

Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

William R. Lagergren, Jr.  
Site Vice President, Watts Bar Nuclear Plant

SEP 26 2001

10 CFR 50.55a

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555

Gentlemen:

In the Matter of )  
Tennessee Valley Authority ) Docket No.50-390

**WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - AMERICAN SOCIETY OF  
MECHANICAL ENGINEERS (ASME) SECTION XI, INSERVICE INSPECTION -  
REQUEST FOR RELIEF 1-RR-4**

In accordance with 10 CFR 50.55a(g)(5)(iii), TVA is requesting relief to use a temporary non-Code repair until the WBN Spring 2002 refueling outage. A through wall leak was discovered in a section of ASME Code Class 3 essential raw cooling water (ERCW) system piping. This six-inch nominal pipe size segment of piping is located between the ERCW Train B main discharge header and the Unit 1/Unit 2 interface isolation valve. This section of piping cannot be isolated without a plant shutdown to perform a Code repair. Due to the location of this leak, system operability is not affected.

This relief request is submitted in accordance with the guidance of NRC Generic Letter 90-05, "Guidance for Performing Temporary Non-Code Repair of Code Class 1, 2, and 3 Piping," except for the flaw evaluation methodology. TVA evaluated the operability of the ERCW piping with regards to: (1) the structural integrity of the pipe, (2) the effects of spray on adjacent equipment, and (3) ERCW flow rate requirements. TVA's evaluation for operability indicates that the ERCW system will perform its design basis function and that the surrounding equipment is not adversely affected by spray. The structural

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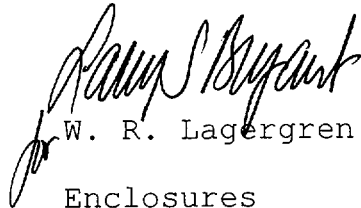
SEP 26 2001

integrity of the flawed piping was assessed and found acceptable using the flaw evaluation methodology described in ASME Code Case N-513. This method reflects the current industry consensus approach for evaluation of through-wall flaws. This Code Case is approved for use in 10 CFR 50.55a(b)(2)(xiii), provided certain restrictions are applied.

Enclosure 1 provides the justification for the Request for Relief, 1-RR-4. Enclosure 2 provides a list of commitments to be tracked until the non-Code repair is replaced with a Code repair. The WBN Code of Record is 1989 Edition (no addenda) of ASME Section XI.

If you have any questions concerning this request, please contact P. L. Pace at (423) 365-1824.

Sincerely,



W. R. Lagergren

Enclosures

cc (Enclosures):

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1  
FIRST 10-YEAR INTERVAL  
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SUMMARY:

A through wall leak was discovered in a section of American Society Of Mechanical Engineers (ASME) ASME Code Class 3 ERCW System piping. The leak is in a six-inch nominal pipe size (NPS) segment of piping that is located between the ERCW Train B main discharge header and isolation valve, 0-ISV-067-528-B, which is considered a Unit 1/Unit 2 interface valve (locked closed). This section of piping cannot be isolated for repair without a plant shutdown. Due to the location of this leak, system operability is not affected. A structural integrity evaluation has been performed on the piping and was found acceptable.

A Code repair plan was developed in accordance with the site repair and replacement program which required isolating the affected piping from the 30-inch NPS main discharge header using a freeze plugging method to allow repair welding. The repair plan was attempted; however, the freeze plug isolation method failed, thus preventing the ASME Code repair by welding. TVA also considered the use of the provisions of ASME Code Cases N-513, "Evaluation Criteria for Temporary Acceptance of flaws in Class 3 Piping," and N-523-1, "Mechanical clamping Devices for Class 2 and 3 Piping," as allowed in 10 CFR 50.55a, and determined that use of these Code Cases was not practical because of the circumstances of the pipe leak.

Because this segment of piping cannot be practically isolated without a plant shutdown to perform a Code repair, this request for relief is submitted in accordance with the guidance of NRC Generic Letter 90-05, "Guidance for Performing Temporary Non-Code Repair of Code Class 1, 2, and 3 Piping." This generic letter allows authorization for a temporary non-Code repair. Similar requests have been submitted to NRC for a temporary non-Code repair such as TVA's Sequoyah Nuclear Plant Unit 1 and 2 letter dated January 20, 1999, and an Oyster Creek request approved by NRC letter

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dated July 20, 2001. A Code repair or replacement is scheduled to be implemented during the Unit 1 Cycle 4 (U1C4) refueling outage in the Spring of 2002. This request for relief is submitted in accordance with 10 CFR 50.55a(g)(5)(iii) to authorize use of this temporary non-Code repair until the WBN U1C4 Spring 2002 refueling outage.

UNIT: WBN Unit 1

SYSTEM: Essential Raw Cooling Water

COMPONENTS: Six-inch NPS, Schedule 40, Carbon Steel Pipe

ASME CODE CLASS: 3

FUNCTION: This section of ERCW piping provides for discharge from the Unit 2 component cooling system flood-mode connections to Train B ERCW main discharge header. This section of piping is between the discharge header and valve 0-ISV-067-528-B which is considered a Unit 1/Unit 2 interface valve (locked closed) and is an isolated stagnant portion of the system. This area is identified on drawing 1-47W845-2, coordinates G-3 (FSAR Figure 9.2-2), and the examination sketch (see attached copies).

IMPRACTICAL CODE  
REQUIREMENTS:

An ASME, Section XI, Code repair or replacement is required to be performed in accordance with ASME, Section XI, 1989 Edition, IWA-4000, "Repair Procedures," or IWA-7000, "Replacement," respectively, in order to restore the system's structural integrity back to its original design requirements.

BASIS  
FOR RELIEF:

On July 28, 2001, a through wall leak was discovered in the ERCW system. The leak is located in a low energy six-inch NPS diameter carbon steel pipe between the ERCW Train B main discharge header and valve 0-ISV-067-528-B which cannot be isolated from the discharge header for repair. The design pressure and temperature for this section of piping is 35 pounds per square inch gauge (psig) and 130

## ENCLOSURE 1

### WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 FIRST 10-YEAR INTERVAL REQUEST FOR RELIEF 1-RR-4

degrees Fahrenheit (F). The water is stagnant in this section of the pipe. Problem Evaluation Report (PER) 01-012757-000 has been written to document this condition.

The leakage from the piping was characterized as a steady stream approximately  $\frac{1}{4}$  inch diameter. Since this is the last branch off the discharge header before leaving the Auxiliary Building, the leak does not affect system operability. Ultrasonic examinations were performed to determine structural integrity. As a stop gap measure to minimize spraying concerns, a clamp and rubber gasket were installed over the leak. At this time, no leakage is occurring.

A structural evaluation was performed in accordance with the provisions of ASME Code Case N-513 to address the structural integrity of the piping. The results of this evaluation determined an acceptable flaw length based on the provisions of Code Case N-513 criteria which ensures structural integrity. Acceptance criteria to maintain structural integrity has been developed to utilize in future evaluations. Based upon the above, TVA determined the structural integrity of the ERCW system is not impaired. The clamp was also evaluated for design loading conditions and was found acceptable.

Initially, it was determined that a weld repair would be attempted. A Code repair plan was developed in accordance with the site repair and replacement program which required isolating the affected piping from the discharge header using a freeze plugging method to allow repair welding. The repair plan was attempted on August 30, 2001; however, the freeze plug isolation method failed, thus preventing repair welding.

The requirements for applying NRC approved Code Case N-513 for evaluating and accepting the flaw without repair or replacement are met for this leak. However, the ERCW water from the leak would be routed to the Auxiliary Building

ENCLOSURE 1

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sump which requires processing as radioactive waste. This is considered unnecessary for ERCW system water. Use of Code Case N-523-1, for employing a mechanical clamping device was also considered. The design and material requirements do not provide an increase in safety over the temporary non-Code repair due to the low system pressure. A determination was then made to request relief for authorization to use a temporary non-Code repair in accordance with the guidance of Generic Letter 90-05.

The guidance of Generic Letter 90-05 is used except for the flaw evaluation method. The structural integrity of the flawed piping was assessed and found acceptable using the flaw evaluation method described in Code Case N-513 because this method reflects the current industry consensus approach for evaluation of through-wall flaws. This Code Case is approved for generic use by licensees as stated in 10 CFR 50.55a(b)(2)(xiii), provided certain restrictions are applied.

The preliminary root cause for the piping degradation is considered to be due to microbiological induced corrosion (MIC). An ultrasonic examination was performed one pipe diameter upstream and downstream of the leak for use in evaluating structural integrity. Since the root cause is considered to be MIC, no additional areas were examined because MIC cannot be reliably predicted as to its location. The leakage has not caused any detrimental flooding or spraying onto any adjacent equipment. The amount of leakage does not affect the system flow requirements.

PROPOSED  
TEMPORARY  
NON-CODE  
REPAIR:

At this time, TVA plans to leave the piping as is with a temporary non-Code repair using a clamp with rubber gasketing. The structural evaluation shows that this piping still has sufficient strength to perform its design function.

ENCLOSURE 1

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1  
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ALTERNATIVE  
REQUIREMENTS:

A weekly walkdown to assess the operability and any leakage through the temporary non-Code repair will be performed. Any changes which affect operability or structural integrity will be evaluated. An ultrasonic examination will be performed every three months to assess the piping degradation rate. Based upon the weekly walkdowns and ultrasonic examinations, an engineering evaluation will be performed to determine if further remedial measures or corrective actions are needed. An ASME Section XI repair or replacement will be performed before the completion of the U1C4 refueling outage which is currently scheduled in the Spring 2002.

JUSTIFICATION  
FOR GRANTING  
OF RELIEF:

A Code repair while in operation is impractical based upon the inability to isolate the segment of ERCW piping containing the leak. Based on the flaw evaluation and the proposed alternative requirements, the temporary non-Code repair provides an acceptable level of quality and safety. The ERCW system Train B is considered operable, although degraded, and thus is available for continued operation under the provision of Generic Letter 91-18, "Information to Licensees Regarding NRC Inspection Manual Section in Resolution of Degraded and Non-Conforming Conditions," dated October 8, 1997. Authorization to use the proposed alternative is requested per 10 CFR 50.55a(g)(5)(iii) until the repair or replacement is made in the Spring 2002 refueling outage.

TVA  
Office of Nuclear Power

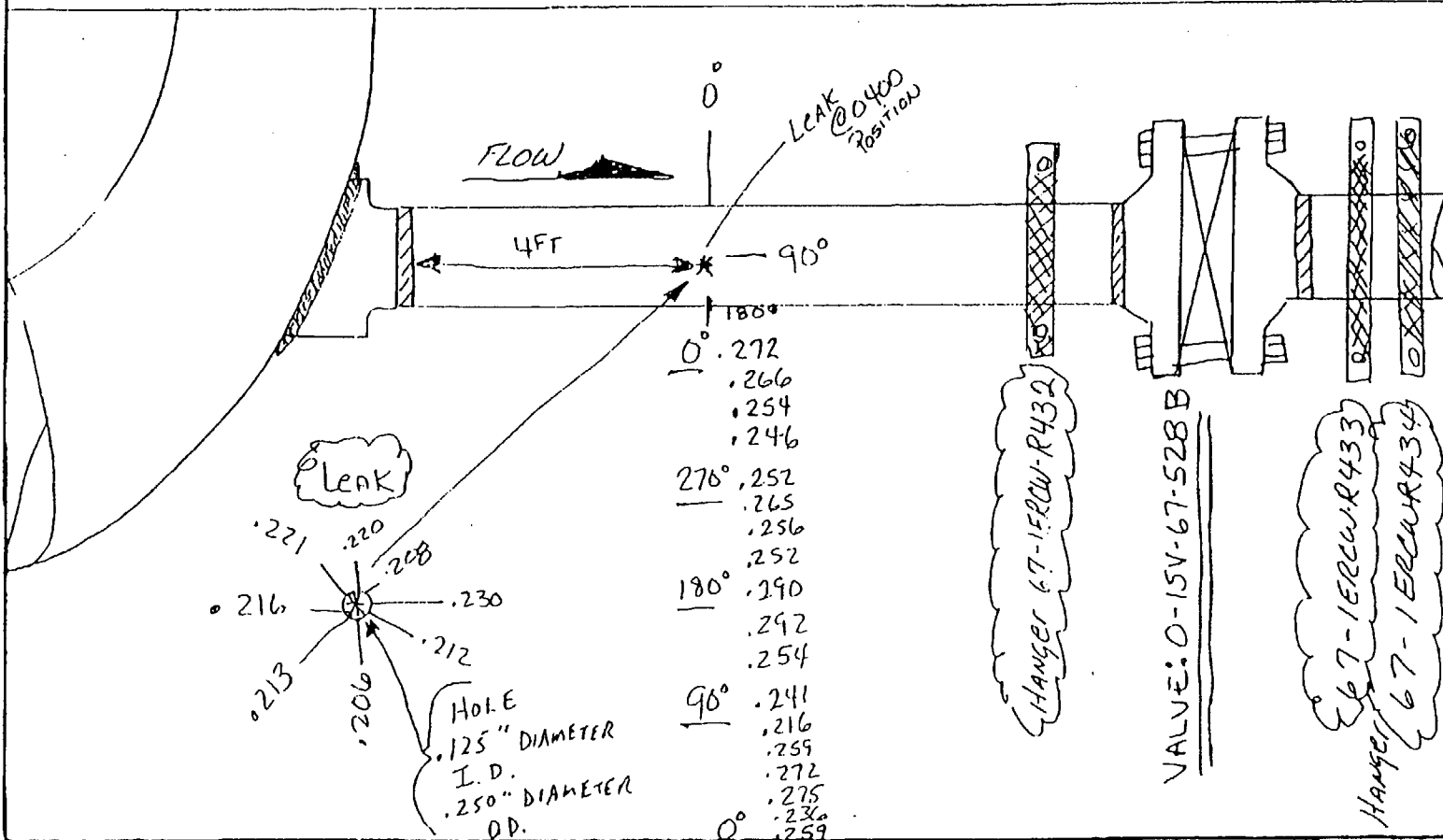
PROJECT: WATTS BAR SYSTEM: 067  
Unit: 2 WELD NO.: Piping

REPORT NO.:  
BOP-R544

SEP-12-2001 12:42

SYSTEMS ENGINEERING

P.02/03



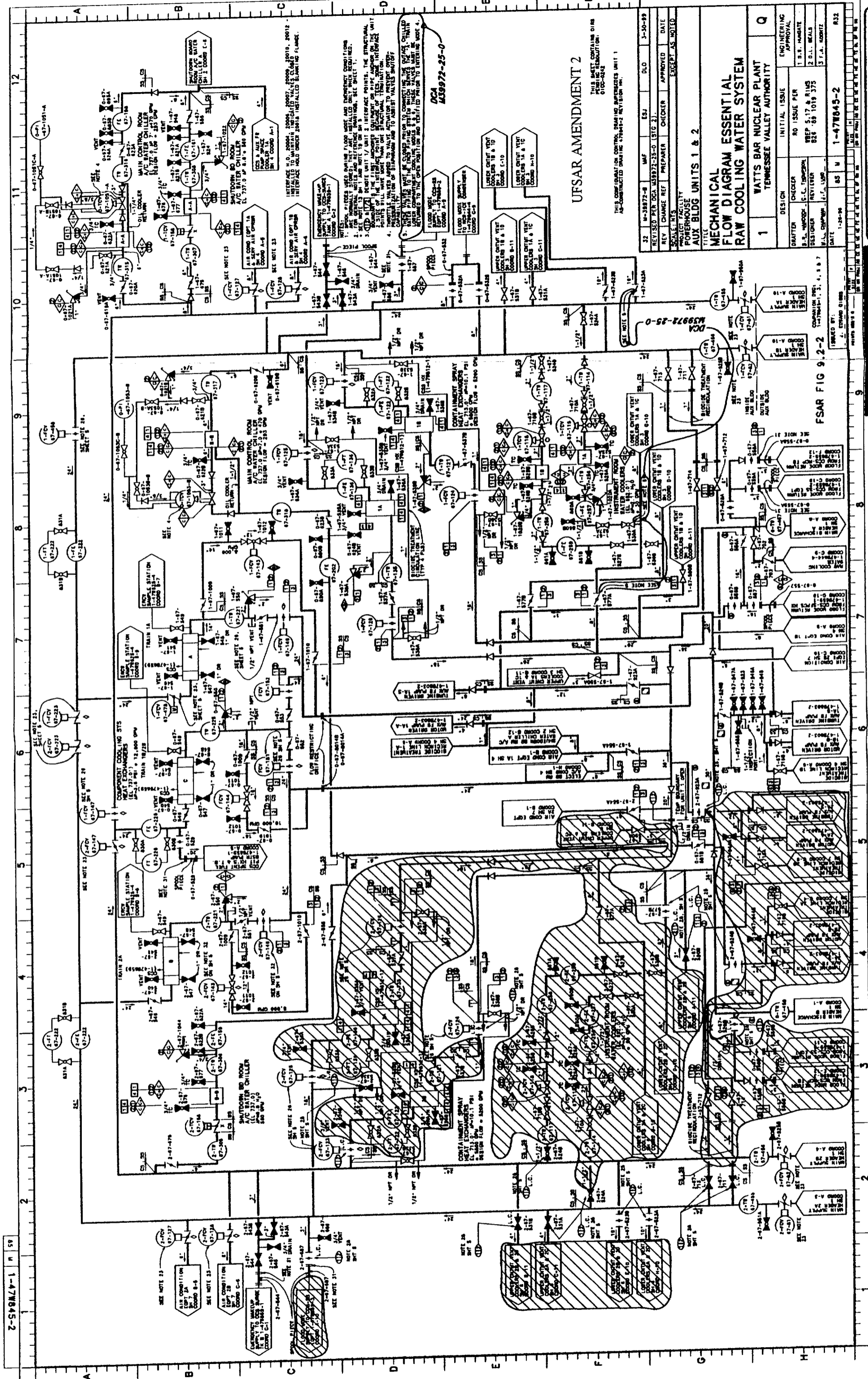
BY: J. L. Kuy

LEVEL: II

DATE: 7-30-01

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UFSAR AMENDMENT 2

THIS SHEET CONTAINS 0186  
PIPING REVISIONS  
0100-0242

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1  
AS SUBTRACTED DRAWING 17849-2 REVISION WA.

REVISED PER DCA MS972-25-0 (SIC 2)	DATE	3-30-89
REV. CHANGE REF. PREPARED BY	CHECKER	DLD
SCALE: NTS	PROJECT ACTIVITY	EXCEPT AS NOTED
PROJECT ACTIVITY	POWERHOUSE	
TITLE		
MECHANICAL FLOW DIAGRAM ESSENTIAL RAW COOLING WATER SYSTEM		
1 WATTS BAR NUCLEAR PLANT TENNESSEE VALLEY AUTHORITY		
DESIGN	INITIAL ISSUE	ENGINEERING APPROVAL
DRAWN BY	NO. ISSUE PER	1 S.R. WARRATE
CHECKED BY	DESIGNED BY	2 D.L. WEALES
REVIEWER	DATE	3 T.A. GOSSETT
DATE	1-28-89	85 M 1-47845-2
DATE	1-28-89	832

FSAR FIG 9.2-2		
COMPARISON NO. 1, 2, 3, 4, 5, 6, 7		
DRAWN BY: D. WARRATE		
CHECKED BY: S. R. WARRATE		
REVIEWER: D. L. WEALES		
DATE: 1-28-89		
PROJECT ACTIVITY: POWERHOUSE		
SCALE: NTS		
REVISED PER DCA MS972-25-0 (SIC 2)		
DATE: 3-30-89		
DLD		
EXCEPT AS NOTED		
PROJECT ACTIVITY: POWERHOUSE		
TITLE: MECHANICAL FLOW DIAGRAM ESSENTIAL RAW COOLING WATER SYSTEM		
1 WATTS BAR NUCLEAR PLANT TENNESSEE VALLEY AUTHORITY		
ENGINEERING APPROVAL: 1 S.R. WARRATE		
2 D.L. WEALES		
3 T.A. GOSSETT		
DATE: 1-28-89		
85 M 1-47845-2		
832		

CONFIGURATION CONTROL DRAWING

FIGURE 9.2-2

PROVIDING MAINTENANCE DRAWING  
THIS DRAWING IS TO BE MAINTAINED IN THE  
DRAWING ROOM AND NOT IN THE CONTROL ROOM

ENCLOSURE 2

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1  
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COMMITMENT LIST

1. A weekly walkdown to assess the operability and any leakage through the temporary non-Code repair will be performed. Any changes which affect operability or structural integrity will be evaluated.
2. An ultrasonic examination will be performed every three months to assess the piping degradation rate. Based upon the weekly walkdowns and ultrasonic examinations, an engineering evaluation will be performed to determine if further remedial measures or corrective actions are needed.
4. An ASME Section XI repair or replacement will be performed before the completion of the U1C4 refueling outage which is currently scheduled in the Spring 2002.