

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8903150106      DOC. DATE: 89/03/06      NOTARIZED: NO      DOCKET #  
 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C      05000250  
       50-251 Turkey Point Plant, Unit 4, Florida Power and Light C      05000251  
 AUTH. NAME      AUTHOR AFFILIATION  
 CONWAY, W.F.      Florida Power & Light Co.  
 RECIP. NAME      RECIPIENT AFFILIATION  
                          Document Control Branch (Document Control Desk)

SUBJECT: Responds to NRC Bulletin 88-011, "Pressurizer Surge Line Thermal Stratification."

DISTRIBUTION CODE: IE11D      COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5  
 TITLE: Bulletin Response (50 DKT)

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL		RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD2-2 LA	1 0		PD2-2 PD	1 1
	EDISON, G	1 1			
INTERNAL:	AEOD/DOA	1 1		AEOD/DSP/TPAB	1 1
	NRR/DEST/ADE 8H	1 1		NRR/DEST/ADS 7E	1 1
	NRR/DEST/MEB 9H	1 1		NRR/DOEA/EAB 11	1 1
	NRR/DOEA/GCB 11	1 1		NRR/DREP/EPB 10	1 1
	NRR/PMAS/ILRB12	1 1		NUDOCS-ABSTRACT	1 1
	<u>REG FILE</u> 02	1 1		RES/DSIR/EIB	1 1
	RGN2 FILE 01	1 1			
EXTERNAL:	LPDR	1 1		NRC PDR	1 1
	NSIC	1 1			

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,  
 ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION  
 LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 19 ENCL 18

*A10-1*

R  
I  
D  
S  
/  
A  
D  
D  
S  
  
R  
I  
D  
S  
/  
A  
D  
D  
S



MARCH 6 1989

L-89-79

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

Gentlemen:

Re: Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251  
NRC Bulletin No. 88-11  
Pressurizer Surge Line Thermal Stratification

NRC Bulletin No. 88-11, "Pressurizer Surge Line Thermal Stratification," issued on December 20, 1988, requested that licensees establish and implement a program to confirm pressurizer surge line integrity in view of the occurrence of thermal stratification, and to inform the staff of the actions taken to resolve this issue.

In accordance with requirement 1.a of the bulletin, Florida Power & Light Company conducted inspections of the Turkey Point Unit 3 and 4 surge lines. The inspections did not identify any gross discernable distress or structural damage in the lines including piping, pipe supports, piping whip restraints, and anchor bolts. These inspections were completed during the recent Unit 3 outage which ended in early February, and during the current Unit 4 refueling outage.

For Unit 3, the results of the walkdown performed by FPL personnel indicated some crushed insulation at two of the pipe whip restraints. The movement of the surge line resulting in the crushed insulation is consistent with the thermal expansion of the line during power operation and startup. There is no evidence of abnormal movement or interference of the surge line piping with any of the whip restraints.

The walkdown also indicated that the spring hanger had bottomed out both of its spring cans. This movement is consistent with the maximum predicted movement with stratification. The resulting loads have been determined to remain within the capacity of the spring hanger components.

8903150106 890306  
PDR ADCK 05000250  
Q PDC

For Unit 4, the results of the walkdown performed by FPL personnel indicated some crushed insulation at two of the pipe whip restraints. The movement of the surge line resulting in the crushed insulation is consistent with the thermal expansion of the line during power operation and startup. There is no evidence of abnormal movement or interference of the surge line piping with any of the whip restraints.

The walkdown also identified cracks in three pipe to saddle tack welds in spring hanger SR-400. These welds serve only to locate the saddle relative to the pipe; they are not required to maintain the capacity of the hanger. The spring assembly showed no signs of damage.

In order to satisfy the requirements and schedules of Bulletin 88-11, FPL is participating in a program for partial resolution of this issue through the Westinghouse Owner's Group (WOG).

The WOG program was approved at the October 1988 meeting of the WOG, and has the following objectives:

- Develop a generic Justification for Continued Operation (JCO) to assure that plant safety is not compromised while the effects of thermal stratification are being determined.
- Collect and summarize relevant design, operational, analytical, and test data for as many WOG plants as possible. In addition, a representative sampling, of approximately ten plants, will be selected to perform a review of plant records and conduct interviews with operations personnel.
- Evaluate data and identify and prioritize significant parameters contributing to this issue. Categorize (group) plants based on these parameters.
- Recommend additional monitoring to supplement the existing transient database required to bound all WOG plants.
- Estimate the effect of thermal stratification on fatigue life as a function of key parameters.
- Recommend short term and long term actions.



The WOG program is designed to benefit from the experience gained in the performance of several plant specific analyses on Westinghouse PWR surge lines. These detailed analyses included definition of revised thermal transients (including stratification) and evaluations of pipe stress, fatigue usage factor, thermal striping, fatigue crack growth, leak before-break, and support loads. The overall analytical approach used in all of these analyses has been consistent and has been reviewed, in detail, by the NRC staff. A significant amount of surge line thermal monitoring data has been obtained in support of these plant specific analyses. Additional surge line thermal monitoring and plant system data continues to be made available within the WOG, resulting in a steadily increasing database. A significant amount of progress has been accomplished toward meeting these objectives.

To date, the WOG has completed approximately 80% of the effort of assembling plant specific design information on all domestic Westinghouse PWRs (55 units total). This effort will establish the range of key design parameters and permit grouping of plants based on these parameters.

Based on the information assembled to date, and the experience gained in plant specific analyses and monitoring programs, the WOG evaluation has resulted in the following observations regarding plant similarity and thermal stratification:

1. Thermal stratification ( $>100^{\circ}\text{F}$ ) has been measured on all surge lines for which monitoring has been performed and which have been reviewed by the WOG to date (7 plants).
2. The amount of stratification measured and its variation with time (cycling) varies. This variation has been conservatively enveloped and applicability demonstrated for plant specific analyses. Additional monitoring data representing a wider range of surge line configurations may be needed in order to demonstrate the applicability of these thermal stratification transients to other Westinghouse units.
3. Significant factors which can influence the structural effects of stratification are:
  - a. Location and design of rigid supports and restraints
  - b. Pipe layout geometry and size
  - c. Type and location of piping components

4. Although the material and fabrication techniques for Westinghouse surge lines are reasonably consistent and of high quality, the design parameters listed in item 3 vary among Westinghouse PWRs. This variation in design is primarily a result of plant specific routing requirements. This variability is currently being examined in order to assess the feasibility of a bounding analysis approach.

These observations developed through the on-going WOG program, indicate that the development of thermal stratification loadings and the evaluation of fatigue, considering these loadings, is a complex process. Therefore, in order to precisely evaluate stratification, additional time is needed.

While more time is needed to evaluate the stratification issue in detail, the NDE inspection history at Turkey Point, as well as all other domestic Westinghouse designed PWRs, has not revealed any service induced degradation in the surge line piping that has been attributed to thermal stratification.

In addition, all the plant specific analyses performed to date that have included the loadings due to stratification and striping have validated the "leak-before break" concept and have substantiated a 40-year plant life. Thus, a prudent approach for providing a detailed evaluation of the effects of surge line stratification would be to follow the WOG program grouping evaluation recommendations and monitor as determined to be appropriate.

Consistent with the approach discussed with the NRC Staff by Westinghouse, FPL will provide a response to item 1.b by January 4, 1991. This schedule will provide sufficient time to obtain the necessary additional monitoring data, define thermal transients, perform all required analyses and update the stress and fatigue analyses to ensure compliance with applicable code and regulatory requirements. This schedule, though different from that requested in action 1.b of Bulletin 88-11, is consistent with the requirement to update the stress and fatigue analyses within two years as stated in action 1.d of the Bulletin.

At this time, FPL's request for an alternate schedule applies only to item 1.b of NRC Bulletin 88-11. FPL intends to comply with all other requirements of the Bulletin.

U. S. Nuclear Regulatory Commission  
L-89-79  
Page five

To assure that the plant safety is not compromised within the requested period of schedule extension, a Justification for Continued Operation (JCO), will be submitted to the staff by April 28, 1989. The JCO which is currently being developed, will utilize the information, experience, and monitoring data obtained through the WOG program, and will support the alternate schedule discussed herein. Unit specific evaluations done for FPL by Westinghouse justify continued operation of both Turkey Point units through their next refueling outages.

Very truly yours,



W. F. Conway  
Senior Vice President - Nuclear

WFC/RHF:re

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II,  
USNRC  
Senior Resident Inspector, USNRC, Turkey Point Plant