle-to-Vessel Weld and Pressurizer Surge Nozzle Inner Radius Section
COMPONENT NUMBER(S):	1/2RY-01-S, PN-01

ASME CODE SECTION XI REQUIREMENT

Perform volumetric (UT) examination of the nozzle-to-vessel weld and the nozzle inner radius section.

BASIS FOR RELIEF

In accordance with 10CFR50.55 a (g)(5)(iv), relief is requested on the basis that compliance with the Code requirement would result in hardship or unusual difficulty without compensating increase in the level of quality and safety.

Byron Units 1 and 2 pressurizer nozzles are welded to the vessel heads (Attachment 1). Each pressurizer has a single surge nozzle in the lower head. To perform UT examinations on these areas, the outside surface of the lower vessel head, which is the optimal scanning surface, must be accessible. This optimal scanning surface is made accessible by removing the lower pressurizer head insulation. The impact of removing the lower head insulation is discussed below.

The lower head of the pressurizer is covered by 4 inches of multi-layered stainless steel mirror insulation. To remove the insulation, the 78 pressurizer heater cables would have to be disconnected (Attachment 2). In addition, each of the 78 convection stops, which are riveted to the insulation, would have to be cut so that the insulation could be removed (Attachment 3).

Previous attempts to acquire this data have proven unsuccessful. During previous outages, attempts were made to modify the insulation on the lower head of the Byron Unit 2 pressurizer to allow inspection access without full insulation and heater cable removal. The insulation group worked three shifts per day for five days to remove this insulation. The groups used small grinders to cut the insulation from the nozzle to the first ring of the immersion heaters. After this work was completed, the bottom head insulation was lowered until stopped by the heater connections. These actions did not result in sufficient access to conduct the examinations. Further actions to provide access were determined to be impractical. The insulation was replaced and the cut areas were covered.

Examination of the nozzle to vessel weld and the nozzle inner radius would result in limited examination coverage. Even if the insulation were removed, full ultrasonic examination coverage of the surge nozzle-to-vessel weld can not be achieved. The pressurizer surge nozzle geometry limits transducer contact.

BYRON UNITS 1 & 2
INSERVICE INSPECTION

RELIEF REQUEST NR-19

BASIS FOR RELIEF (cont)

Consequently, scanning on the nozzle side of the weld is impracticable. The heater penetrations obstruct scanning from the shell side of the weld. The estimated coverage would only be approximately 60% of the weld volume. Regarding the nozzle inner radius, only limited ultrasonic examination of the nozzle inside radius section would be achievable from the outside surface with the insulation removed. The complex geometry of the"blend region" is not conducive to typical UT examination techniques. A limited examination would be possible if ultrasonic scanning were conducted from the nozzle. However, due to the complex geometry of the nozzle, the resulting coverage would provide very limited data from which to assess the condition of the surge nozzle inside radius section. The limited data obtained from these examinations does not provide a compensatory increase in quality and safety to justify the hazards of personnel radiation exposure incurred to obtain the data.

The radiation exposure to plant personnel for insulation removal, surface preparation, and inspection is estimated to be 154 person-rem. To provide a basis for the dose estimates, a survey was conducted during the Braidwood A2R05 outage on March 16, 1996. This survey shows a 500mR contact dose rate on the lower head insulation with a general area rate of over 200mR. The primary work of disconnecting the heater cables, removing insulation, surface preparation, and inspection would occur in an area approximately 1 foot from the surge nozzle. After the insulation removal, the rates shown in the survey would increase. Lead shielding would not be practicable because the shielding would have to be placed on the surfaces that require work.

Estimated Dose for PZR Surge Nozzle and Nozzle Inner Radius Examination.

Activity	Man Hour Estimates[1]	Dose Rate (R/hr)[2]	Accumulated Dose (R)
Scaffolding	98	0.150	14.7
Cable Disconnection/Replacement	412	0.250	103
Insulation Removal/Replacement	140	0.250	35
Surface Preparation	1	0.250	0.25
Examination	4	0.250	1
Total	655	-	153.95

[1]Time estimates established by W.A. Pope Company, the primary contractor, and Raytheon Engineers & Constructors the inspection organization.

[2]Whole body dose rate estimates based on location of worker's trunk for specified work in required area at about 1 foot from surge line.

PROPOSED ALTERNATIVE EXAMINATION

The option of examining the pressurizer surge nozzle-to-head weld and nozzle inside radius section from the inside surface has been addressed and determined to be impractical. The inside surface of the pressurizer surge nozzle is accessible only from the manway. Removal and reinstallation of the manway would incur significant radiation exposure to plant personnel, which is estimated to be approximately 2 person-rem. Most importantly, baffle plates internal to the pressurizer would prohibit access to the debris screen and the surrounding inside surfaces of the nozzle for a meaningful VT-1 examination.

BYRON UNITS 1 & 2
INSERVICE INSPECTION

RELIEF REQUEST NR-19

PROPOSED ALTERNATIVE EXAMINATION (cont.)

To ensure compliance with 10CFR50.55 a (g)(3), continued periodic visual examination (VT-2) of the nozzle inner radius area and nozzle to vessel weld will be performed according to the requirements of ASME Section XI, Table IWB-2500-1, Examination Category B-P, including applicable Code Case(s).

JUSTIFICATION

Westinghouse Materials and Engineering has provided technical input to the basis for the exemption request for the nozzle to vessel weld and nozzle inner radius. The assessment discusses the structural integrity of the Byron Units 1 and 2 Pressurizer Surge Nozzle with respect to the nozzle to vessel weld and nozzle inner radius, and the need for the inservice inspection of these areas. The assessment includes three complimenting approaches of inspection history, fracture assessment, and risk assessment. Each approach arrives at the same conclusion, which is that the inservice inspection of the nozzle areas do not significantly improve the confidence in the structural integrity of the pressurizer.

Inspection History:
The surge nozzle inner radius for each pressurizer is subjected to a surface examination both before and after the deposit of the stainless steel cladding. The inspection before cladding included 100% UT. The inspection after cladding was performed after the manufacturer hydrotest and included a radiographic examination for both the nozzle inner radii and nozzle to vessel weld for acceptance to ASME Section III.

For preservice inspection, a UT was conducted of the nozzle to vessel welds with no indications in excess of allowables in ASME Section XI table IWB-3512-1. The nozzle inner radii did not have a preservice UT conducted due to the fact that no technique was available. Preservice relief request NR-13 was granted for the nozzle inner radius.

For inservice inspection of the surge nozzles, access restrictions and the radiological concerns preclude contact examinations from the inside of the pressurizer. This leaves as the only option to perform the examination from the nozzle outside surface blend region as described previously in the "Basis for Relief".

A survey was conducted by the Westinghouse Owners Group, where it was found that roughly half of the plants surveyed have sought and received relief from volumetric examinations for the aforementioned reasons. Those that have been carrying out surge nozzle inspections have not reported any indications. Specifically, 21 inspections have been completed, 9 by using UT methods, with no reported indications. While this finding in itself is not sufficient to prove there is no need for further inspection in these areas, it is consistent with the other findings here, in that no concerns are evident with flaws in this region at the beginning of service, and there are no known mechanisms for cracks to initiate during service.

Fracture Assessment:
Westinghouse conducted fracture evaluations of the Byron surge nozzle inner radius and nozzle to vessel weld regions to determine the sensitivity of this region to the presence of a flaw. The full set of design transients was considered, and the most limiting event was found to be the heatup and cooldown, which can involve insurges of cooler water into the bottom of the pressurizer. The cooler water has a higher density than

JUSTIFICATION (cont)

was the water in the pressurizer before the insurge, and therefore mixing cannot be guaranteed. The worst case assumed, where no mixing occurs, and the maximum temperature difference between the loop and pressurizer of 320° F was assumed. Because the pressurizer is hot when the insurges occur, the fracture toughness value from the ASME Code Section XI K_{IA} curve was found to be 200 ksi$\sqrt{in}$. The entire range of times during the insurge events was considered along with all the other design transients, and the stress intensity factor never exceeded the toughness, regardless of the size of the postulated crack. These results are summarized in Attachments 4 and 5, pages 8 and 9. Therefore, the structural integrity of the pressurizer will not be affected by flaws in the surge nozzle inner radius or nozzle to vessel weld.

Risk Assessment:

Westinghouse examined the effects of inservice examinations on the risk of failure due to cracking in the surge nozzle. From the fracture assessment it was determined that there is a very large tolerance for the presence of flaws in both the nozzle inner radii and the nozzle to vessel weld. Since the applied stress intensity factor does not exceed the fracture toughness, it could be argued that leakage would occur from a through wall flaw at the nozzle before any integrity problems would occur.

There are no mechanisms of damage other than fatigue for the surge nozzle. Therefore, the only scenarios of concern are for a flaw which was not found in the fabrication and preservice examinations to grow during service, or for a flaw to initiate during service and grow.

The surge nozzle forgings for Byron Units 1 and 2 were examined by both UT and MT prior to the cladding being applied. After cladding, the surge nozzles were required to be liquid penetrant tested to ensure the integrity of the cladding. The nozzle to vessel welds received both penetrant and volumetric (RT) during fabrication and UT during preservice examinations. With these examinations, it is extremely unlikely that a flaw of any size would be missed. Fatigue crack growth from any such flaw would be very small, and the fatigue assessments carried out to certify the design acceptance ensure that the fatigue loads during service are unlikely to initiate a flaw. Therefore the risk of failure is very low, and is unchanged whether or not inservice UT inspections are conducted.

Conclusion:

The assessments discussed above have shown that there is no compensating increase in quality or safety from ultrasonic inservice inspection of the surge nozzle and nozzle to vessel weld. Inspections which have been performed have not identified any indications at all in the entire population of Westinghouse plants, and the fracture assessment showed that the nozzle and nozzle to vessel weld have a very large tolerance for flaws. There are no mechanisms for the development of flaws during service, so that the risk of failure is not decreased by inservice inspection. A VT-2 inspection at pressure along with Reactor Coolant System Leakage Detection Systems ensure that through wall flaws would be identified prior to pressurizer structural integrity being compromised.

APPLICABLE TIME PERIOD

This relief request will be required for the first ten-year Inspection Interval.

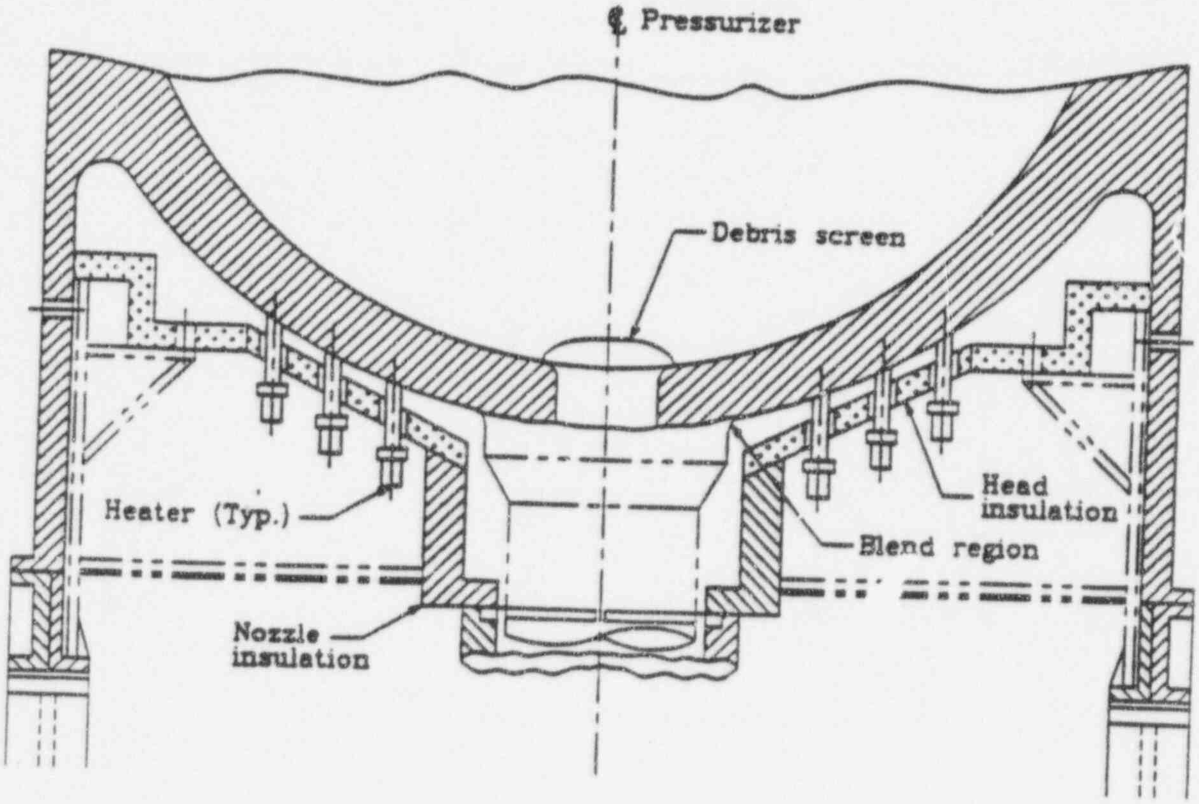
APPROVAL STATUS

Pending NRC review

BYRON UNITS 1 & 2
INSERVICE INSPECTION

RELIEF REQUEST NR-19

ATTACHMENTS

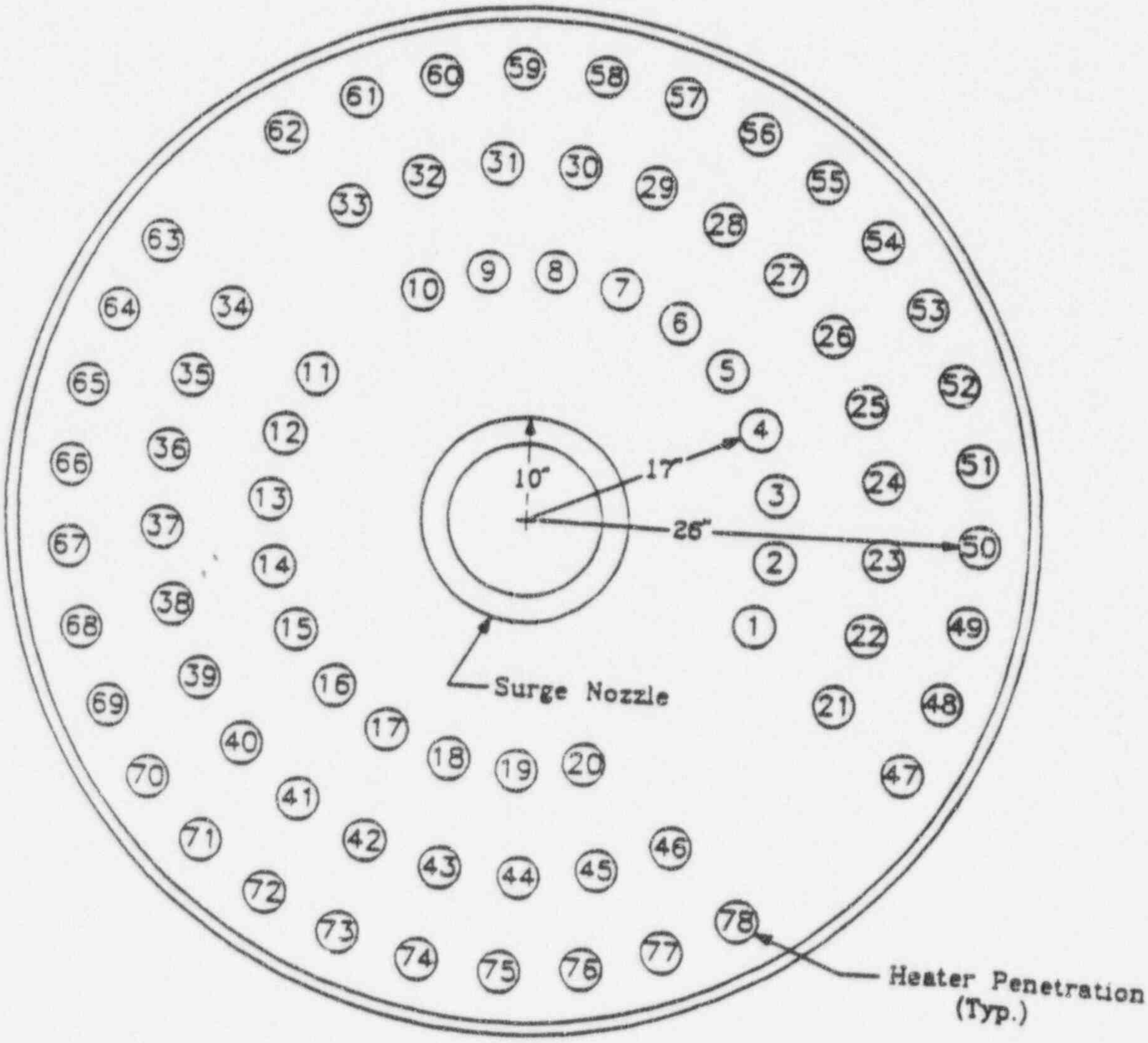


Attachment 1: Pressurizer Bottom Head Assembly

BYRON UNITS 1 & 2
INSERVICE INSPECTION

RELIEF REQUEST NR-19

ATTACHMENTS

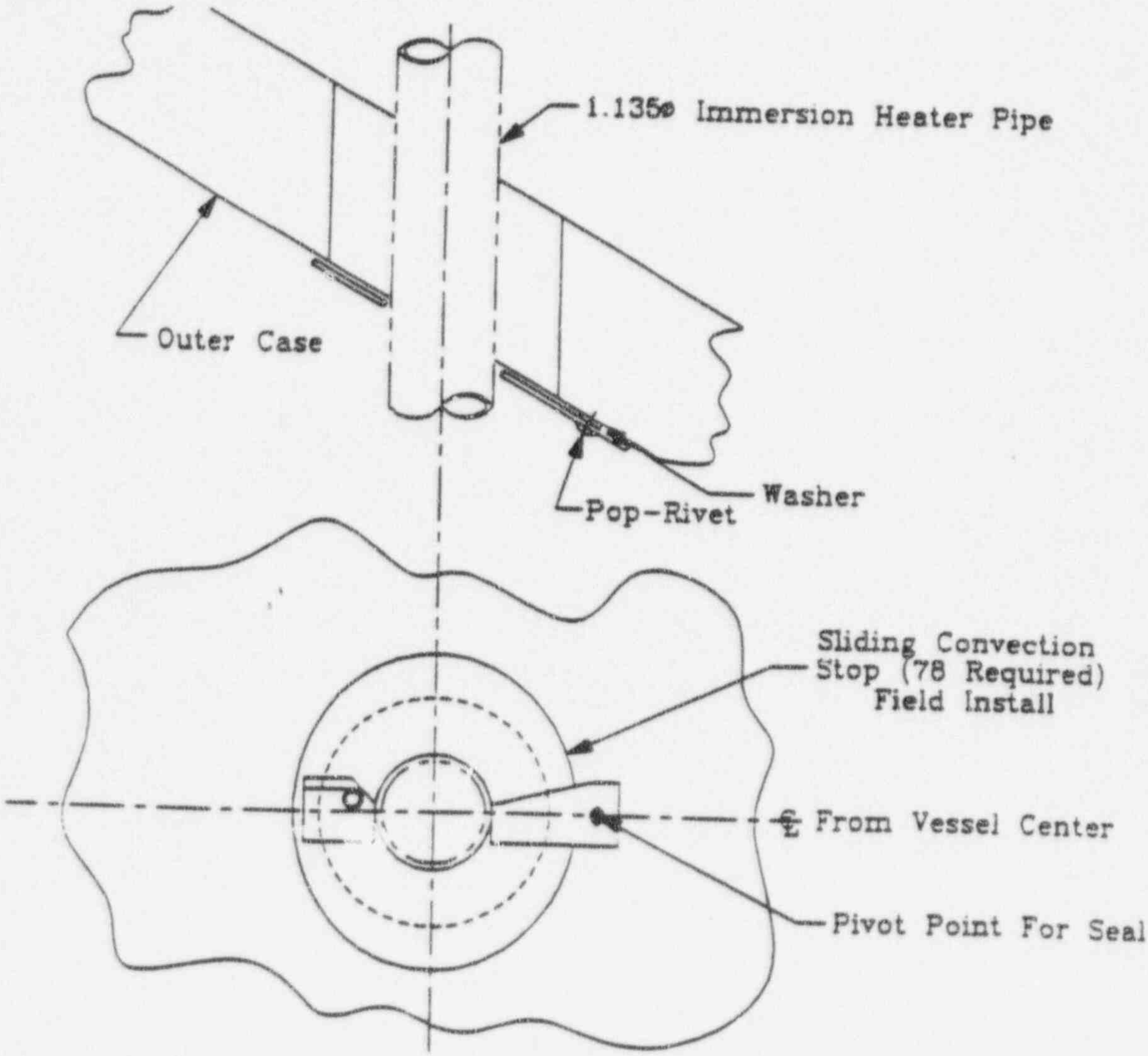


Attachment 2: Immersion Heater Assembly

BYRON UNITS 1 & 2
INSERVICE INSPECTION

RELIEF REQUEST NR-19

ATTACHMENTS



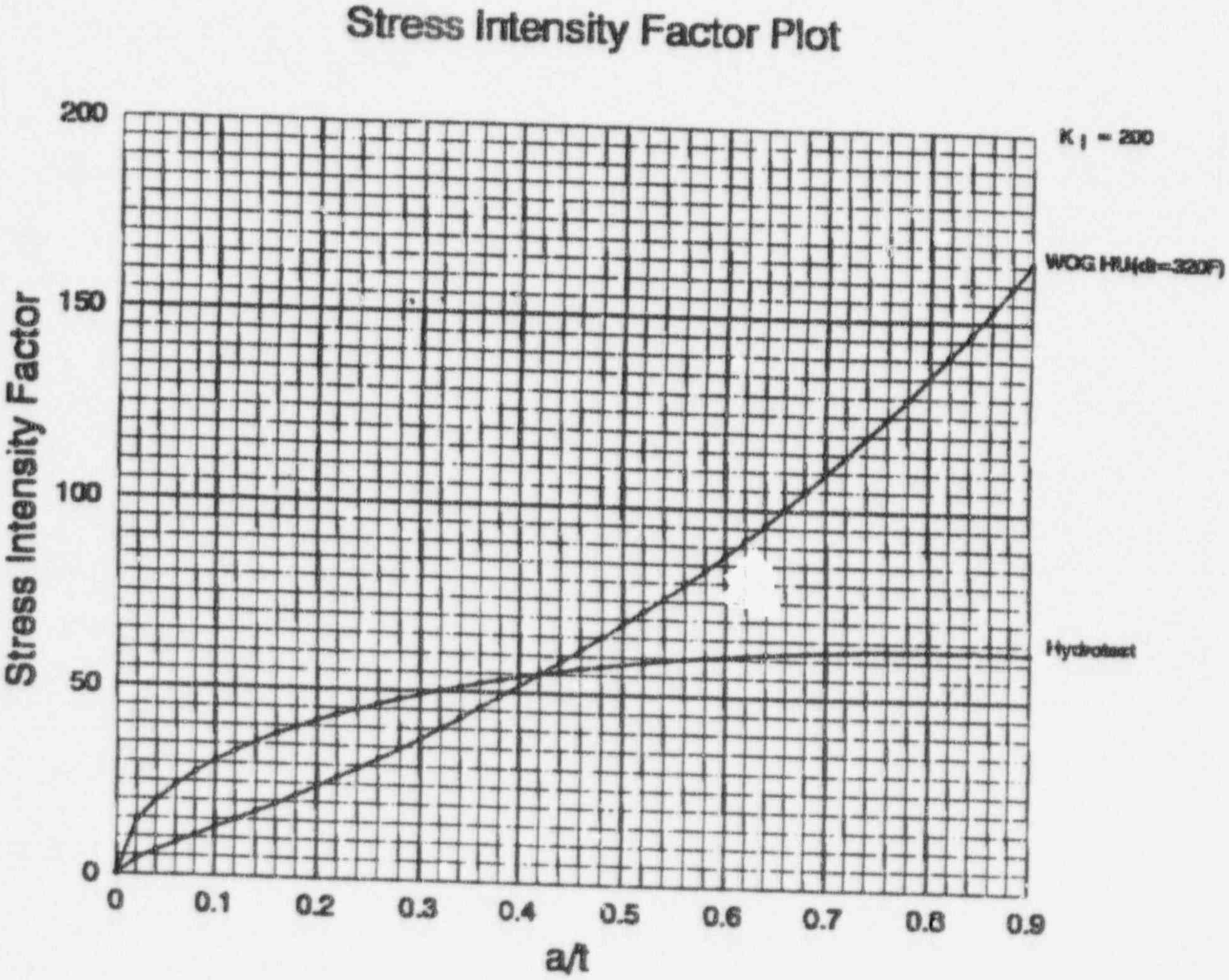
Attachment 3: Bottom Head Insulation Details

BYRON UNITS 1 & 2

INSERVICE INSPECTION

RELIEF REQUEST NR-19

ATTACHMENTS



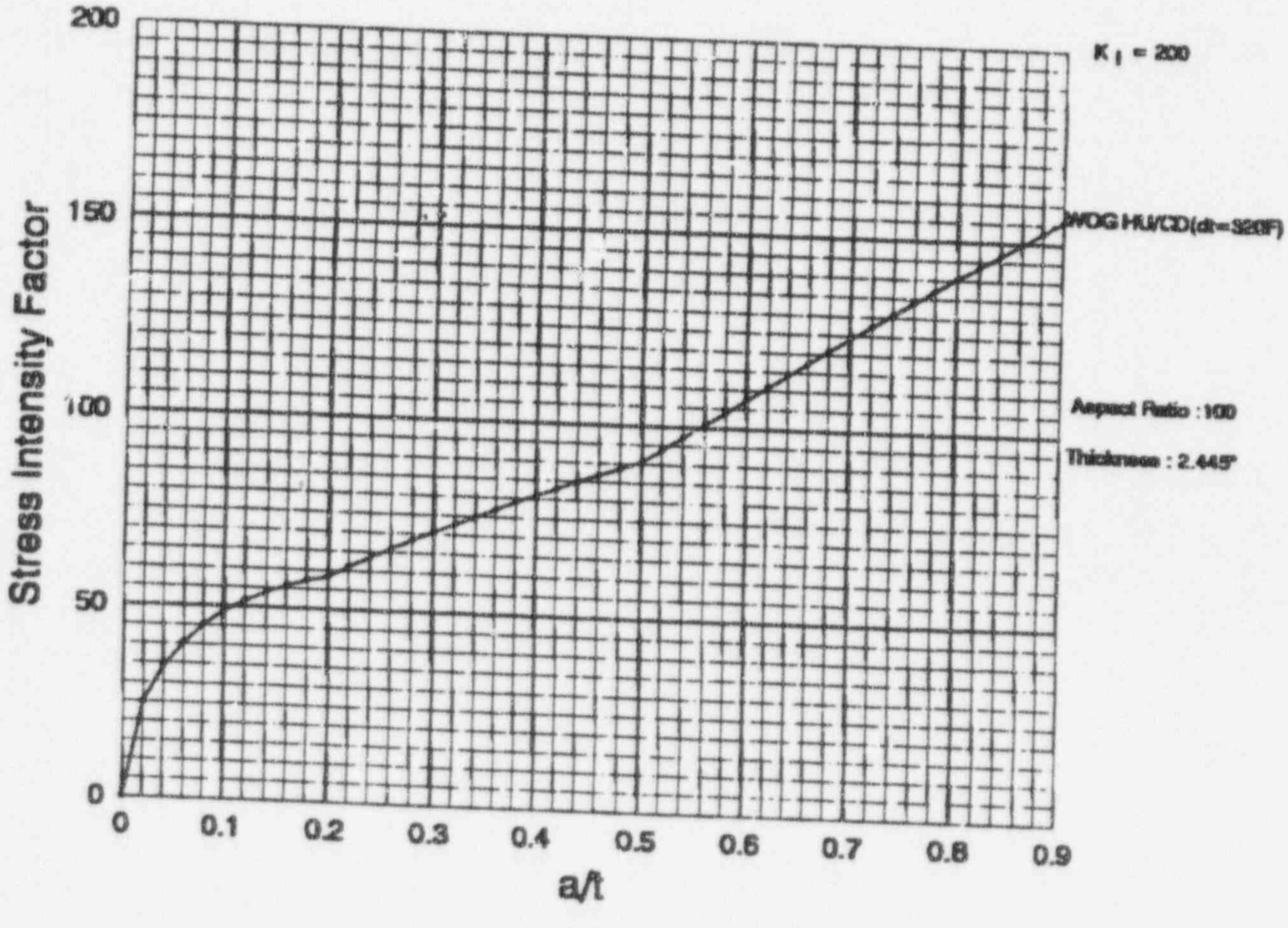
Attachment 4: Stress Intensity Factor Plot: Pressurizer Surge Nozzle Weld Inside Surface Flaw

BYRON UNITS 1 & 2
INSERVICE INSPECTION

RELIEF REQUEST NR-19

ATTACHMENTS

Stress Intensity Factor Plot



Attachment 5: Stress Intensity Factor Plot: Pressurizer Surge Nozzle Corner Inside Surface Flaw

ATTACHMENT B

RELIEF REQUEST NR-24

COMPONENT IDENTIFICATION

CODE CLASS(ES):	(1) One
REFERENCE(S):	Subsection IWB, Table IWB-2500-1
EXAMINATION CATEGORY(IES):	B-D
ITEM NUMBER(S):	B3.110 & B3.120
DESCRIPTION:	Pressurizer Surge Nozzle-to-Vessel Weld and Pressurizer Surge Nozzle Inner Radius Section
COMPONENT NUMBER(S):	1PZR-01-N1 2PZR-01-N1

ASME CODE SECTION XI REQUIREMENT

Perform volumetric (UT) examination of the nozzle-to-vessel weld and the nozzle inner radius section.

BASIS FOR RELIEF

In accordance with 10CFR50.55a(g)(5)(iv), relief is requested on the basis that compliance with the Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Braidwood Units 1 and 2 pressurizer nozzles are welded to the vessel heads (Attachment 1). Each pressurizer has a single surge nozzle in the lower head. To perform UT examinations on these areas, the outside surface of the lower vessel head, which is the optimal scanning surface, must be accessible. This optimal scanning surface is made accessible by removing the lower pressurizer head insulation. The impact of removing the lower head insulation is discussed below.

The lower head of the pressurizer is covered by 4 inches of multi-layered stainless steel mirror insulation. To remove the insulation, the 78 pressurizer heater cables would have to be disconnected (Attachment 2). In addition, each of the 78 convection stops, which are riveted to the insulation, would have to be cut so that the insulation could be removed (Attachment 3).

Previous attempts to acquire this data at another ComEd plant have proven unsuccessful. During previous outages, an attempt was made to modify the insulation on the lower head of the Byron Unit 2 pressurizer to allow inspection access without full insulation and heater cable removal. The insulation group worked for three shifts per day for five days to remove this insulation. The groups used small grinders to cut the insulation from the nozzle to the first ring of immersion heaters. After this work was completed, the bottom head insulation was lowered until stopped by the heater connections. These actions did not result in sufficient access to conduct the required examinations. Further actions to provide access were determined to be impractical. The insulation was replaced and the cut areas were covered.

Examination of the nozzle to vessel weld and the nozzle inner radius would result in limited examination coverage. Even if the insulation were removed, full ultrasonic examination coverage of the surge nozzle-to-vessel weld can not be achieved. The pressurizer surge nozzle geometry limits transducer contact.

Relief Request NR-24 (Cont.)

Consequently, scanning on the nozzle side of the weld is impracticable. The heater penetrations obstruct scanning from the shell side of the weld. The estimated coverage would only be approximately 60% of the weld volume. Regarding the nozzle inner radius, only limited ultrasonic examination of the nozzle inside radius section would be achievable from the outside surface with the insulation removed. The complex geometry of the "blend region" is not conducive to typical UT examination techniques. A limited examination would be possible if ultrasonic scanning were conducted from the nozzle. However, due to the complex geometry of the nozzle, the resulting coverage would provide very limited data from which to assess the condition of the surge nozzle inside radius section. The limited data obtained from these examinations does not provide a compensatory increase in quality and safety to justify the hazards of personnel radiation exposure incurred to obtain the data.

The radiation exposure to plant personnel for insulation removal, surface preparation, and inspection is estimated to be 154 person-rem. To provide a basis for the dose estimates, a survey was conducted during the Braidwood A2R05 outage on March 16, 1996. This survey shows a 500mR contact dose rate on the lower head insulation with a general area rate of over 200mR. The primary work of disconnecting the heater cables, removing insulation, surface preparation, and inspection would occur in an area approximately 1 foot from the surge nozzle. After the insulation is removed, the rates shown in the survey would increase. Lead shielding would not be practicable because the shielding would have to be placed on the surfaces that require work.

Estimated Dose for PZR Surge Nozzle and Nozzle Inner Radius Examination.

Activity	Man Hour Estimates[1]	Dose Rate (R/hr)[2]	Accumulated Dose (R)
Scaffolding	98	0.150	14.7
Cable Disconnection/Replacement	412	0.250	103
Insulation Removal/Replacement	140	0.250	35
Surface Preparation	1	0.250	0.25
Examination	4	0.250	1
Total	655	-	153.95

[1]Time estimates established by W.A. Pope Company, the primary contractor, and Raytheon Engineers & Constructors. the inspection organization.

[2]Whole body dose rate estimates based on location of worker's trunk for specified work in required area at about 1 foot from surge line.

PROPOSED ALTERNATIVE EXAMINATION

The option of examining the pressurizer surge nozzle-to-head weld and nozzle inside radius section from the inside surface has been addressed and determined to be impractical. The inside surface of the pressurizer surge nozzle is accessible only from the manway. Removal and reinstallation of the manway would incur significant radiation exposure to plant personnel, which is estimated to be approximately 2 person-rem for Braidwood Unit 2. Braidwood Unit 1 would incur more dose to gain access to the pressurizer due to a diaphragm seal welded in the manway. Most importantly, baffle plates internal to the pressurizer would prohibit access to the debris screen and the surrounding inside surfaces of the nozzle for a meaningful VT-1 examination.

To ensure compliance with 10CFR50.55a(g)(3), continued periodic visual examination (VT-2) of the nozzle inner radius area and nozzle to vessel weld will

Relief Request NR-24 (Cont.)

be performed according to the requirements of ASME Section XI, Table IWB-2500-1, Examination Category B-P, including applicable Code Case(s).

JUSTIFICATION

Westinghouse Materials and Engineering Group has provided technical input to the basis for the exemption request for the nozzle to vessel weld and nozzle inner radius. This assessment discusses the structural integrity of the Braidwood Units 1 and 2 Pressurizer Surge Nozzle with respect to the nozzle to vessel weld and nozzle inner radius, and the need for the inservice inspection of these areas. The assessment includes three complimenting approaches which include inspection history, fracture assessment, and risk assessment. Each approach arrives at the same conclusion, which is that the inservice inspection of the nozzle areas do not significantly improve the confidence in the structural integrity of the pressurizer.

Inspection History:
The surge nozzle inner radius for each pressurizer is subjected to a surface examination both before and after the deposit of the stainless steel cladding. The inspection before cladding included 100% UT. The inspection after cladding was performed after the manufacturer hydrotest and included a radiographic examination for both the nozzle inner radii and nozzle to vessel weld for acceptance to ASME Section III.

For preservice inspection, a UT was conducted of the nozzle to vessel welds with no indications in excess of allowables in ASME Section XI table IWB-3512-1. The nozzle inner radii did not have a preservice UT conducted due to the fact that no technique was available. Preservice relief request 1NR4 (Unit 1) and 2NR4 (Unit 2) were granted for the nozzle inner radius.

For inservice inspection of the surge nozzles, access restrictions and the radiological concerns preclude contact examinations from the inside of the pressurizer. This leaves the only option to perform the examination from the nozzle outside surface blend region as described previously in the "Basis for Relief".

A survey was conducted by the Westinghouse Owners Group, where it was discovered that roughly half of the plants surveyed have sought and received relief from volumetric examinations for the aforementioned reasons. Those that have been carrying out surge nozzle inspections have not reported any indications. Specifically, 21 inspections have been completed, 9 by using UT methods, with no reported indications. While this finding in itself is not sufficient to prove there is no need for further inspection in these areas, it is consistent with the other findings here, in that no concerns are evident with flaws in this region at the beginning of service, and there are no known mechanisms for cracks to initiate during service.

Fracture Assessment:
Westinghouse conducted fracture evaluations of the Braidwood surge nozzle inner radius and nozzle to vessel weld regions to determine the sensitivity of this region to the presence of a flaw. The full set of design transients was considered, and the most limiting event was found to be the heatup and cooldown, which can involve insurges of cooler water into the bottom of the pressurizer. The cooler water has a higher density than the water in the pressurizer before the insurge, and therefore mixing cannot be guaranteed. The worst case where no mixing occurs was addressed, and the maximum temperature difference between the loop and pressurizer of 320° F was assumed. Because the pressurizer is hot when the insurges occur, the fracture toughness value from the ASME Code Section XI K_{IA} curve was found to be 200 ksi$\sqrt{in}$. The entire range of times during the insurge

events was considered along with all the other design transients, and the stress intensity factor never exceeded the toughness, regardless of the size of the postulated crack. These results are summarized in Attachments 4 and 5. Therefore, the structural integrity of the pressurizer will not be affected by flaws in the surge nozzle inner radius or nozzle to vessel weld.

Risk Assessment:
Westinghouse examined the effects of inservice examinations on the risk of failure due to cracking in the surge nozzle. From the fracture assessment it was determined that there is a very large tolerance for the presence of flaws in both the nozzle inner radii and the nozzle to vessel weld. Since the applied stress intensity factor does not exceed the fracture toughness, it could be argued that leakage would occur from a through wall flaw at the nozzle before any integrity problems would occur.

There are no mechanisms of damage other than fatigue for the surge nozzle. Therefore, the only scenarios of concern are for a flaw which was not found in the fabrication and preservice examinations to grow during service, or for a flaw to initiate during service and grow.

The surge nozzle forgings for Braidwood Units 1 and 2 were examined by both UT and MT prior to the cladding being applied. After cladding, the surge nozzles were required to be liquid penetrant tested to ensure the integrity of the cladding. The nozzle to vessel welds received both penetrant and volumetric (RT) during fabrication and UT during preservice examinations. With these examinations, it is extremely unlikely that a flaw of any size would be missed. Fatigue crack growth from any such flaw would be very small, and the fatigue assessments carried out to certify the design acceptance ensure that the fatigue loads during service are unlikely to initiate a flaw. Therefore the risk of failure is very low, and is unchanged whether or not inservice UT inspections are conducted.

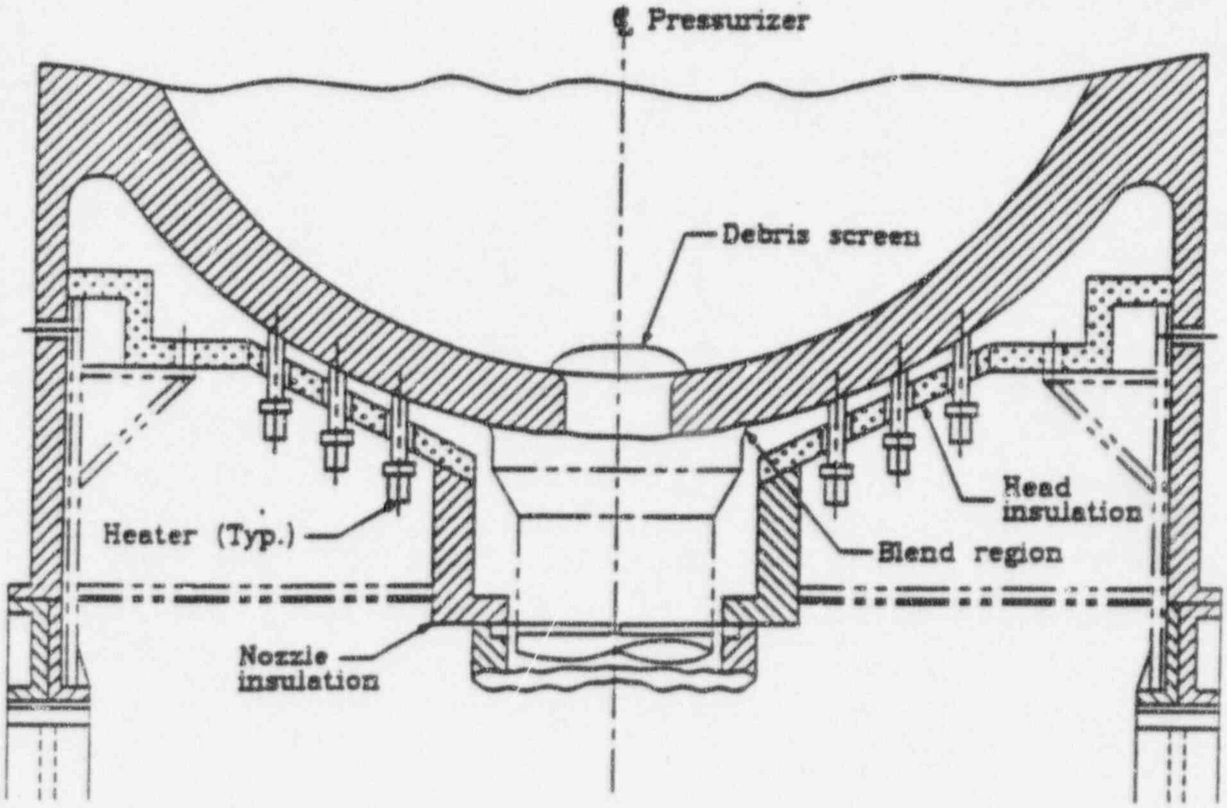
Conclusion:
The assessments discussed above have shown that there is no compensating increase in quality or safety from ultrasonic inservice inspection of the surge nozzle and nozzle to vessel weld. Inspections which have been performed have not identified any indications at all in the entire population of Westinghouse plants, and the fracture assessment showed that the nozzle and nozzle to vessel weld have a very large tolerance for flaws. There are no mechanisms for the development of flaws during service, so that the risk of failure is not decreased by inservice inspection. A VT-2 inspection at pressure, along with Reactor Coolant System Leakage Detection Systems ensure that through wall flaws would be identified prior to pressurizer structural integrity being compromised.

APPLICABLE TIME PERIOD

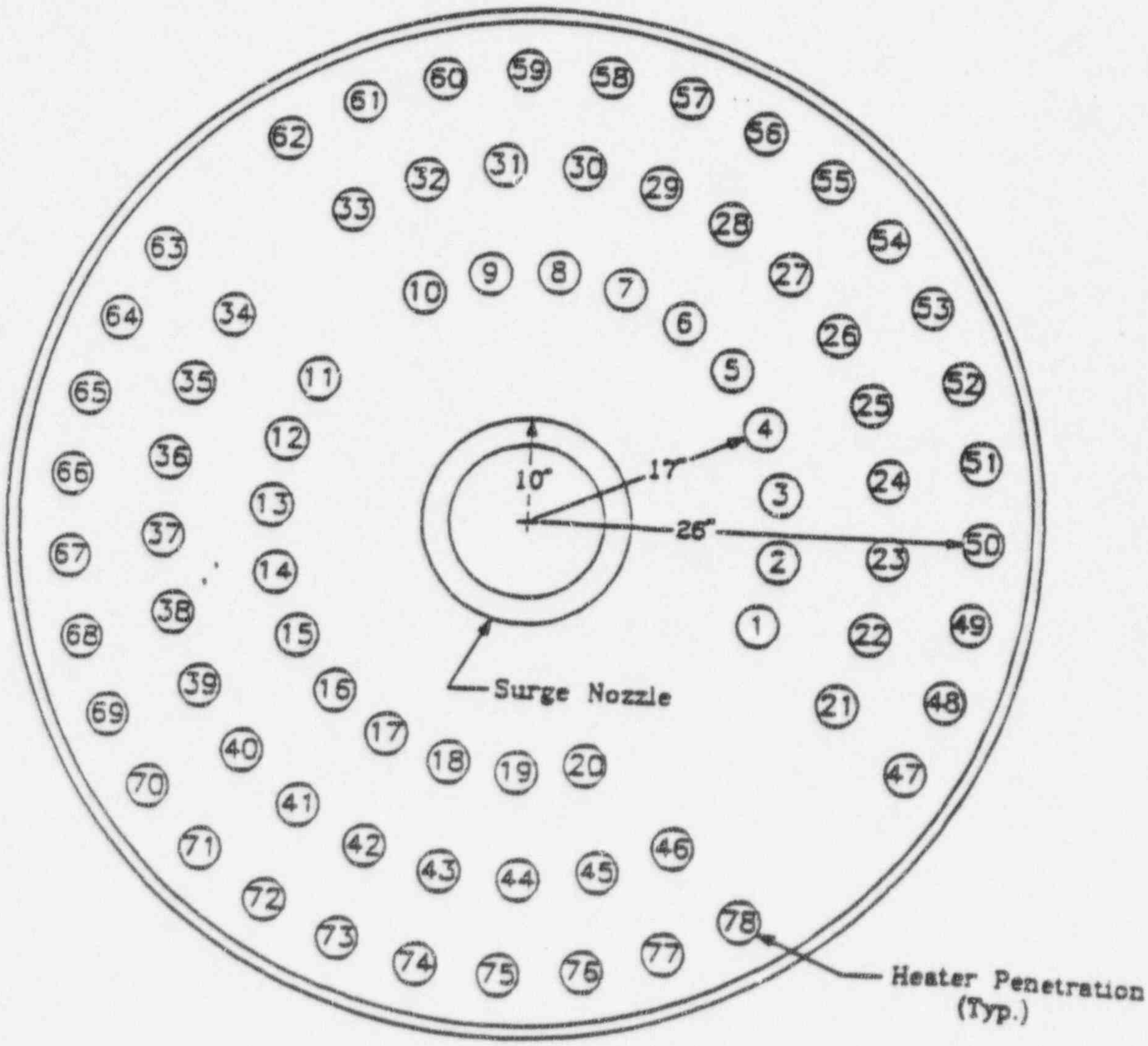
This relief request will be required for the First Ten Year Inspection Interval.

APPROVAL STATUS

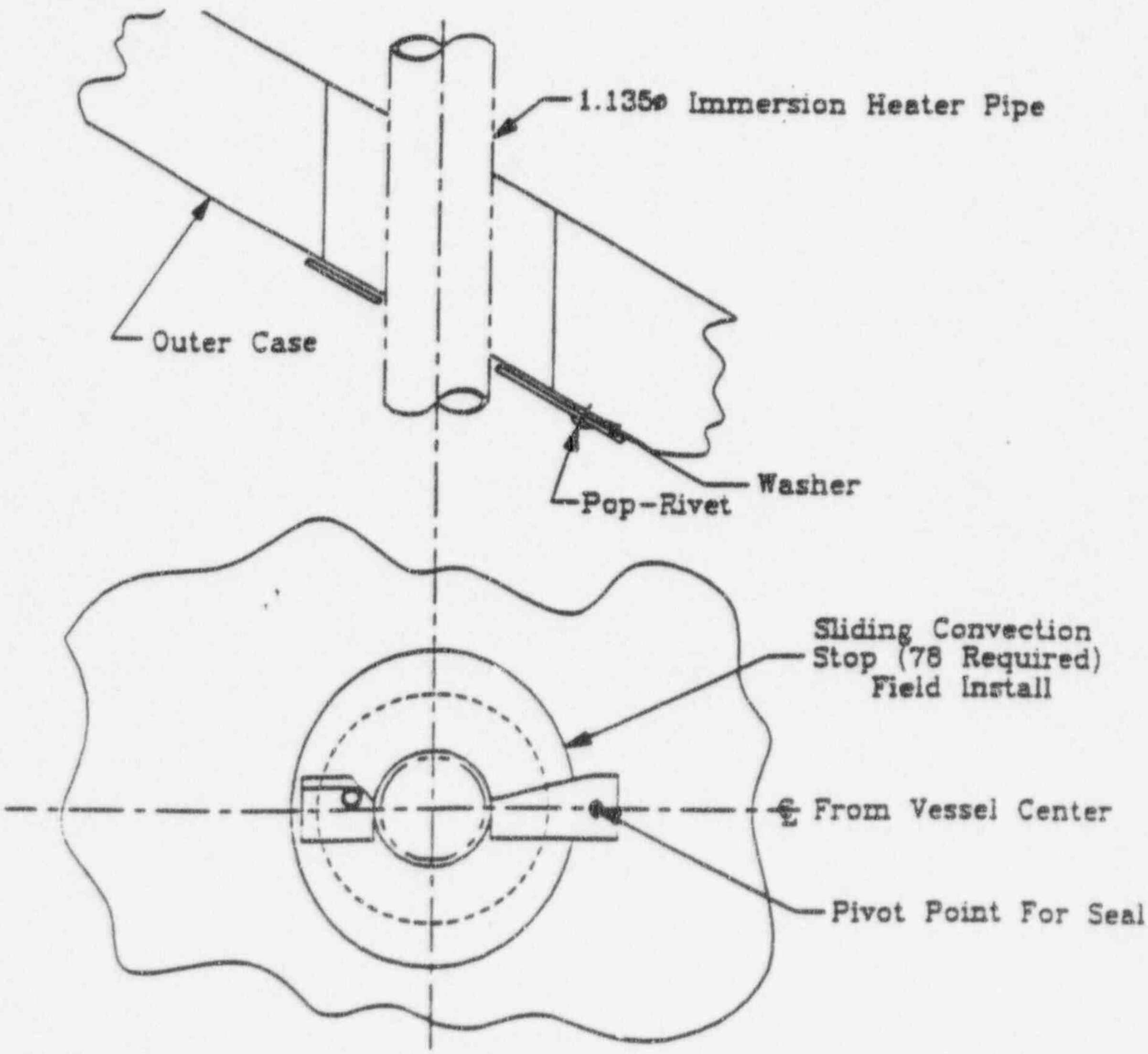
Pending NRC review



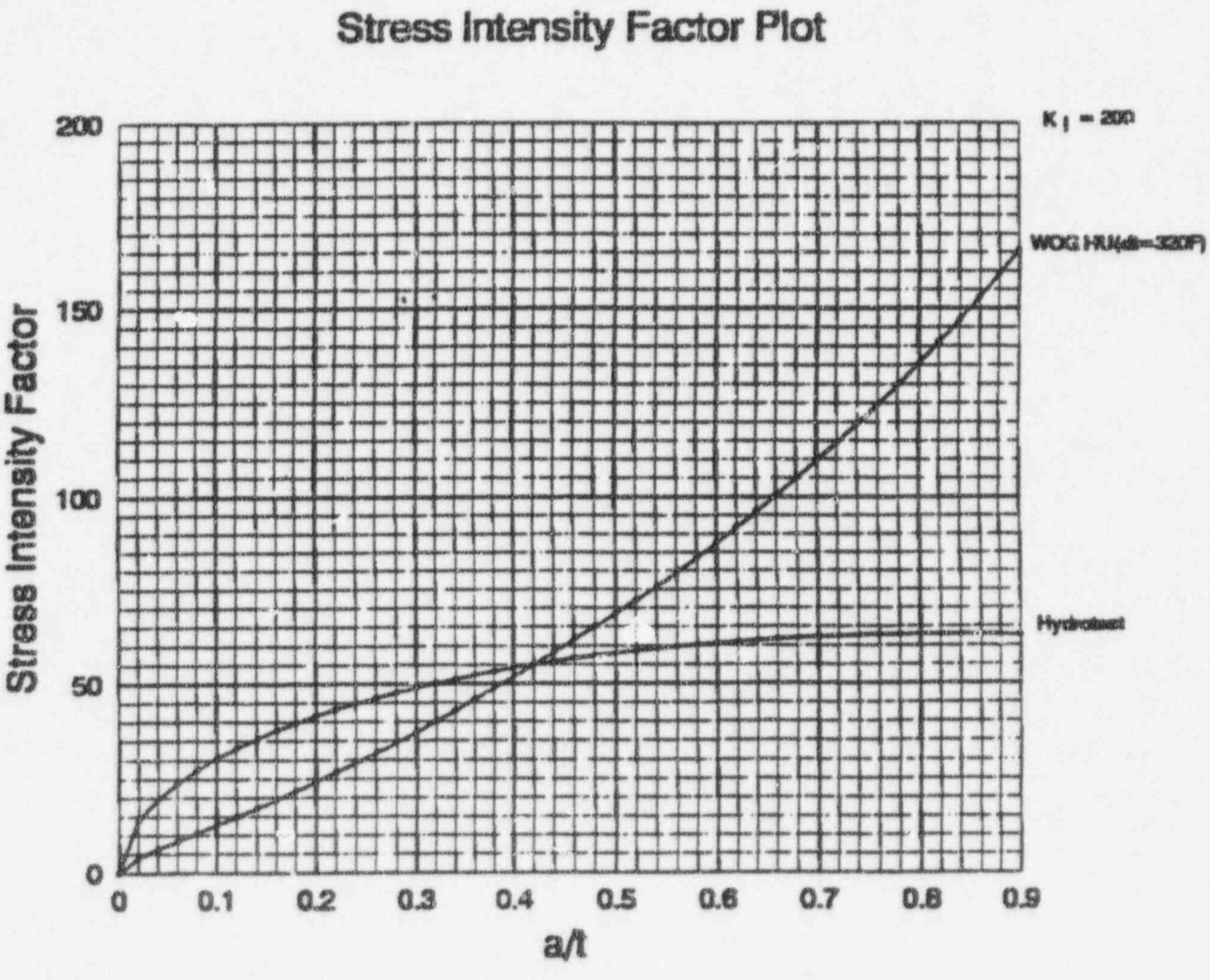
Pressurizer Bottom Head Assembly



Immersion Heater Assembly



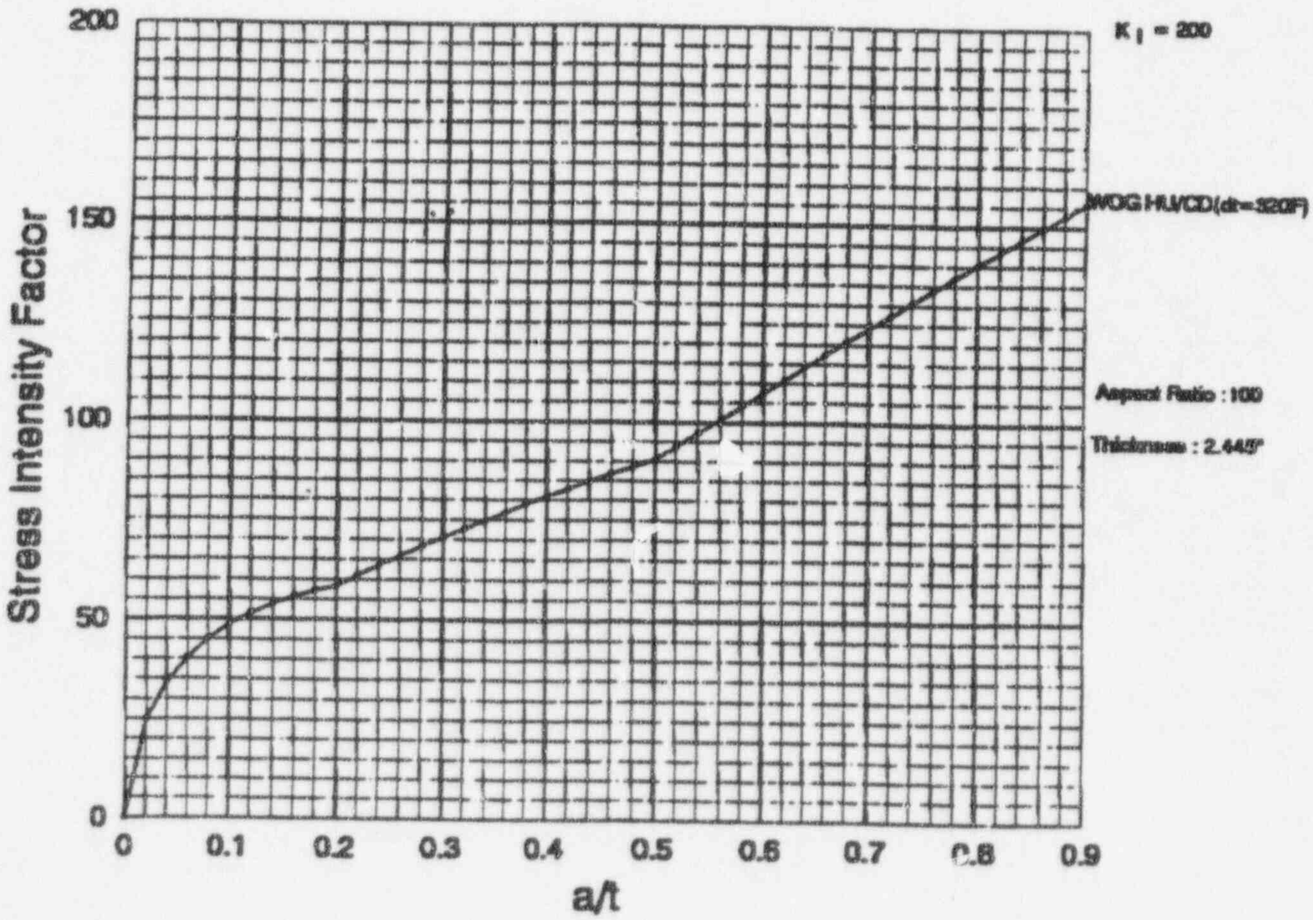
Bottom Head Insulation Details



<u>Stress Intensity Factor Plot:</u>

<u>Pressurizer Surge Nozzle Weld Inside Surface Flaw</u>

Stress Intensity Factor Plot



Stress Intensity Factor Plot:

Pressurizer Surge Nozzle Corner Inside Surface Flaw