CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9611050179 DOC.DATE: 96/10/25 NOTARIZED: NO DOCKET #
FACIL:50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
AUTH.NAME AUTHOR AFFILIATION
BOHLKE,W.H. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Informs that util agrees w/NRC staff re importance of issues surrounding revised LBLOCA evaluation model.Final analysis of impact of model error on ECCS acceptance criteria will be prepared.

DISTRIBUTION CODE: A001D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 3
TITLE: OR Submittal: General Distribution

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD2-3 LA	1	1	PD2-3 PD	1	1
	WIENS,L.	1	1			
INTERNAL:	ACRS	1	1	FILE CENTER 01	1	1
	NRR/DE/EMCB	1	1	NRR/DRCH/HICB	1	1
	NRR/DSSA/SPLB	1	1	NRR/DSSA/SRXB	1	1
	NUDOCS-ABSTRACT	1	1	OGC/HDS3	1	0
EXTERNAL:	NOAC	1	1	NRC PDR	1	1

CATEGORY 1 DOCUMENT

NOTE TO ALL "RIDS" RECIPIENTS:
PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

TOTAL NUMBER OF COPIES REQUIRED: LTTR 13 ENCL 12

Florida Power & Light Company, P.O. Box 14000, Juno Beach, FL 33408-0420

FPL

OCT 25 1996
L-96-283
10 CFR 50.46

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

Re: St. Lucie Unit 1
Docket No. 50-335
Revised LBLOCA Evaluation Model;
Preliminary Assessment of Impact on PCT

Ref: (1) NRC letter: Brian W. Sheron to T.F. Plunkett, 10 CFR 50.46 LARGE BREAK LOSS-OF-COOLANT ACCIDENT EVALUATION MODEL FOR ST. LUCIE PLANT, UNIT 1 (TAC NO. M96355); October 11, 1996.

(2) Telecon 10/24/96, 4:00 pm, J.A. Zwolinski(NRC), et al, to W.H. Bohlke (FPL), et.al.

Reference (1) informed Florida Power and Light Company (FPL) of problems identified by the NRC concerning changes to the Siemens Power Corporation (SPC) large break loss-of-coolant (LBLOCA) evaluation model used by SPC for pressurized water reactors. The letter requested that FPL evaluate, in accordance with 10 CFR 50.46(a)(3)(ii), the impact of identified model errors and changes, and take whatever actions are required to assure compliance with 10 CFR 50.46.

FPL agrees with the NRC staff regarding the importance of the issues surrounding the subject LBLOCA evaluation model. As discussed in Reference (2), FPL has agreed to document the current assessment and the rationale leading to FPL's conclusion that St. Lucie Unit 1 is operating in compliance with 10 CFR 50.46. The attachment to this letter contains that assessment with supporting rationale.

Because the current assessment's calculational results have not received final verification by SPC, FPL is also preparing a final analysis of the impact of the LBLOCA model error on emergency core cooling system acceptance criteria. FPL will submit this analysis to the NRC upon completion of its review of SPC revised calculational model final results.

Please contact us if there are any questions regarding this submittal.

Very truly yours,

W. H. Bohlke
Vice President
Nuclear Engineering

WHB/RLD

A001 1/1

Attachment: LBLOCA Assessment For St. Lucie Unit 1

cc: Stewart D. Ebneter, Regional Administrator, Region II, USNRC.
Senior Resident Inspector, USNRC, St. Lucie Plant.

ATTACHMENT
LBLOCA Assessment For St. Lucie Unit 1

FPL has performed an assessment for St. Lucie Unit 1 in light of NRC's concern with the calculation of peak cladding temperature (PCT) resulting from a Large Break Loss of Coolant Accident (Reference 1). The NRC identified non-physical behavior in the heat transfer coefficient for reflood rates between 1.00 in/sec and 1.77 in/sec in the NRC approved 1986 ECCS/LBLOCA evaluation model for Siemens Power Corporation (SPC). FPL has developed a modification to the heat transfer coefficient with a linear function between 1.00 in/sec and 1.77 in/sec which corrects the non-physical behavior of the reflood heat transfer correlation. FPL concludes that this modification is appropriate because:

i) The end points for interpolating the heat transfer coefficient are the respective values at flooding rates of 1.00 in/sec and 1.77 in/sec.

ii) The linear interpolation of the heat transfer coefficient between the flooding rates of 1.00 in/sec and 1.77 in/sec follows the trend of increasing heat transfer coefficient with increasing reflood rate shown by the FLECHT test data (Reference 2).

iii) The values of the heat transfer coefficient throughout the range of interest are conservative for pressurized water reactor applications.

An assessment of PCT using the above interpolation approach has shown a PCT of 2027 ^{0}F (Reference 3), which is an increase of 115 ^{0}F with respect to the current analysis of record PCT of 1912 ^{0}F. The recalculated PCT remains well below the 10 CFR 50.46 criterion of 2200 ^{0}F (margin > 150 ^{0}F). However, the magnitude of the increase meets the definition of significant change per 10 CFR 50.46.

In addition, the preliminary results of the calculation show that the maximum local cladding oxidation is much less than 17% and the core wide maximum oxidation is much less than 1%. In conclusion, the 10 CFR 50.46 acceptance criteria remain satisfied.

The information used by FPL to reach its conclusion is based upon computer code calculations which have not received a formal verification under SPC's and FPL's quality assurance programs. A formal review of this analysis is currently in progress.

Meanwhile, FPL has performed a review of the above analytical results with respect to the following major parameters. The review concludes that the operation of St. Lucie Unit 1 will continue to remain in compliance with 10 CFR 50.46:

Heat Transfer Coefficient: The heat transfer coefficient in the current analysis is less than that seen with the uncorrected 1986 model correlation. The behavior of the heat transfer coefficient with time at various elevations is as expected.

Flooding Rate: The flooding rate shows a drop from a value of ~2 in/sec at 75 seconds to a value of ~1.2 in/sec at 150 seconds into the transient. The calculated increase in PCT is consistent with the reduced heat transfer coefficient in this range of flooding rates.

Peak Cladding Temperature: The PCT has increased and the corresponding time to reach the PCT has increased by more than 30 seconds under the reduced heat transfer coefficient assumption. This behavior of PCT following modification of the heat transfer coefficient is as expected and the magnitude of the change appears reasonable.

References:

1. Letter B. W. Sheron (NRR) to T. F. Plunkett (FPL),"10 CFR 50.46 Large Break Loss-Of-Coolant Accident Evaluation Model For St. Lucie Unit 1 (TAC No. M96355)," dated October 11, 1996.

2. N. Lee, "PWR FLECHT SEASET Unblocked Bundle, Forced and Gravity Reflood Task, Data Evaluation and Analysis Report," EPRI-NP-2013, NUREG/CR-2256, WCAP-9891, February 1982.

3. Letter TMH:96:223, T. M. Howe (SPC) to R. J. Rodriguez (FPL), "Assessment of Non-Physical Behavior in Heat Transfer for St. Lucie Unit 1 LBLOCA," October 23,1996.