UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JANUARY 8 1980

MEMORANDUM FOR: Those on Attached List

FROM: Larry C. Shao, Chairman
PWR Pipe Crack Study Group

SUBJECT: FORTHCOMING MEETING OF PWR PIPE CRACK STUDY GROUP

Date & Time: Friday, January 11, 1980
8:30 am - 5:00 pm

Location: Phillips Building
Room P-114

Purpose: To discuss current progress and schedule of PCSG investigation.

Participants: Pipe Crack Study Group Members

L C. Shao

Larry C. Shao, Chairman
PWR Pipe Crack Study Group

Enclosure:
Meeting Agenda

cc: See next page

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L. Shao, NRR/RES
S. Bush, PNWL
W. Hazelton, NRR
A. Taboada, SD
J. Muscara, RSR
C. Cheng, NRR
R. Gamble, NRR
R. Woodruff, I&E
V. Noonan, NRR
R. Bosnak, NRR
J. Burns, RES
T. March, NRR
V. Panciera, NRR

1817 121

AGENDA

I. Introduction

II. Study Group Charter and Schedule

III. Sub-Task Group Status

Sub-Task 1 - Defining the Cracking Mechanism - W. Hazelton

Sub-Task 2 - Significance of Cracking - V. Panciera

Sub-Task 3 - Determine Cause of Cracking - R. Gamble

Sub-Task 4 - ISI and Leak Detection - C. Cheng

Sub-Task 5 - Review Ongoing Programs and Recommended New Programs - J. Muscara

Sub-Task 6 - Report Organization - S. Bush

IV. Technical Discussion

V. Summary

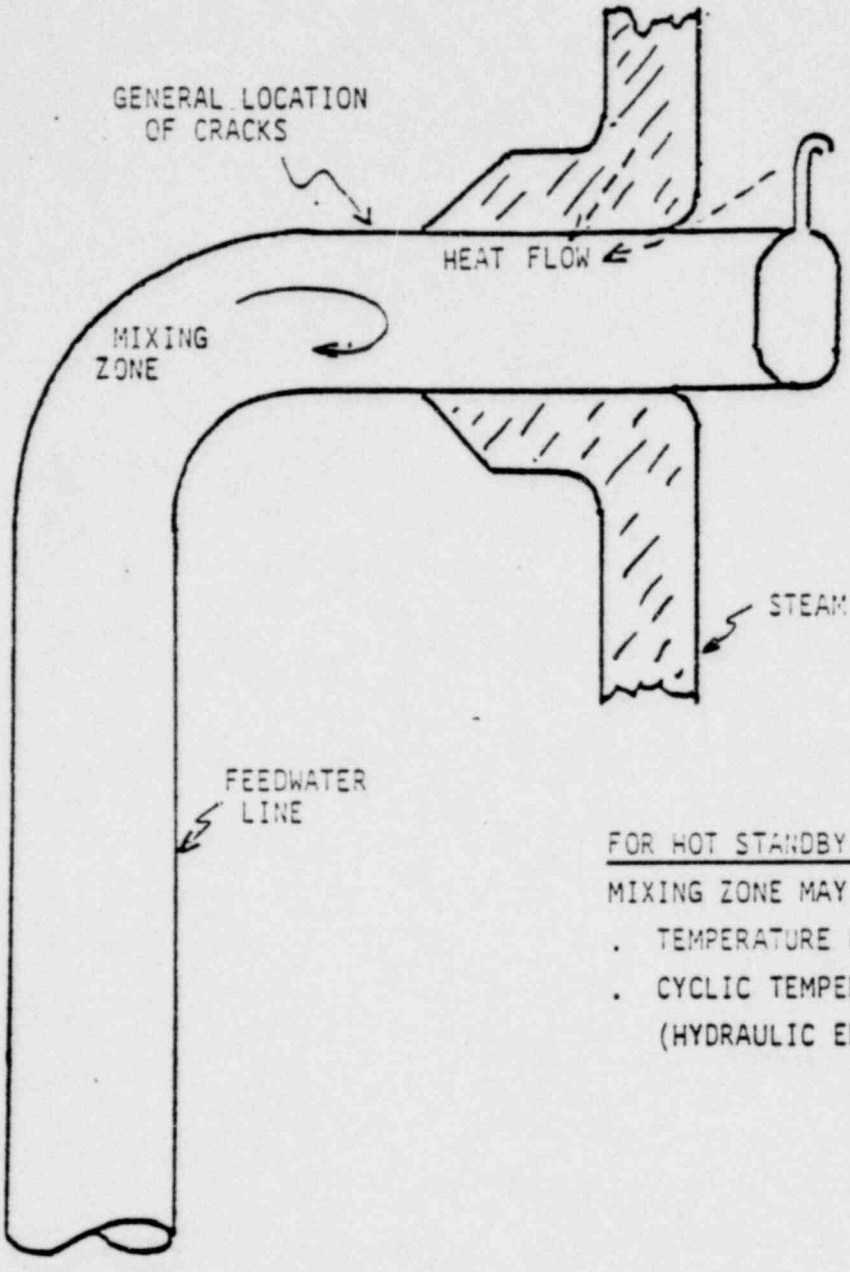
NOTE: PCSG Members should attend the Feedwater Pipe Crack Meeting January 10, 1980, in P-422 if possible.

1817 122

PWR Feedwater Cracking

ILLUSTRATION OF HOW LOCAL THERMAL STRESSES MAY BE GENERATED

POOR ORIGINAL

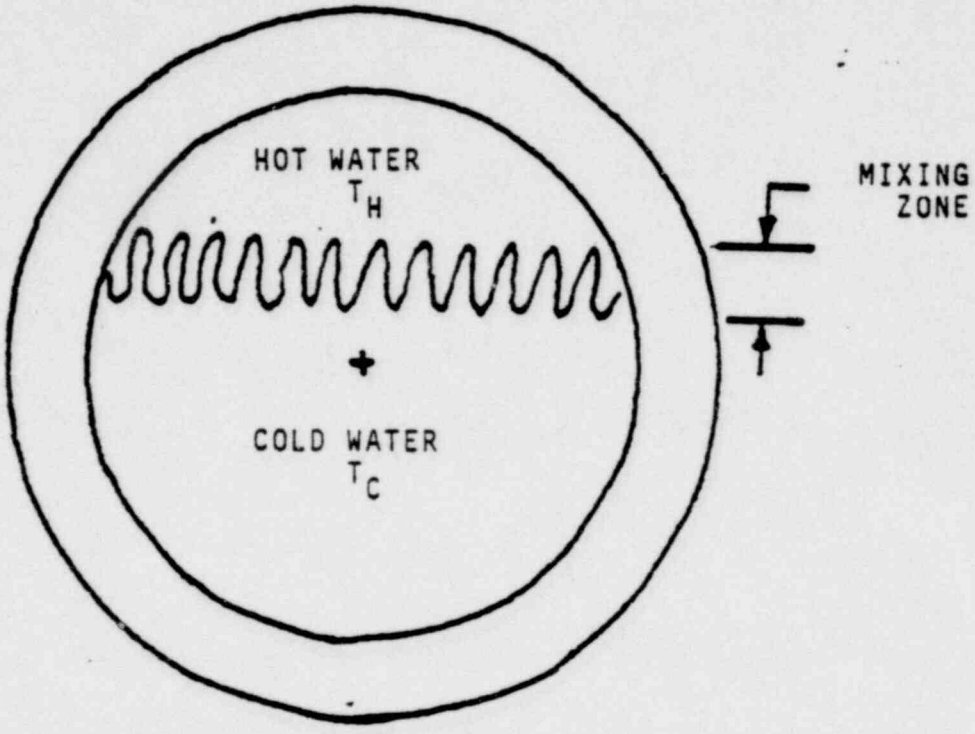


FOR HOT STANDBY CONDITIONS

MIXING ZONE MAY HAVE

- TEMPERATURE GRADIENTS (STRATIFICATION)
- CYCLIC TEMPERATURES AT METAL SURFACE (HYDRAULIC EDDIES)

THERMAL STRESSES IN A LINE WITH STRATIFIED FLOW



1. HIGH CYCLE STRESSES AT METAL SURFACE IN MIXING ZONE (SHALLOW PENETRATION)
2. LOW CYCLE AXIAL AND TANGENTIAL STRESSES DUE TO TEMPERATURE DIFFERENCES TOP TO BOTTOM (DEPEND ON INTERFACE LEVEL AND THICKNESS OF MIXING ZONE)
3. TRANSIENT THROUGH-WALL BENDING STRESSES AS LEVEL OF MIXING ZONE (FLOW RATE) CHANGES OR AS TEMPERATURES CHANGE

(ALL STRESSES ROUGHLY PROPORTIONAL TO $(T_H - T_C)$

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