

**North
Atlantic**

North Atlantic Energy Service Corporation
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The Northeast Utilities System

Ted C. Feigenbaum
Senior Vice President &
Chief Nuclear Officer

NYN-95081

October 16, 1995

United States Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

References: (a) Facility Operating License No. NPF-86, Docket No. 50-443
(b) NRC Generic Letter 90-05 "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping," June 15, 1990

Subject: Relief Request From ASME Code Section XI Requirements

Gentlemen:

North Atlantic Energy Service Corporation (North Atlantic) hereby requests, pursuant to NRC Generic Letter 90-05, relief from the ASME Boiler and Pressure Vessel Code Section XI requirements pursuant to 10CFR50.55a(g)(6)(i). The Enclosure provides a description of actions taken by North Atlantic to make temporary non-code repairs to a leak in the Service Water (SW) System line 1802-14-153-24". The SW System is a Class 3, moderate energy system. The non-code repair, a soft rubber gasket secured with a mechanical clamp, was completed at approximately 1530 on October 15, 1995. This repair successfully isolated the leak.

The leak is located in a cement lined 24-inch bypass line for Strainer SW-S-11, which is downstream of the ocean and cooling tower SW pumps and upstream of the Primary Component Cooling Water (PCCW), Secondary Component Cooling Water (SCCW), and Emergency Diesel Generator Water Jacket heat exchangers. Attachment 2 of the Enclosure depicts the leak location. Specifically, the leak is a 1/32-inch diameter through-wall flaw at a field weld connecting a straight section of 24-inch diameter pipe to a 24-inch diameter Tee fitting. The leak is approximately one gallon per hour. Ultrasonic examination has identified no additional degradation of this field weld. However, it must be noted that approximately 25% of this weld was not examined since weld preparation for ultrasonic examination was stopped immediately upon discovery of the through-wall leak. Preliminary augmented ultrasonic examinations performed to date on other welds with similar configurations and service environments were found to be acceptable.

It is not practical to isolate the leaking SW line to perform a code repair. A code repair on this line would require partial draindown of SW Train B, resulting in the inoperability of the two ocean SW pumps

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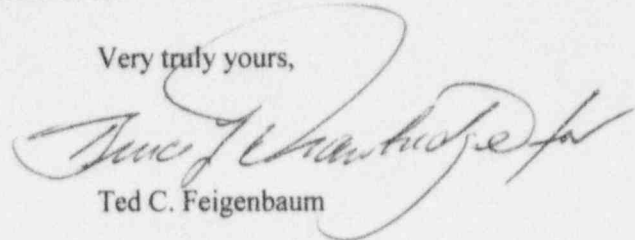
and the cooling tower SW pump within this train. Inoperability of an entire SW loop is allowed by the requirements of Technical Specification 3/4.7.4 "Service Water System/Ultimate Heat Sink" for up to 72 hours. However, due to system configuration, both trains of SW are needed to dissipate normal plant heat loads. Additionally, the allowed outage time may not be sufficient to perform a code repair, thus entry into Technical Specification 3.0.3 would be required and a plant shutdown would ensue.

Consistent with the provisions of Generic Letter 90-05, North Atlantic is submitting this relief request for a temporary non-code repair. Code repair of the degraded piping will be completed during the upcoming refueling outage, which is scheduled to begin on November 4, 1995. The Resident Inspector for Seabrook Station, Mr. David Mannai, was notified of this repair.

This letter and its Enclosure have been reviewed and approved by the Station Operation Review Committee (SORC). A supplement to this letter will be submitted by October 31, 1995 to provide the results of augmented examinations of SW welds with similar configuration, fabrication, and service environment.

Should you have any questions regarding this letter, please contact Mr. James M. Peschel, Regulatory Compliance Manager, at (603) 474-9521 extension 3772.

Very truly yours,



Ted C. Feigenbaum

TCF/JES:jes
Enclosure

cc: Mr. Thomas T. Martin
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Seabrook, NH 03874

North Atlantic
October 16, 1995

ENCLOSURE TO NYN-95081

SEABROOK STATION
FORM FOR RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

ACR # 95-316

DATE: 10/14/95

TIME: Approx. 1625

1.0 ORIGINATOR

1.1 DESCRIPTION OF FLAW

There is a thru wall flaw causing leakage on line 1802-14-153-24". The leak is at the field weld which connects line 1802-14 to line 1802-5-153-24" and is downstream of the normally closed "B" train strainer bypass valve SW-V66. (Refer to Attachment 1)

This leak is located in the Service Water Strainer Room at elevation 53' in the PAB. Since routine strainer basket cleaning is performed in this room, the area is very well drained. The flaw has an approximate dimension of 1/32" diameter. The leak rate is estimated to be less than one gallon per hour.

Piping/Component Drawing No.:

The piping is carbon steel with 3/8" thick cement lining as detailed on sketch 804998 of specification 248-2 (Refer to Attachment 2).

P&ID No.:

1-SW-B/D20795

1.2 IMPRACTICALITY OF CODE REPAIR

It was determined not practical to perform a code repair of the leaking SW line at this time. A code repair on this line would require partial draindown of SW Train "B", resulting in the inoperability of the two ocean SW pumps and the cooling tower pump within this train.

Inoperability of an entire SW Loop is allowed by Technical Specification 3/4.7.4a "Service Water System/Ultimate Heat Sink" for up to a 72 hour period. However, due to system configuration, both trains are needed to dissipate normal plant heat loads. Furthermore, the allowed outage time may not be sufficient to perform a code repair, thus entry into Technical Specification 3.0.3 would be required and a plant shutdown would ensue.

1.3 DESCRIPTION OF PROPOSED TEMPORARY REPAIR

A soft rubber gasket with mechanical clamp has been installed.

SEABROOK STATION
FORM FOR RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

1.4 SAFETY SIGNIFICANCE System Interaction Evaluation

Flooding:

There is a leak of less than one gallon per hour coming from the 1/32" diameter thru wall flaw in this 24" diameter field weld. Ultrasonic Examination has confirmed that there is no additional degradation at this field weld.

The leakage is well contained within the Service Water Strainer Room, elevation 53' of the PAB. More than adequate drainage exists to preclude flooding.

Jet Spray:

There are no safety related power supplies that could be disabled as a result of the jet spray from this flaw. Motor operated valves SW-V4 and V5, located in this room, have an active safety related function. The valves are at least 20 feet from the location of the leak and are well shielded by large pipe and grating from any spray, should it develop.

Loss of Flow:

Loss of SW thru this flaw is insignificant to the Service Water Pump or Cooling Tower Pump capacity to supply design flow during an accident combined with LOP. One Service Water Pump must supply 8,339 gpm or 11,360 gpm from one Cooling Tower Pump to satisfy design heat loads from ECCS and the Emergency Diesel Generator.

Other Interactions:

None

Failure Consequences

Total failure of this weld could result in SW "B" train inoperability. Because of system configuration, both trains of SW are needed to dissipate normal plant heat loads. Thus, a forced shutdown would commence.

System pressure loss via the postulated break would most likely cause a tower actuation signal to occur. Since this line is within the pressure boundary of the SW system when on the tower, cooling tower pump flow would degrade sufficiently to necessitate a shutdown of SW-P-110B.

There is no interaction with the SW "A" train which alone can accommodate design base heat loads.

SEABROOK STATION
FORM FOR RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

Impact to Safe Shutdown Capability

As described above, the SW "A" train would be unaffected by total failure of this "B" train weld. The "A" train alone is sufficient for safe shutdown decay heat removal heat loads or heat loads during a design base event with LOP.

1.5 ROOT CAUSE INVESTIGATION

Root Cause Description:

Localized flaw in the cement lining caused accelerated corrosion at this field weld.

Other Systems Affected:

None

1.6 AUGMENTED INSPECTION

Assessment of overall degradation of the affected system:

The leak is typical of localized cement lining flaws at field welds in the carbon steel SW piping. These leaks do not result from large areas of damage but from very localized wall loss.

An ultrasonic examination of the weld circumference was performed. The only wall loss reported is local to the flaw location. It should be noted that approximately 25% of this weld could not be examined because the weld preparation needed for UT was stopped upon discovery of the thru wall leak.

Additional examinations required (based on root cause) - specify number of inspection locations - also specify frequency of inspections: (ten most susceptible and accessible locations for high energy systems and five for moderate energy piping systems)

Preliminary Ultrasonic Examinations have been performed at five additional locations in the SW "B" train (Attachment 3):

- 24" shop weld at the strainer bypass Tee (upstream side)
- 24" shop weld at the strainer bypass Tee (downstream side)
- 24" shop weld in the strainer bypass (elbow below flaw location)
- 16" field weld at the 24"x16" Tee to the DG Heat Exchanger
- 24" field weld at an elbow downstream of SW-V-67

All additional locations evaluated were found acceptable. At least three additional field weld locations will be included in the augmented inspection plan. These locations and finalized UT results will be submitted in a supplement to this Relief Request.

SEABROOK STATION
FORM FOR RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

Description of areas selected for augmented inspection:

These locations will be of similar fabrication, configuration, and service environment.

2.0 STRESS ANALYSIS

2.1 DESIGN DETAILS

System: Service Water "B" train. In the bypass line for Strainer SW-S-11 and Downstream of valve SW-V-66.

Component: Field weld connecting a straight section of 24" diameter pipe and a 24 " diameter Tee fitting.

Component Size: 24" diameter cement lined carbon steel pipe.
 24"X24"x24" cement lined carbon steel Tee.

Nominal Wall Thickness: 0.375"

Safety Code Class: Class 3

Material: SA-105

Design Pressure: 150 psig

Design/Operating Temperature: 200/34-90 degrees F

Code Minimum Wall Thickness: 0.171"

2.2 FLAW CHARACTERIZATION

Flaw Description/Size: (i.e., flaw size, adjacent wall thickness, single/multiple flaw, total area examined, etc.)

The flaw is highly localized. The through wall portion of the flaw is approximately 1/32" diameter and the minimum adjacent wall thickness is 0.174".

Flaw Location: The flaw is located downstream of SW-V-66.

Method Examination: UT

Note: Approximately 25% of this weld could not be examined since weld prep. for UT was stopped immediately upon discovery of the thru wall leak)

SEABROOK STATION
FORM FOR RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

Flaw Type: Through wall flaw due to erosion/corrosion

Referenced UT Measurements: Attachment 3

2.3 FLAW EVALUATION SUMMARY

Method Used:

"Through-Wall Flaw" Approach (GL 90-05). This method considers a through wall flaw and evaluates the flaw stability by a linear elastic fracture mechanics methodology.

Results of Evaluation:

Loading conditions included dead weight, pressure, thermal, and seismic. All code stress equations were considered and determined to be acceptable. Stability of flaw was evaluated for all loading conditions and determined to be acceptable. Results of this evaluation are summarized below:

ASME III, SUBSECTION ND, STRESS EVALUATION			
DESIGN CONDITION	ACTUAL STRESS (PSI)	ALLOWABLE STRESS (PSI)	<u>ACTUAL</u> ALLOWABLE
Normal	2,932.	15,000.	0.20
Upset	8,223.	18,000.	0.46
Faulted	11,052.	27,000.	0.41

FLAW STABILITY CHECK		
STRESS INTENSITY FACTOR (KSI(IN) ^{1/2})		FACTOR OF SAFETY
ACTUAL	CRITICAL	CRITICAL/ACTUAL
5.24	35.0	6.68

2.4 FLAW MONITORING

Walkdown Frequency: (for leak monitoring)

At least once per week.

Frequency of Follow-up NDE: (for erosion rate assessment)

At least once every three months.



NOTES:
1) PIECE MARKS AND CODE DATA
PLATES ARE SHOP TACK WELDED
TO PIPE UNLESS OTHERWISE
INDICATED

1. SEE ISO *NA* FOR FIELD
INSTALL INSTRUCTIONS
2. SIZE *156*
3. MFG SID *ADME III CL3*
4. DESIGN PRESS *150*
5. DESIGN TEMP *UA*
POLYURETHANE ELASTOMER LINED
6. PIPE *SA-106 GR. B, S75*
POLY LINED W/PUW
7. FITTING *SA-218W SCH 40 FLG*
8. FLGINGS *SA-105, 150# W/PUW*
316 SS CORE, POLY ELASTOMER LINED
9. SEISMIC *CT. 1*
NON-DUCTILITY CLASS D


CIRCLED ITEMS INDICATE
CHANGES PER REVISION

TEST
SW-IT-04

SERVICE WATER

1-SW-1802-2

PUBLIC SERVICE CO. OF NEW HAMPSHIRE
SEABROOK STATION



SEABROOK STATION
United Engineers & Constructors

97A3

E-7000-TC - 8A1609/BGM

DECLARATION

1

Y8	STA
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Figure 1

4

BIP SW- M- 02
TEST SW-IT-04/IT TEST
TURNOVER - N/A

DIPPING IN ZONE
42C
TANK FARM

COST DATA INFORMATION WILL
NOT BE PROVIDED OR MAINTAINED
BY UELC ENGINEERING

Pullman Power Products
ELD INSTALLATION INSTRUCTIONS
SEABROOK STATION

PROCEDURE 11-1-BB-2
METAL - ROOT E7018
JIT E7018

ING ☒ CONSUM. INSERT N^2
SPLIT RING $3/2$ MIN $1/3$ 10^2 N^2 $1/2$

OF MIN. 50 ° DEFEND FIRST 2
 S OF MAX DEFENSE 5000 MIL PER
REMAINER
 O HEAT TEMP. NR

Q-MT# 202 RT# NF
1150902

B.W.

Fullman Power Products
ELED INSTALLATION INSTRUCTIONS
SEABROOK STATION

PROCEDURE NA
ETAL - ROOT

DATE _____
/T_____
ING CONSUM. INSERT_____

P SPLIT RING _____
OF MIN. _____

SO F MAX. _____
O HEAT TEMP. _____

1- T# RTB

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RED.
P.P.Q.A.
APPROVED

BY J. M. [illegible] DATE 03-16-08

NOTE
PROCESS SHEET PROGRAM

RMATION

REV
0

COM
DATE
DATE

453
AP BY
MA,
5/9

DATE	
TIME	

SPR.
HK'D. B
E
E

BY

ILD	June 8-10	
MMW	MJTG	7:30-8:30

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2

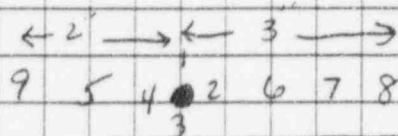
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ULTRASONIC THICKNESS EXAMINATION REPORT

LOCATION <u>LINE 1802</u> <u>SW-B-TRAIN</u>	SYSTEM <u>SW</u>	WORK REQUEST <u>N/A</u>																					
EXAMINATION AREA/RESULTS																							
DESCRIPTION OF EXAMINATION AREA AND RESULTS <u>CARBON STEEL, FITTINGS AND PIPE, SEE ATTACHED SHEETS</u> <u>FOR SPECIFIC RESULTS.</u> <u>SW-S-11 BYPASS LINE.</u> <u>UT PERFORMED PER DIRECTION OF ISS AND LOCATION SPECIFIED BY K. SATZ.</u>																							
SKETCH (Include constructions, components, extensions, etc.) <div style="text-align: right;"><input checked="" type="checkbox"/> ATTACHED</div>	EXAMINED <u>Steph. J. H.</u> LEVEL <u>II</u> DATE <u>10-14-95</u> EXAMINED <u>N/A</u> LEVEL <u>N/A</u> DATE <u>N/A</u>																						
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> EXAMINATION RESULTS <input type="checkbox"/> ACCEPTABLE <input checked="" type="checkbox"/> EVALUATION REQ'D </div>																						
	REVIEWED _____ LEVEL _____ DATE _____ REVIEWED <u>K. W. Satz</u> DATE <u>10/15/95</u> <div style="text-align: right; font-size: small;">Responsible Engineer</div>																						
INSTRUMENT DATA																							
INSTRUMENT: MFG/MODEL <u>STRESSTEL GRIDMIKE</u> GTE/SN <u>GTE 2644</u> <input type="checkbox"/> CRT <input type="checkbox"/> CRT/DIGITAL <input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> HORIZONTAL LINEARITY PERFORMED COMP SURFACE TEMP >125° <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES FLS No. _____ CAL DUE DATE _____																							
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td rowspan="3" style="width:15%;">CAL BLOCK MATL _____</td> <td style="width:15%;">THICKNESS</td> <td style="width:15%;">.1004</td> <td style="width:15%;">.8004</td> <td rowspan="3" style="width:15%;">TIME CHECKED</td> </tr> <tr> <td>FLS NO.</td> <td>FLS 6321</td> <td>FLS 6321</td> </tr> <tr> <td>Cal. Due Date</td> <td>11-1-96</td> <td>11-1-96</td> </tr> </table>		CAL BLOCK MATL _____	THICKNESS	.1004	.8004	TIME CHECKED	FLS NO.	FLS 6321	FLS 6321	Cal. Due Date	11-1-96	11-1-96	TRANSducer <u>SWR 10-15-95</u> <input checked="" type="checkbox"/> PITCH / CATCH <input checked="" type="checkbox"/> PULSE / ECHO MFG. <u>STRESSTEL</u> SER# <u>10229</u> SIZE <u>.250</u> FREQ. <u>5</u> MHz										
CAL BLOCK MATL _____	THICKNESS		.1004	.8004	TIME CHECKED																		
	FLS NO.		FLS 6321	FLS 6321																			
	Cal. Due Date	11-1-96	11-1-96																				
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td rowspan="5" style="width:15%;">CALIBRATION CHECK</td> <td style="width:15%;">INITIAL</td> <td style="width:15%;">.100</td> <td style="width:15%;">.800</td> <td style="width:15%;">2235</td> </tr> <tr> <td>INTERIM</td> <td>.101</td> <td>.799</td> <td>2300</td> </tr> <tr> <td>INTERIM</td> <td>.101</td> <td>.800</td> <td>2322</td> </tr> <tr> <td>INTERIM</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FINAL</td> <td>.099</td> <td>.799</td> <td>2345</td> </tr> </table>		CALIBRATION CHECK	INITIAL	.100	.800	2235	INTERIM	.101	.799	2300	INTERIM	.101	.800	2322	INTERIM				FINAL	.099	.799	2345	COUPLANT MFG. <u>ULTRAGEL II</u> BATCH # <u>092121</u>
CALIBRATION CHECK	INITIAL		.100	.800	2235																		
	INTERIM		.101	.799	2300																		
	INTERIM		.101	.800	2322																		
	INTERIM																						
	FINAL	.099	.799	2345																			
ENGINEERING EVALUATION <input type="checkbox"/> N/A <input type="checkbox"/> ATTACHED <input type="checkbox"/> SEE BELOW																							
EVALUATION/COMMENTS <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> ACCEPT <input type="checkbox"/> REPAIR/REPLACE </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>Responsible Engineer _____</div> <div>Date _____</div> </div>																							

ULTRASONIC THICKNESS EXAMINATION SKETCH

LOCATION B T101n SW at Tee ^{By 1453 11NP} SYSTEM SW WORK REQUEST _____



1	.450
2	.174
3	.352
4	.188
5	.200
6	.175
7	.184
8	.191
9	.316

180° from weld
thickness is in the
.350 and above

6" from hole .345 on weld
Page show no indication

SMT 10-15-95

ULTRASONIC THICKNESS EXAMINATION SKETCH

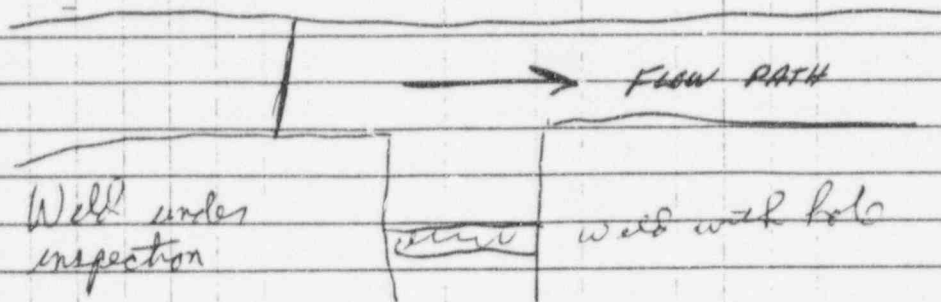
LOCATION

See Below

SYSTEM

SW

WORK REQUEST



Scan show low point as .407 on pipe
and .548 on weld. Set is 7.600
No deterioration found

SNIP 10-15-95

ULTRASONIC THICKNESS EXAMINATION SKETCH

LOCATION _____ SYSTEM _____ WORK REQUEST _____

FLOW PATH

Weld with hole

Weld under inspection

Note
Weld is painted
.511 is the thickness over weld, No deterioration found

SMT 10-15-95

ULTRASONIC THICKNESS EXAMINATION SKETCH

LOCATION <u>See Below</u>	SYSTEM <u>SW</u>	WORK REQUEST _____
---------------------------	------------------	--------------------

Weld with hole →

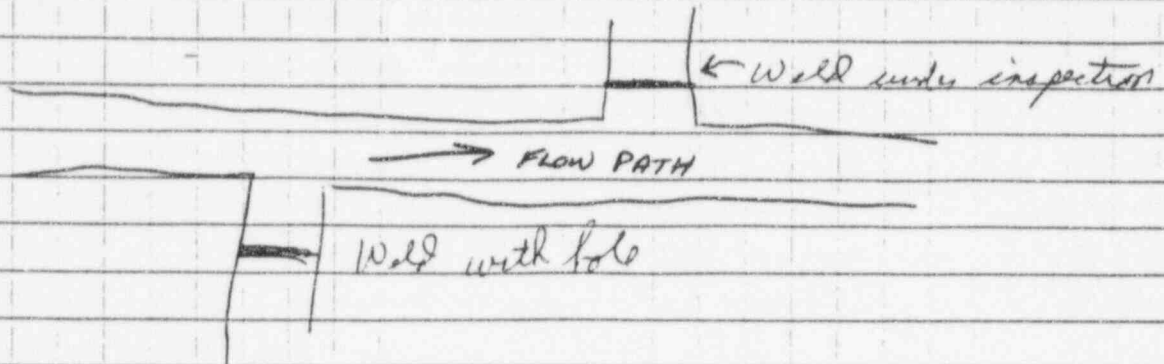
← Weld under inspection

Low point on Pipe is .403 and
weld is .442 No detection found.

5/11/95 10-2-95
SHE 10-098

ULTRASONIC THICKNESS EXAMINATION SKETCH

LOCATION 1802-1001 SYSTEM SW WORK REQUEST _____



General area lowest points

Pipe .362

Weld .313

tee \approx .500

No deformation found

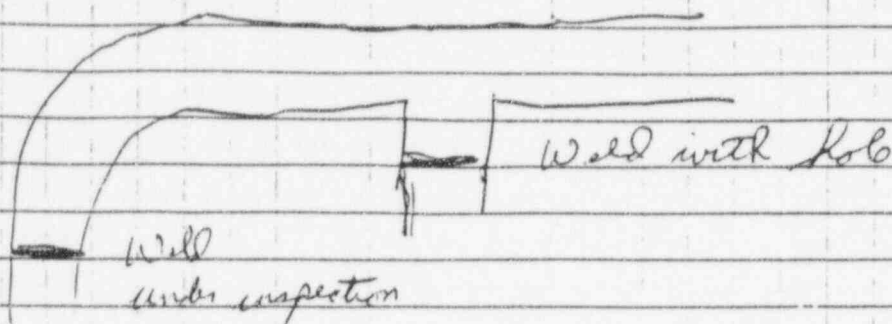
SMK 10-15-95

ATTACHMENT "A" TO C-S-1-45369
 SHP. 6 OF 7 REV. 1

ULTRASONIC THICKNESS EXAMINATION SKETCH

LOCATION 1802-FO301SYSTEM SLD

WORK REQUEST _____



General area scan is
 elbows .330
 weld .290

No deformation noted

Note

Subsurface indication interfering with UT
 yield found reading is .097.
 Indication most likely due to lack of
 fusion Area ~ 1 1/2" location is
 on upper elbow lower joint outside
 radius

SMP 10-15-95

ATTACHMENT "A" TO C-S-1-45269

PG. 70F7