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RECIP. NAME      RECIPIENT AFFILIATION  
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SUBJECT: Forwards rept providing changes to or errors discovered in  
ECCS evaluation models for 881017 - 891016.

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*Journal of Management Studies*, 19(1), 67-80.



DEC 20 1989

L-89-422  
10 CFR 50.46

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  
10 CFR 50.46, "Acceptance Criteria for  
Emergency Core Cooling Systems In Light Water  
Nuclear Power Reactors" - Annual Report

10 CFR 50.46(a)(3)(ii) requires that licensees report to the Commission at least annually the nature of changes to or errors discovered in the emergency core cooling system (ECCS) evaluation models, or in the application of such models, that affect the peak clad temperature calculation, and their effect on the limiting ECCS analysis. Florida Power & Light Company's report for Turkey Point Units 3 and 4 for the period October 17, 1988 through October 16, 1989 is attached.

Should there be any questions, please contact us.

Very truly yours,

  
K. N. Harris  
Vice President  
Turkey Point Plant Nuclear

Attachment

KNH/TCG/gp

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

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ATTACHMENT

Re: Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251  
10 CFR 50.46, "Acceptance Criteria for  
Emergency Core Cooling Systems In Light Water  
Nuclear Power Reactors" - Annual Report

By letter L-87-336 dated August 20, 1987, Florida Power & Light Company (FPL) reported a peak clad temperature of 2107°F in the event of a worst case large break LOCA transient. This value included a calculated temperature of 2051°F plus 56°F increment due to reduced safety injection and increased containment spray flow.

Recent plant changes have resulted in a further increase in the peak clad temperature for the worst case large break LOCA by 37°F to a total of 2144°F. This includes a 9°F increment due to the containment purge coincident with a LBLOCA, an 8°F increase due to an increase in the steady-state pressurizer pressure uncertainty band, a 3°F increase due to the implementation of the Debris Resistant Fuel Assembly design, a 10°F increase due to the use of non-OFA fuel and a 7°F increase due to a degradation in the low-head safety injection pump flow.

Recent plant changes have increased the peak clad temperature for the worst case small break LOCA from 1605°F as described in the FSAR by 161°F to a total of 1766°F. This includes an increase of 19°F due to open blowdown sample lines, a 21°F increase due to fuel assembly thimble plug removal, a 31°F increase due to containment temperature increase from 120°F to 130°F, a 13°F increase due to an increase in the steady-state pressurizer pressure uncertainty band, a 27°F increase due to the implementation of the Debris Resistant Fuel Assembly design, and a 50°F increase due to an increase in auxiliary feedwater initiation delay time from 60 seconds to 180 seconds.

In addition to the above, Westinghouse discovered an error regarding the small break LOCA modeling of the main feedwater purge volume upon the initiation of auxiliary feedwater. The error in the modeling resulted in an increase of 223°F to a peak clad temperature of 1989°F.

The small break LOCA analysis as described in the FSAR was performed by Westinghouse in 1983 using the WFLASH computer code.

The large break LOCA analysis as described in the FSAR was performed by Westinghouse in 1983 using the BART computer code without the grid model.

Based upon information received from Westinghouse we have concluded that none of the ECCS model changes or errors detailed in the Westinghouse submittal to the NRC (letters NS-NRC-89-3463 and NS-NRC-89-3464, dated October 5, 1989), are applicable to Turkey Point.

The revised PCT of 2144°F for the worst case large break LOCA and 1989°F for the worst case small break LOCA correcting for the effects discussed herein and summarized in Table 1 are below the limit of 2200°F as per the acceptance criteria in 10 CFR 50.46.

TABLE 1  
TURKEY POINT UNITS 3 AND 4  
PREDICTED PEAK CLAD TEMPERATURES

CURRENT LBLOCA EVALUATIONS  
THAT HAVE ASSESSED PCT PENALTIES

Analysis of Record	2051°F
3 HHSI to 2 HHSI Pumps	9°F
Increased Containment Spray Flow	15°F
Reduced LHSI/RHR Flow	32°F
Effect of Containment Purging	9°F
Proposed Implementation of DRFA	3°F
Pressurizer Pressure Uncertainty	8°F
Transition Core Penalty	10°F
Further Reduced RHR Flow	7°F

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2144°F

CURRENT SBLOCA EVALUATIONS  
THAT HAVE ASSESSED PCT PENALTIES

Analysis of Record	1605°F
Open Blowdown Sample Lines	19°F
Thimble Plug Removal	21°F
Increase in Allowed Containment Temperature	31°F
Pressurizer Pressure Uncertainty	13°F
Proposed Implementation of DRFA	27°F
Increase in AFW Initiation Delay Time	50°F

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1766°F

Error Due to Main Feedwater Purge	223°F
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1989°F