DUKE POWER COMPANY

ESS/NDE

TECHNICAL REPORT

Ultrasonic Examination of Oconee Unit 3 Safe End 3A1 and Unit 2 2A1 Piping

Unit 3, 3A1 Safe End

Ultrasonic Examination

On May 11, 1997 an ultrasonic (UT) examination was performed by Duke Power Company personnel using Procedure NDE-600, Revision 9. The procedure and examination personnel are qualified in accordance with the requirements of ASME Section XI, Appendix VIII, 1992 Edition with the 1993 Addenda.

The results of the examination showed two suspected crack indications at 157° and 171° outside circumference azimuth location, (Figure 1). These indications were recorded as 0.5 in. long and between 2.25 in. and 3.05 in. from the edge of the safe end taper. They are located in the safe end base material adjacent to the nozzle-to-safe end weld parallel with the axis of the safe end. No other indications were recorded. The accuracy of the location of these indications is ± 0.1 in. along the safe end axis and ± 0.4 in. in the circumferential direction.

Metallographic Examination

The safe end was sectioned at two locations in the cracked region. The first section was made approximately 0.5 inch from the field cut. Metallographic examination at this location shows thirty-two cracks around the inside circumference. There are five cracks greater than 10% through wall, and the deepest crack is 17% through wall (0.1474 in.). The cracks are more concentrated in the 91°-180° and 181°-270° azimuth locations than any other areas. The attached charts show more detailed information.

The second section cut was approximately 0.2 inch from the first section cut in the direction of the pipe-to-safe end weld. Metallographic examination at this location shows fourteen cracks around the inside circumference. Eleven of these cracks were equal to or less than 0.100 inch deep. The table below shows a comparison of the five deepest cracks in the safe end.

Azimuth Location	Depth at 1st Cut[1]	Depth at 2nd Cut[2]	UT Detection[3]	Skew[4]
143°	0.116"	0.074"	Yes	4°
171°	0.136"	0.100"	Yes	3°
201°	0.108"	0.108"	No	2°
229°	0.147"	0.141"	No	7°
253°	0.132"	0.127:	No	4°

1 Depth at Cut 1- crack depth at the locations of the first cross-section

2 Depth at Cut 2 - crack depth at location of the second cross-section

3 UT Detection - crack location corresponds to the location of a flaw recorded by ultrasonic examination

4 Skew - angular change in the location of the crack from Cut 1 to Cut 2

Minimum Detectable Crack Size

Comparison of the ultrasonic data with the metallographic results show that the indications recorded by the ultrasonic examiners correlate to known cracks at 143° and 171° on the Met Lab Report. These cracks are 13% (0.116") through wall for Indication number 1 and 16% (0.136") through wall for Indication number 2. Cracks less than 0.116" were not detected.

Undetected Cracks

Twenty-seven other cracks with dimensions less than 10% through wall were not recorded. Three cracks with through wall dimensions greater than 10% were not recorded. They are located at 229° (17% tw), 253° (15% tw) and 201° (13% tw). All of the cracks are located at a change in section thickness on the safe end inside diameter. All three cracks were contained in a circumferential length of 0.8 in. on the inside surface. Factors, such as poor search unit contact, inside surface geometry and the skew angle of the cracks are being investigated as possible causes for not detecting these cracks The most likely reason for not recording the three cracks at 229°, 253° and 201° is poor search unit contact.

When an examination is performed on small diameter pipe to detect axial cracks, loss of contact between the search unit and the part surface can occur if the search unit is not held in correct alignment. This is difficult in a manual examination because of the small size of the search unit. Also, the gloves, which are required to be worn in a contaminated area reduce the examiner's ability to maintain the search unit alignment. Search units can be contoured to fit the outside radius and improve contact. The choice of flat or contoured search units is a trade off between detecting cracks that are purely axial and detecting cracks that are skewed off axis. A contoured search unit fits snug on the outside radius, but cannot be oscillated to detect off-axis cracks. No contoured search units were available for the safe end outside diameter at the time the examinations were performed.

Conclusions

Based on review of the ultrasonic and Met Lab Report, the ultrasonic procedure used to examine the safe end is capable of detecting cracks as small as 13% through wall. Poor search unit contact, inside surface geometry of the safe end at the crack location, and the skew angle of the cracks may have contributed to the inconsistent crack detection. These factors will be evaluated prior to the Oconee Unit 1 refueling outage and any improvements will be incorporated in the ultrasonic procedure.

Unit 2, 2A1 makeup Piping

The makeup line piping segment extending from the HPI nozzle safe end to the first valve, including the "warming" nozzle connection, was removed in April 1997. No field NDE examinations were performed before removal of this piping. The pipe was split lengthwise and examined with dye penetrant, revealing a network of cracks around the circumference of the pipe between the warming nozzle connection and the safe end-to-pipe weld.

An ultrasonic examination of this piece was performed on May 20, 1997 using the same procedure that had been used for all of the Oconee HPI examinations in April-May 1997. The cracks in the pipe segment were easily detectable with the three different techniques allowed by the procedure. After the ultrasonic inspection, this pipe was sectioned and the

cracking was found to have a maximum depth of 0.05 in. which is 14% of the 0.344 in. wall thickness.

Conclusion

The data from this pipe indicates that cracks equal to or greater than 0.050 in. (14% through wall) can be detected with the current ultrasonic procedure.

James J. McArdle III

Principal NDE Level III UT

Duke Power Company

DUKE POWER COMPANY

Form 00184 (R4-88)

Station Oconee Unit 3 Rev. ____ File No. ____ Sheet ____ Of ____

Subject Re-plot of indications with new thickness of .872"

Ref. Cal Shts. 9703001F0 & 9703020 F0 By James W Stoops III Date 5-19-97

Prob No. 3A1-Safe End Pc-47 Checked By ____ Date ____

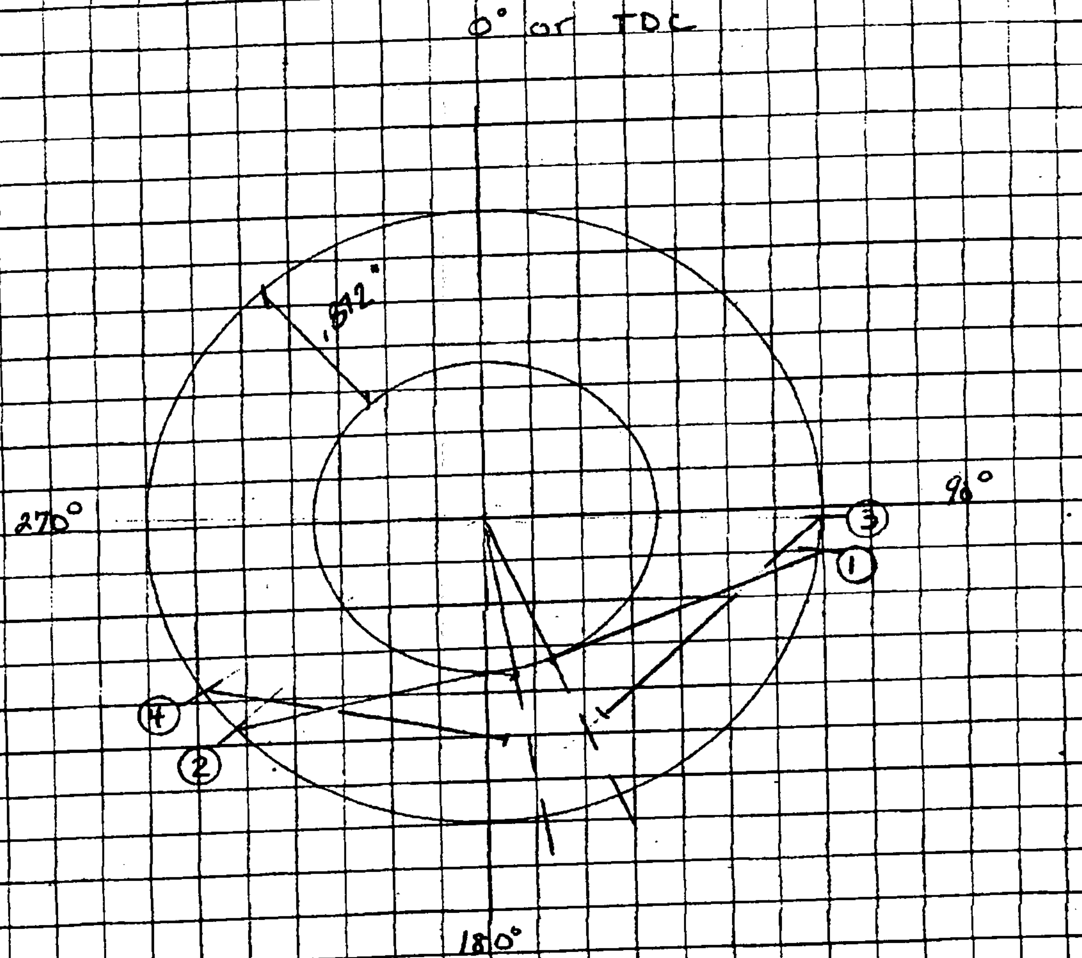
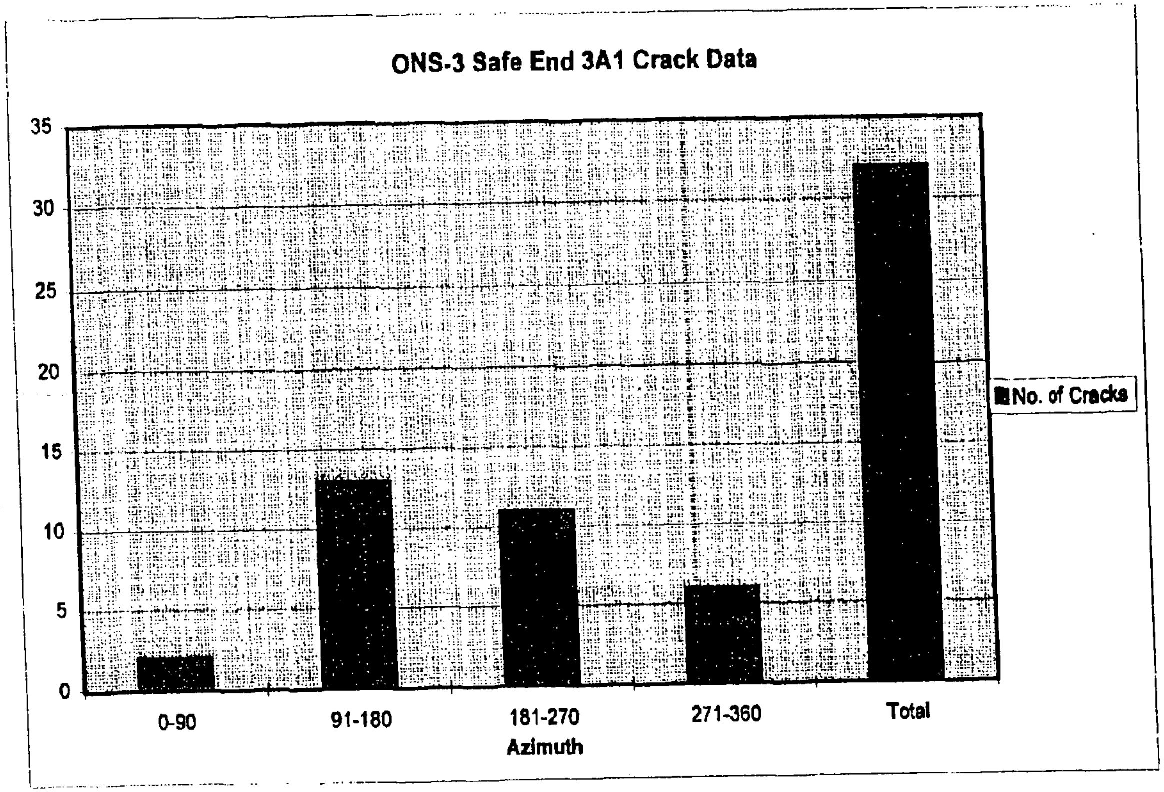


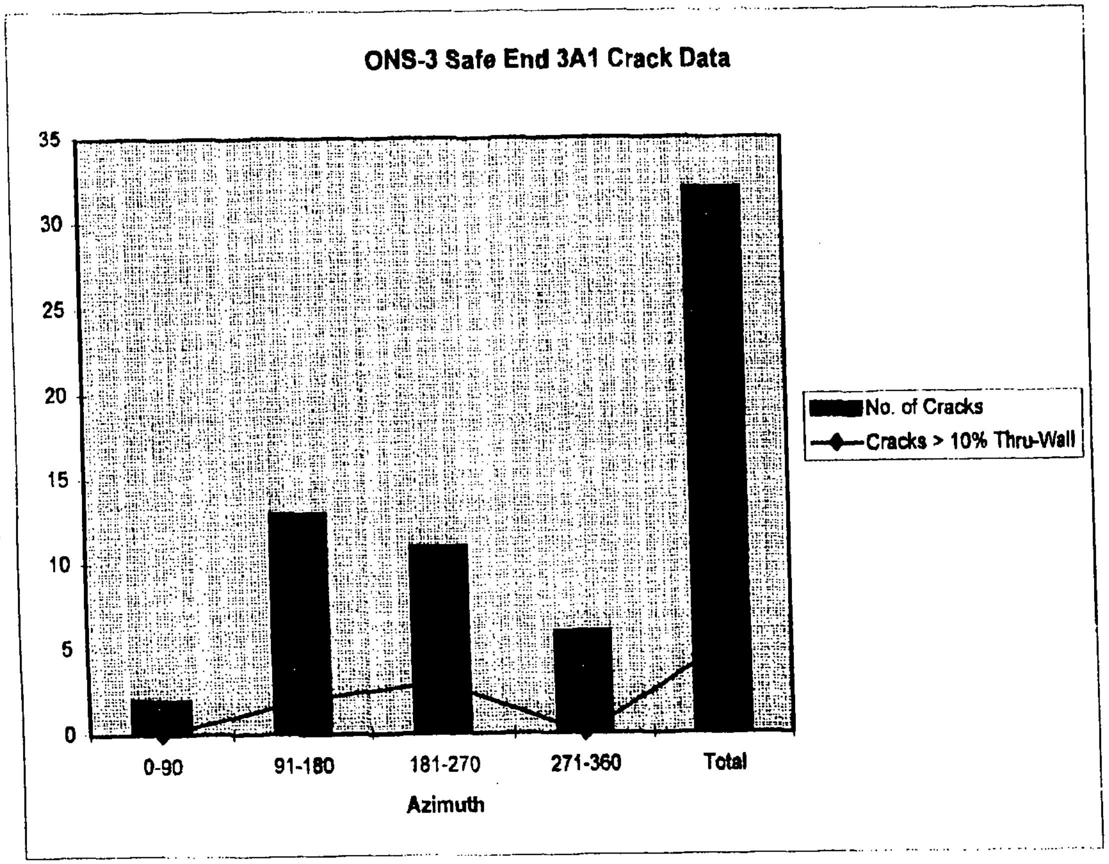
FIGURE-1

ONS-3 Safe End Crack Data

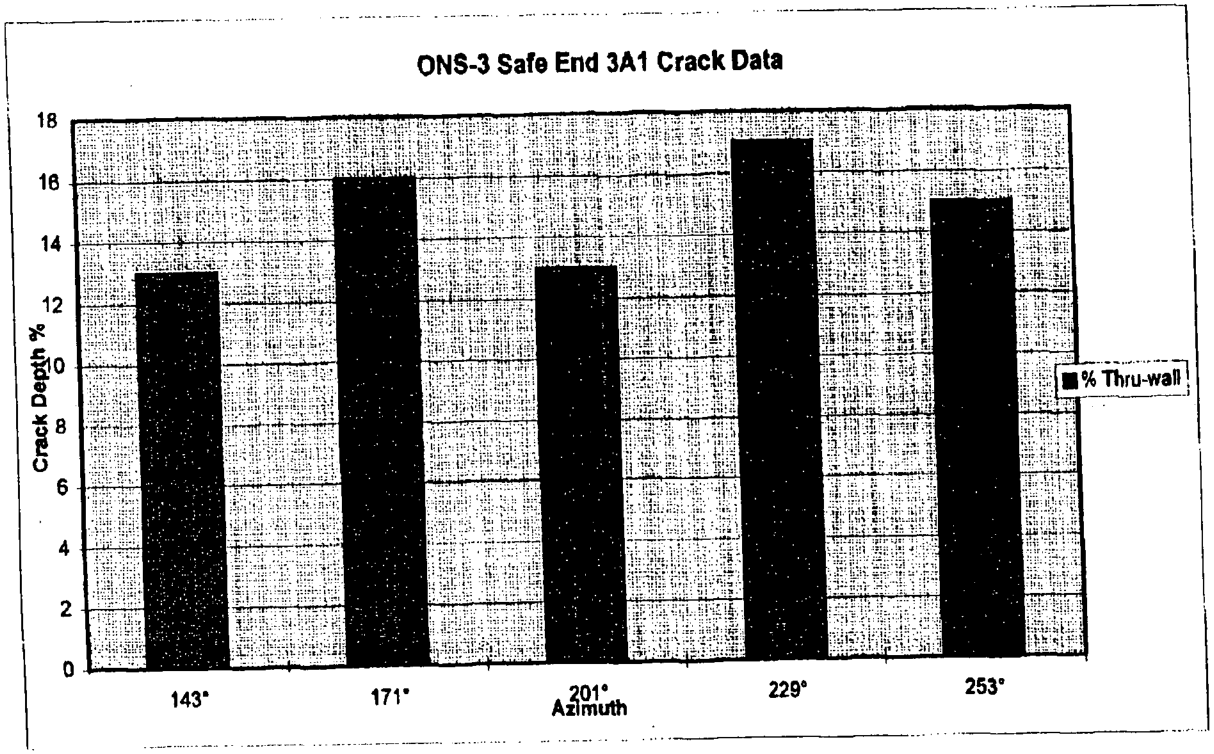
Azimuth	No. of Cracks
0-90	2
91-180	13
181-270	11
271-360	6
Total	32



Azimuth	No. of Cracks	Cracks > 10% Thru-Wall
0-90	2	0
91-180	13	2
181-270	11	3
271-360	6	0
Total	32	5



Azimuth Location of Cracks > 10%	% Thru-wall
143°	13
171°	16
201°	13
229°	17
253°	15



Attachment 2
Revised Information Regarding Question 1d, 2a, 4e, & 4f
in May 5, 1997
NRC Request for Additional Information

Question: 1(d)

Provide an assessment of the effect of the residual weld stresses and flow induced vibration of the sleeve on the root cause of the crack growth.

Answer:

References:

1. NUREG-0313
2. Babcock & Wilcox 177 Fuel Assembly Owner's Group Safe End Task Force Report on Generic Investigation of HPI/MU Nozzle Component Cracking, B & W Document # 77-1140611-00 (1983)
3. Flow-Induced Vibration Blevins, Van Nostrand Reinhold, 1990

Effect of Residual stress

The laboratory-measured through wall axial residual stresses through the pipe wall (pipe wall thickness greater than 1 inch) is shown in Figure 3 from Ref. 1. The solid line is the axial residual stress distribution used for the stress intensity factor calculation for pipe sizes of 12" or greater in Ref. 1.

Obviously, the HPI/MU line piping under consideration is much smaller in diameter and the wall thickness is only 0.375 inch. Therefore, the magnitude of the residual stress is expected to be significantly smaller than that shown in Figure 3 where the inside surface stress, which is the maximum, is approximately 30 ksi.

During the initial crack formation stage, the presence of residual stress certainly adds to the level of mean stress, but not to the cyclic stress that is the driving force for fatigue crack growth. This distribution indicates that at about 20% penetration, the residual stress changes from tension to compression. The residual stress will be automatically relieved by crack growth since the crack face becomes the free surface. At the onset of crack growth, the effect of residual stress will diminish with increased crack depth and becomes completely inconsequential when it reaches 20% of wall thickness.

Effect of Flow Induced Vibrations on Safe-End Cracking

Flow induced vibrations have two potential effects on cracking of the weld between the piping and the safe-end. The first is a potential mechanical effect that could cause stress cycling in the safe-end weld. The second is more complex in that flow induced loading can contribute to creation of a gap at the thermal sleeve inlet, possibly allowing hot water to enter the pipe/safe-end region during low flow conditions.

Effect of Flow Induced Vibrations on Stresses at the Nozzle/Safe End Weld

There are two potential mechanical loadings on the end of the thermal sleeve. The first mechanical loading that can occur is a drag load. Using the dimensions for the Unit 2/3 thermal sleeve that extend into the flow stream (1.75″ OD by about 3.375 inches), the expected velocity of 47 ft/sec and a bounding drag coefficient of 1.2, the drag load is estimated to be less than 76 lbs. Assuming that this load is applied at the end of the thermal sleeve, this creates an applied moment at the center of the thermal sleeve contact area of 1.12 in-kips. This assumes that none of the loading is transferred into the bore of the reactor coolant piping through the thermal sleeve collar.

The stiffness of the safe-end to nozzle connection is much greater than that of the attached piping, so most of the applied moment will be transferred into the reactor coolant piping nozzle and there will be negligible loading transferred into the safe-end to pipe weld. The moment of inertia of the safe-end to nozzle connection is 6.58 in^4 with a length of about 6 inches. The safe-end and attached pipe has a moment of inertia of 2.53 in^4 . Assuming that the piping is fixed at the connection to the adjacent valve (distance from safe end to valve of 24 inches), the relative stiffness of the load path to the nozzle would be about 10 (6.58/6)/(2.53/24). Thus, it is estimated that no more than 1/10th of the load could be transmitted to the safe-end weld (This ratio was confirmed with a simplified beam analysis). The resulting extreme fiber stress on the 2.875″ OD by 0.375″ thick piping would be 0.069 ksi. This loading is expected to be quasi-steady, but even if it cycled, it would be negligible from the standpoint of fatigue usage and crack growth.

The second mechanical loading is that due to vortex shedding. This results in potential lateral vibration of the thermal sleeve. Although the lateral loading is a strong function of relationship between the vortex shedding frequency and the natural frequency of the structure, the lateral loading is significantly less than the drag load. The vortex shedding

frequency for a cylinder in cross flow may be determined using the Strouhal Number (Per Ref. 3). The Reynolds Number for the cylinder cross flow is on the order of 4×10^6, where the Strouhal number is approximately .25. This results in a vortex shedding frequency of about 80 Hz. Based on Ref. 2, the natural frequency of the thermal sleeve is above 200 Hz. Therefore, as long as the thermal sleeve is tight, there should be no significant amplification of the lateral loads.

However, if the thermal sleeve were to loosen (e.g., by thermal effects), the stiffness and the natural frequency of the thermal sleeve could reduce such that the natural vibrational frequency of the thermal sleeve and the vortex shedding frequency could coincide. In this case, there could be a resonant condition that would result in considerably higher lateral loadings. The B&W Owner's Group report estimated that the vortex shedding lateral load would be less than 1300 lb. if resonance were to occur. This would result in the safe end stress computed above to be 1.2 ksi. This is still a negligible stress from the standpoint of initiating or driving a crack.

Note that the above resonance loading is somewhat hypothetical. If the thermal sleeve resonance frequency is reduced due to loosening of the sleeve, it is expected that there would be downstream contact of the collar with the nozzle bore. This would have the effect of restricting the lateral movement of the sleeve due to rubbing between the collar and the cladding on the nozzle bore. This is born out by the failure analysis of the damaged thermal sleeves for both Units 2 and 3.

Loosening of Sleeve and Potential Thermal Effects

As noted above, flow induced loadings can have an effect in further loosening the thermal sleeve. Results of the laboratory examination have shown that the loosened thermal sleeve results in wear of the thermal sleeve support collar, the thermal sleeve roll expansion area and adjacent safe-end. There is evidence to suggest that much of the wear is a result of lateral loading that is probably due to vortex shedding. This would suggest that any loosening of the thermal sleeve in the safe-end (due to thermal effects) would lead to further loosening due to the effects of flow induced loadings.

Thus, the flow induced loadings can contribute to opening up of the gap between the thermal sleeve and the safe end.

Question 2a:

Provide a history of all examinations (volumetric, surface and visual) of the pipe/safe-end weld and adjacent piping and of the radiographic examination of the thermal sleeves in each unit of Oconee.

Response:

The examination history for the three Oconee units was submitted to the staff in Duke letters dated May 7, 1997, May 8, 1997, and May 12, 1997. Table 1 provides additional detail regarding the inspection results as discussed during the May 14, 1997, meeting with the staff.

Question 4e:

Based on the root cause of the cracking, provide an assessment of the time to initiate and propagate a crack through wall of the piping.

Response:

The failure analysis of the 2A1 MU cracked pipe/safe end weld indicates the root cause as being high cycle thermal fatigue, due to thermal mixing of makeup and reactor coolant fluids. The fracture surface revealed the fatigue striations spaced at no more than 1 micron (10^{-6} meter), although the striations were not necessarily evenly spaced, indicating there is probably a spectrum of cyclic events that drove the crack through the wall of the pipe. It is believed that the through-wall propagation of the crack occurred over a long period of time (indicated by a heavily oxidized crack surface).

Based on the ASME Code, Section XI, Appendix C fatigue crack growth curve for austenitic stainless steel, a striation spacing of 1 micron correlates to an alternating crack driving stress intensity of about 40 ksi-in $^{1/2}$. This may be considered to be an upper bound, since the striation spacing is less than 1 micron. In fact, based on the results of the failure analysis, the crack driving stress intensity factor could have contributions as low as 5 ksi-in $^{1/2}$, which is the threshold for fatigue crack growth.

Turbulent penetration of reactor coolant into the MU nozzle could cause fluid temperature variations between 500 °F and 100°F at the unsteady interface between the reactor coolant and makeup fluids. The location of this interface along the MU nozzle would depend on the makeup flow rate. There are currently no measured data or analytical predictions available to provide thermal boundary

conditions for a fracture analysis, although computational fluid dynamics (CFD) is underway. However, in order to pursue the theory that turbulent penetration could reach the weld region, a simplified fracture analysis has been performed to correlate thermal mixing with fatigue crack growth, using a worst case temperature change of 400°F. Other sources of significant temperature variation could be: (1) back-flow of reactor coolant into the makeup pipe during partial pump operation and with low normal makeup, and (2) reactor coolant leakage through annular gaps between the thermal sleeve and nozzle.

Examination of the crack surface revealed a circumferential inside surface flaw, extending about 30% into the wall over an arc length of approximately 180°. Over the remainder of the circumference, the flaw depth gradually increased until it became through wall over a 77° arc length. An initial flaw depth of 0.050″ was used in the simplified fracture analysis as a starting point for tracking fatigue crack growth through the pipe wall.

The fracture analysis considered a very conservative 400°F change in fluid temperature (from 500°F to 100°F) over a 12 second period as a source of thermal loading for the pipe. As such, this represents the cooling portion of the cyclic event, whereas any associated heating during a recovery portion would be expected to produce compressive stress that would not contribute to crack driving stress intensity factors. One-dimensional transient heat transfer produced a through-wall thermal gradient (with an elastic surface stress of 50 ksi) that results in a stress intensity factor of 20 ksi-in $^{1/2}$ for the 0.050″ initial flaw depth. Because of decreasing thermal stress through the pipe wall, the maximum stress intensity factor for this postulated transient is 23 ksi-in $^{1/2}$ at a depth equal to 43% of the wall thickness. These stress intensity factors are within the 5 to 40 ksi-in $^{1/2}$ range indicated by the fatigue striations on the 2A1 cracked surface. It is estimated that it would take about 25,000 cycles to propagate a crack 30% through-wall, and about 100,000 cycles to go 80% through-wall.

Using an austenitic material fatigue curve without any ASME Code safety factors, it is estimated that it would take more than 1,000,000 cycles for a 50 ksi surface stress to initiate a crack. Thus, a long incubation period could exist.

To assess the potential for attaining this number of cycles, a review of plant operating history was begun. This assessment is preliminary due to the many uncertainties in the number of times the necessary and sufficient conditions required for the thermal phenomena to have occurred, the duration of each event, and the actual thermal cycling associated with each event. As such this assessment does not prove that the required number of cycles to

initiate a crack and drive the crack through the wall of the material have been attained.

It is believed the low flow phenomena occurs primarily during heatup, cooldown and during a full power trip. Additional necessary and sufficient conditions include only one of the two "A" Reactor Coolant Pumps in operation, leakage through RCS/HPI boundary check valve (HP-126 or HP-127), and sufficient temperature in the Reactor Coolant System. Since the original plant startup, Unit 1 has experienced 95 heatups and cooldowns and additionally, 61 trips from full power operation. Again, based on plant operating history, it is conservative to assume that the necessary and sufficient conditions noted above could potentially occur on six occasions during each of the heatups, cooldowns and trips. A key conservatism in this assumption is that the check valves are leaking on every startup, shutdown, and trip. Thus, if the check valves are leaking half the time, the total number of cycles would be reduced in half. Based on thermocouple data recorded for Unit 1 at locations adjacent to 1HP-127, it is estimated that the necessary and sufficient conditions could have existed 6 hours per occasion. Given an estimate of three thermal cycling events occurring per minute, the total estimated thermal cycles are as follows:

(95 HU/CD + 61 TRIPS) x
(6 occurrences of necessary conditions / HU/CD and TRIP) x
(6 hrs / occurrence) x (60 min./ hr.) x (3 cycles / min.) =
1,010,880 cycles or approximately 1,000,000 cycles.

The above information provides an assessment of the frequency and duration of plant conditions required to initiate a crack. It does not provide the number of cycles required to drive the crack through wall. As noted, this number is an estimate and thus the prediction of a time-to-failure remains speculative until a source and associated frequency of the postulated thermal mixing is identified. Additional analysis is being performed using computational fluid dynamics (CFD) that will evaluate the various mechanisms that contribute to the thermal cycling. This analysis will attempt to identify the frequency of the loading and better qualify time to initiate and propagate a crack through the wall of the piping.

Question 4(f):

Provide a revised leak-before-break analysis based on the complex flaw geometry as found in the cracked and leaking pipe/safe end weld.

Answer:

It is understood that leak-before-break methods are inappropriate for small bore piping, however, the intent of this evaluation is to show that margin exists between a crack size exhibiting 10 gpm leakage and the critical flaw size.

Leak-before-break analysis for the pipe/safe end has been performed using the PICEP Code developed by EPRI for finite-length, through-wall circumferential flaws using normal operating loads. Crack models are not available to perform leak-before-break analysis for the complex flaw geometry identified for the Oconee-2 leaking nozzle. As an alternative, PICEP-based leak-before-break analysis has been repeated for varying pipe wall thickness to approximate the geometry of the Oconee-2 flaw. The normal operating conditions and geometry are presented in Table 2 and the material properties are presented in Table 3. The actual loads on the nozzle for Unit 1 are provided in Table 4. The results of the leak-before-break analysis is presented in Table 5.

Table 2 Normal Operating Conditions and Geometry

Temperature	= 100 F
Pressure	= 2300 psi
Outside Diameter	= 2.875 in
Thickness	= 0.375 in
Material	= 316 Stainless Steel

Table 3 Material Properties

Material	: A-376 TP316
Yield Stress	: 30 ksi
Ultimate Stress	: 75 ksi
Flow Stress	: 52.5 ksi ((Yield + Ultimate)/2)
Young's Modulus	: 28.3E6 psi
Ramberg-Osgood Parameters	
alpha	: 3.46
n	: 5.68

Table 4 Unit 1 Applied Nozzle Loads from HPI Piping

Loading Condition	Ma (ft-lbs)	Mb (ft-lbs)	Mc (ft-lbs)	Mr (ft-lbs)
Weight	145	61	-269	
Thermal	288	225	-1035	
Normal Operating	433	286	-1304	1403

The following leakage size cracks and critical flaw sizes may be seen with decreasing thicknesses assuming the normal operating external loads.

Table 5 Actual Operating Load Results

Thickness (in)	Leakage Size Crack (in) @ 10 gpm	Critical Crack Length(in)	Margin Ratio
0.375	2.73	3.94	1.4
0.25	2.29	3.54	1.6
0.2	2.03	3.21	1.6

To investigate the sensitivity of critical crack length results for the weld metal, TIG weld properties were used with the loading case shown above (Table 4) and 0.375 in. thickness. The critical crack length found for that case is 4.44 in. compared to 3.94 in. calculated for the base metal with the same loads. The material properties used for the TIG weld are shown in Table 6 below.

Table 6 Material Properties

Material	: TIG Weld
Yield Stress	: 68.9 ksi
Ultimate Stress	: 79.7 ksi
Young's Modulus	: 28.3E6 psi
Ramberg-Osgood Parameters	
alpha	: 6.25
n	: 6.8

Table 1
Oconee Unit 1
Inspections Associated with 1A1 Discharge Make Up Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
7	E5.01.001	1PDA1-47	1A1 HPI Nozzle Safe-End Base Material PC. 47	UT	Clear	Generic Letter 85-20
7	E5.01.002	1PDA1-47	1A1 HPI Nozzle Safe-End Base Material PC. 47	RT	Clear	Generic Letter 85-20
8	B05.051.002A	1PDA1-11	1A1 Nozzle to Safe-End weld	PT	Clear	Section XI
9	E04.001.001	1PDA1-47	1A1 HPI Nozzle Safe-End Base Material PC. 47	UT	Recordable	Generic Letter 85-20
9	E04.001.001A	1PDA1-47	1A1 HPI Nozzle Safe-End Base Material PC. 47	RT	Clear	Generic Letter 85-20
10	B09.032.019	1PDA1-10	1A1 HPI Nozzle to 1A1 RCP Discharge Piping (Branch Weld)	MT	Clear	Section XI
11	E04.001.001	1PDA1-47	1A1 HPI Nozzle Safe-End Base Material PC. 47	UT	Clear	Generic Letter 85-20
11	E04.001.001A	1PDA1-47	1A1 HPI Nozzle Safe-End Base Material PC. 47	RT	Clear.	Generic Letter 85-20
16	B05.140.003	1-PDA1-11	1A1 Nozzle to Safe-End weld	PT	Clear	Section XI

Table 1 (continued)
Oconee Unit 1
Inspections Associated with 1A2 Discharge Make Up Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
7	E5.01.003	1PDA2-47	1A2 HPI Nozzle Safe-End Base Material PC. 47	UT	Clear	Generic Letter 85-20
7	E5.01.004	1PDA2-47	1A2 HPI Nozzle Safe-End Base Material PC. 47	RT	Clear	Generic Letter 85-20
9	E04.001.002	1PDA2-47	1A2 HPI Nozzle Safe-End Base Material PC. 47	UT	Recordable	Generic Letter 85-20
9	E04.001.002A	1PDA2-47	1A2 HPI Nozzle Safe-End Base Material PC. 47	RT	Clear	Generic Letter 85-20
11	B09.032.020	1PDA2-10	1A2 HPI Nozzle to 1A2 RCP Discharge Piping (Branch Weld)	MT	Clear	Section XI
11	B05.051.005	1PDA2-11	1A2 Nozzle to Safe-End weld	PT	Clear	Section XI
11	E04.001.002	1PDA2-47	1A2 HPI Nozzle Safe-End Base Material	UT	Clear	Generic Letter 85-20
11	E04.001.002A	1PDA2-47	1A2 HPI Nozzle Safe-End Base Material	RT	Clear	Generic Letter 85-20
13	B09.021.060	1-51A-11-85A	Pipe to 1A2 Safe-End weld	PT	Clear	Section XI

Table 1 (continued)
Oconee Unit 1
Inspections Associated with 1B1 Discharge HPI Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
7	E5.01.005	1PDB1-47	1B1 HPI Nozzle Safe-End Base Material PC. 47	UT	Clear	Generic Letter 85-20
7	E5.01.006	1PDB1-47	1B1 HPI Nozzle Safe-End Base Material PC. 47	RT	Clear	Generic Letter 85-20
9	E04.001.003	1PDB1-47	1B1 HPI Nozzle Safe-End Base Material PC. 47	RT	Clear	Generic Letter 85-20
11	B09.032.021	1PDB1-10	1B1 HPI Nozzle to 1B1 RCP Discharge Piping (Branch Weld)	MT	Clear	Section XI
11	E04.001.003	1PDB1-47	1B1 HPI Nozzle Safe-End Base Material	RT	Clear	Generic Letter 85-20
11	E07.001.003	1-51A-11-89	Pipe to 1B1 Safe-End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	E07.001.004	1-51A-11-90	Pipe to Valve 1HP-153 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	E07.001.005	1PDB1-11	1B1 Nozzle to Safe-End weld & 1 inch base metal	UT	Recordable	NRC Bulletin 88-08
13	B09.021.009A	1-51A-11-89	Pipe to 1B1 Safe-End weld	PT	Clear	Section XI
13	B05.051.008	1PDB1-11	1B1 Nozzle to Safe-End weld	PT	Clear	Section XI
13	E07.001.003	1-51A-11-89	Pipe to 1B1 Safe-End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
13	E07.001.004	1-51A-11-90	Pipe to Valve 1HP-153 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
16	G04.001.003	1-51A-11-89	Pipe to 1B1 Safe-End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
16	G04.001.004	1-51A-11-90	Pipe to Valve 1HP-153 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Table 1 (continued)
Oconee Unit 1
Inspections Associated with 1B2 Discharge HPI Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
7	E5.01.007	1PDB2-47	1B2 HPI Nozzle Safe-End Base Material PC. 47	UT	Clear	Generic Letter 85-20
7	E5.01.008	1PDB2-47	1B2 HPI Nozzle Safe-End Base Material PC. 47	RT	Clear .8125 gap on nozzle side	Generic Letter 85-20
9	E04.001.004	1PDB2-47	1B2 HPI Nozzle Safe-End Base Material PC. 47	RT	Clear .8125 gap on nozzle side	Generic Letter 85-20
11	E04.001.004	1PDB2-47	1B2 HPI Nozzle Safe-End Base Material	RT	Clear .875 gap on nozzle side	Generic Letter 85-20
11	E07.001.001	1-51A-11-87	Pipe to 1B2 Safe-End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	E07.001.002	1-51A-11-88	Pipe to Valve 1HP-152 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	E07.001.006	1PDB2-11	1B2 Nozzle to Safe-End weld & 1 inch base metal	UT	Recordable	NRC Bulletin 88-08
12	B09.021.008	1-51A-11-87	Pipe to 1B2 Safe-End weld	PT	Clear	Section XI
13	B09.021.009	1-51A-11-88	Pipe to Valve 1HP-152 weld	PT	Clear	Section XI
13	B09.032.022	1PDB2-10	1B2 HPI Nozzle to 1B2 RCP Discharge Piping (Branch Weld)	MT	Clear	Section XI
13	B05.051.011	1PDB2-11	1B2 Nozzle to Safe-End weld	PT	Clear	Section XI
13	E07.001.001	1-51A-11-87	Pipe to 1B2 Safe-End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
13	E07.001.002	1-51A-11-88	Pipe to Valve 1HP-152 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Table 1 (continued)
Oconee Unit 1
Inspections Associated with 1B2 Discharge HPI Nozzle

16	G04.001.001	1-51A-11-87	Pipe to 1B2 Safe-End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
16	G04.001.002	1-51A-11-88	Pipe to Valve 1HP-152 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Definitions:
Recordable = Indication seen was a geometric reflector and not a flaw.
Clear = No indications

Note: All of the radiographs for the Generic Letter 85-20 items have been re-reviewed during May of 1997, by the NDE Level III RT Examiner. In those instances where the NDE Level III RT Examiner identified that gaps were present on the original radiographs, the dimension and location is recorded in the Inspection Results column. In all cases where gaps were present, the thermal sleeves were still located in their proper positions. When "Clear" is mentioned and no dimension and location is recorded in the Inspection Results column of this document, this means that there were no recordable or rejectable conditions identified during the original and second reviews of the radiographs.

Table 1 (continued)
Oconee Unit 2
Inspections Associated with 2A1 Discharge Make Up Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
6	E5.001.001	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
6	E5.001.002	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
7	B05.051.002A	2PDA1-11	2A1 Nozzle to Safe-End weld	PT	Clear	Section XI
7	E04.001.001	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
7	E04.001.001A	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
8	E04.001.001	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
8	E04.001.001A	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
9	E04.001.001	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
9	E04.001.001A	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
10	E04.001.001	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
10	E04.001.001A	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
11	B09.021.101	2-51A-39.3-44	Pipe to 2A1 Safe-End weld	PT	Clear	Section XI
15	B05.140.004	2PDA1-11	2A1 Nozzle to Safe-End weld	PT	Clear	Section XI

Table 1 (continued)
Oconee Unit 2
Inspections Associated with 2A1 Discharge Make Up Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
15	B09.021.040	2-51A-39-46	Pipe to Valve 2HP-127 weld	PT	Clear	Section XI
15	G02.001.001	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
15	G02.001.001A	2PDA1-47	2A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .5" gap on pipe side and 1.25" gap on nozzle side	Generic Letter 85-20

Table 1 (continued)
Oconee Unit 2
Inspections Associated with 2A2 Discharge Make Up Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
6	E5.001.003	2PDA2-47	2A2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
6	E5.001.004	2PDA2-47	2A2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear 1.125" gap on nozzle side	Generic Letter 85-20
8	E04.001.002	2PDA2-47	2A2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
8	E04.001.002A	2PDA2-47	2A2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear 1.5" gap on nozzle side	Generic Letter 85-20
10	E04.001.002	2PDA2-47	2A2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
10	E04.001.002A	2PDA2-47	2A2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear 1.25" gap on nozzle side	Generic Letter 85-20
12	B05.051.005	2PDA2-11	2A2 Nozzle to Safe-End weld	PT	Clear	Section XI
12	B09.021.108	2-51A-39.3-87A	Pipe to 2A2 Safe-End weld	PT	Clear	Section XI
15	G02.001.002	2PDA2-47	2A2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
15	G02.001.002A	2PDA2-47	2A2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear 1.25" gap on nozzle side	Generic Letter 85-20

Table 1 (continued)
Oconee Unit 2
Inspections Associated with 2B1 Discharge HPI Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
6	E5.001.005	2PDB1-47	2B1 HPI Nozzle Safe End Base Metal PC.47	UT	Clear	Generic Letter 85-20
6	E5.001.006	2PDB1-47	2B1 HPI Nozzle Safe End Base Metal PC.47	RT	Clear	Generic Letter 85-20
7	E04.001.003	2PDB1-47	2B1 HPI Nozzle Safe End Base Metal PC.47	RT	Clear	Generic Letter 85-20
8	E04.001.003	2PDB1-47	2B1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
9	B05.051.008	2PDB1-11	2B1 Nozzle to Safe-End weld	PT	Clear	Section XI
9	E04.001.003	2PDB1-47	2B1 HPI Nozzle Safe End Base Metal PC.47	RT	Clear .5" gap on pipe side	Generic Letter 85-20
10	B09.032.007	2PDB1-10	2B1 HPI Nozzle to 2B1 RCP Discharge Piping (Branch Weld)	MT	Clear	Section XI
10	E04.001.003	2PDB1-47	2B1 HPI Nozzle Safe End Base Metal PC.47	RT	Clear .5" gap on pipe side	Generic Letter 85-20
10	E07.001.001	2-51A-39-90C	Pipe to 2B1 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
10	E07.001.002	2-51A-39-90B	Pipe to Pipe weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
10	E07.001.003	2-51A-39-91	Pipe to Valve 2HP-153 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
10	E07.001.007	2PDB1-11	2B1 Nozzle to Safe-End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	B09.021.114	2-51A-39.3-90C	Pipe to 2B1 Safe-End weld	PT	Clear	Section XI
12	E07.001.001	2-51A-39-90C	Pipe to 2B1 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
12	E07.001.002	2-51A-39-90B	Pipe to Pipe weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Table 1 (continued)
Oconee Unit 2
Inspections Associated with 2B1 Discharge HPI Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
12	E07.001.003	2-51A-39-91	Pipe to Valve 2HP-153 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
15	G02.001.003	2PDB1-47	2B1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .5" gap on pipe side	Generic Letter 85-20
15	G04.001.001	2-51A-39-90C	Pipe to 2B1 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
15	G04.001.002	2-51A-39-90B	Pipe to Pipe weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
15	G04.001.003	2-51A-39-91	Pipe to Valve 2HP-153 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Table 1 (continued)
Oconee Unit 2
Inspections Associated with 2B2 Discharge HPI Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
6	E5.001.007	2PDB2-47	2B2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
6	E5.001.008	2PDB2-47	2B2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
8	E04.001.004	2PDB2-47	2B2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
8	E04.001.004A	2PDB2-47	2B2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
10	B09.032.008	2PDB2-10	2B2 HPI Nozzle to 2B2 RCP Discharge Piping (Branch Weld)	MT	Clear	Section XI
10	E04.001.004	2PDB2-47	2B2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
10	E04.001.004A	2PDB2-47	2B2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
10	E07.001.004	2-51A-39-92A	Pipe to 2B2 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
10	E07.001.005	2-51A-39-92B	Pipe to Pipe weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
10	E07.001.006	2-51A-39-93	Pipe to Valve 2HP-152 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
10	E07.001.008	2PDB2-11	2B2 Nozzle to Safe-End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	B05.051.011	2PDB2-11	2B2 Nozzle to Safe-End weld	PT	Clear	Section XI
12	B09.021.122	2-51A-39.3-92A	Pipe to 2B2 Safe-End weld	PT	Clear	Section XI
12	E07.001.004	2-51A-39-92A	Pipe to 2B2 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
12	E07.001.005	2-51A-39-92B	Pipe to Pipe weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Table 1 (continued)
Oconee Unit 2
Inspections Associated with 2B2 Discharge HPI Nozzle

12	E07.001.006	2-51A-39-93	Pipe to Valve 2HP-152 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
15	G02.001.004	2PDB2-47	2B2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
15	G02.001.004A	2PDB2-47	2B2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
15	G04.001.004	2-51A-39-92A	Pipe to 2B2 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
15	G04.001.005	2-51A-39-92B	Pipe to Pipe weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
15	G04.001.006	2-51A-39-93	Pipe to Valve 2HP-152 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Definitions:
Recordable = Indication seen was a geometric reflector and not a flaw.
Clear = No indications

Note: All of the radiographs for the Generic Letter 85-20 items have been re-reviewed during May of 1997, by the NDE Level III RT Examiner. In those instances where the NDE Level III RT Examiner identified that gaps were present on the original radiographs, the dimension and location is recorded in the Inspection Results column. In all cases where gaps were present, the thermal sleeves were still located in their proper positions. When "Clear" is mentioned and no dimension and location is recorded in the Inspection Results column of this document, this means that there were no recordable or rejectable conditions identified during the original and second reviews of the radiographs.

Table 1 (continued)
Oconee Unit 3
Inspections Associated with 3A1 Discharge Make Up Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
7	E5.01.013	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Recordable	Generic Letter 85-20
7	E5.01.014	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .25" gap on nozzle side	Generic Letter 85-20
8	E04.001.001	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
8	E04.001.001A	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .5625" gap on pipe side and .75" gap on nozzle side	Generic Letter 85-20
9	E04.001.001	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
9	E04.001.001A	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .5625" gap on pipe side and .75" gap on nozzle side	Generic Letter 85-20
10	E04.001.001	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
10	E04.001.001A	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .625" gap on pipe side and 1" gap on nozzle side	Generic Letter 85-20
11	B05.051.002A	3PDA1-11	3A1 Nozzle to Safe-End weld	PT	Clear	Section XI
11	E04.001.001	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
11	E04.001.001A	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .5625" gap on pipe side and .875" gap on nozzle side	Generic Letter 85-20

Table 1 (continued)
Oconee Unit 3
Inspections Associated with 3A1 Discharge Make Up Nozzle

13	B09.021.108	3-51A-63-36	Pipe to Valve 3HP-127 weld	PT	Clear	Section XI
13	B09.021.109	3-51A-63-40	Pipe to 3A1 Safe End weld	PT	Clear	Section XI
16	G02.001.001	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
16	G02.001.001A	3PDA1-47	3A1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear gap visible 100% through expansion area	Generic Letter 85-20

Table 1 (continued)
Oconee Unit 3
Inspections Associated with 3A2 Discharge Make Up Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
7	E5.01.015	3PDA2-47	3A2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
7	E5.01.016	3PDA2-47	3A2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
9	E04.001.002	3PDA2-47	3A2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
9	E04.001.002A	3PDA2-47	3A2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
10	B05.051.005	3PDA2-11	3A2 Nozzle to Safe-End weld	PT	Clear	Section XI
11	E04.001.002	3PDA2-47	3A2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
11	E04.001.002A	3PDA2-47	3A2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
13	B09.021.111	3-51A-64-23A	Pipe to Valve 3HP-126 weld	PT	Clear	Section XI
13	B09.021.112	3-51A-63-24A	Pipe to 3A2 Safe End weld	PT	Clear	Section XI
16	G02.001.002	3PDA2-47	3A2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
16	G02.001.002A	3PDA2-47	3A2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20

Table 1 (continued)
Oconee Unit 3
Inspections Associated with 3B1 Discharge HPI Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
7	E5.01.017	3PDB1-47	3B1 HPI Nozzle Safe End Base Metal PC.47	UT	Clear	Generic Letter 85-20
7	E5.01.018	3PDB1-47	3B1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear 1.125" gap on nozzle side	Generic Letter 85-20
8	E04.001.003	3PDB1-47	3B1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .9375" gap on nozzle side	Generic Letter 85-20
9	E04.001.003	3PDB1-47	3B1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .750" gap on nozzle side	Generic Letter 85-20
10	B05.051.008	3PDB1-11	3B1 Nozzle to Safe-End weld	PT	Clear	Section XI
10	E04.001.003	3PDB1-47	3B1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .625" gap on nozzle side	Generic Letter 85-20
11	E04.001.003	3PDB1-47	3B1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .250" gap on nozzle side	Generic Letter 85-20
11	E07.001.001	3-51A-61-43	Pipe to Valve 3HP-153 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	E07.001.002	3-51A-61-43C	Pipe to Pipe weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	E07.001.003	3-51A-61-44A	Pipe to 3B1 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	E07.001.006	3PDB1-11	3B1 Nozzle to Safe-End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
12	B09.021.119	3-51A-61-43	Pipe to Valve 3HP-153 weld	PT	Clear	Section XI
12	B09.021.120	3-51A-61-44A	Pipe to 3B1 Safe End weld	PT	Clear	Section XI
13	B09.032.004	3PDB1-10	3B1 HPI Nozzle to 3B1 RCP Discharge Piping (Branch Weld)	MT	Clear	Section XI
13	E07.001.001	3-51A-61-43	Pipe to Valve 3HP-153 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Table 1 (continued)
Oconee Unit 3
Inspections Associated with 3B1 Discharge HPI Nozzle

13	E07.001.002	3-51A-61-43C	Pipe to Pipe weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
13	E07.001.003	3-51A-61-44A	Pipe to 3B1 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
15	G04.001.003	3-51A-61-44A	Pipe to 3B1 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
16	G02.001.003	3PDB1-47	3B1 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .250" gap on nozzle side	Generic Letter 85-20
16	G04.001.002	3-51A-61-43C	Pipe to Pipe weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Table 1 (continued)
Oconee Unit 3
Inspections Associated with 3B2 Discharge HPI Nozzle

Refueling Outage	ISI Plan Item Number	Weld ID from ISI Plan	Configuration	Type of Insp.	Inspection Results	Inspection Requirements
7	E5.01.019	3PDB2-47	3B2 HPI Nozzle Safe-End Base Metal PC.47	UT	Clear	Generic Letter 85-20
7	E5.01.020	3PDB2-47	3B2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
8	E04.001.004	3PDB2-47	3B2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
9	E04.001.004	3PDB2-47	3B2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
10	E04.001.004	3PDB2-47	3B2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear .375" gap on nozzle side	Generic Letter 85-20
11	B09.021.124	3-51A-62-26	Pipe to 3B2 Safe End weld	PT	Clear	Section XI
11	E04.001.004	3PDB2-47	3B2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
11	E07.001.004	3-51A-62-25	Pipe to Valve 3HP-152 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	E07.001.005	3-51A-62-26	Pipe to 3B2 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
11	E07.001.007	3PDB2-11	3B2 Nozzle to Safe-End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
12	B05.051.011	3PDB2-11	3B2 Nozzle to Safe-End weld	PT	Clear	Section XI
13	B09.032.005	3PDB2-10	3B2 HPI Nozzle to 3B1 RCP Discharge Piping (Branch Weld)	MT	Clear	Section XI
13	E07.001.004	3-51A-62-25	Pipe to Valve 3HP-152 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
13	E07.001.005	3-51A-62-26	Pipe to 3B2 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08
15	G04.001.005	3-51A-62-26	Pipe to 3B2 Safe End weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Table 1 (continued)
Oconee Unit 3
Inspections Associated with 3B2 Discharge HPI Nozzle

16	G02.001.004	3PDB2-47	3B2 HPI Nozzle Safe-End Base Metal PC.47	RT	Clear	Generic Letter 85-20
16	G04.001.004	3-51A-62-25	Pipe to Valve 3HP-152 weld & 1 inch base metal	UT	Clear	NRC Bulletin 88-08

Definitions:
Recordable = Indication seen was a geometric reflector and not a flaw.
Clear = No indications

Note: All of the radiographs for the Generic Letter 85-20 items have been re-reviewed during May of 1997, by the NDE Level III RT Examiner. In those instances where the NDE Level III RT Examiner identified that gaps were present on the original radiographs, the dimension and location is recorded in the Inspection Results column. In all cases where gaps were present, the thermal sleeves were still located in their proper positions. When "Clear" is mentioned and no dimension and location is recorded in the Inspection Results column of this document, this means that there were no recordable or rejectable conditions identified during the original and second reviews of the radiographs.