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SUBJECT: Forwards rept re 10CFR50.46, "Acceptance Criteria for ECCS in Light Water Nuclear Power Reactors" & actions required to show compliance w/requirements.

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JUN 07 1991

L-91-165
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" - Evaluation Model Reanalysis

10 CFR 50.46 (a)(3)(ii) requires that licensees report to the Commission each change to an acceptable emergency core cooling system (ECCS) evaluation model, or in the application of such model, that affects the peak clad temperature calculation, and their effect on the limiting ECCS analysis. If the change results in a peak clad temperature difference of more than 50°F, the licensee is required to provide the NRC with a report within 30 days and include with the report the actions required to show compliance with 10 CFR 50.46 requirements.

On May 10, 1991, Westinghouse transmitted the results of the reanalysis of the worst case large and small break LOCA transients. Since these results exceed the 50°F peak clad temperature difference, FPL is required to provide the enclosed response within 30 days of receipt of Westinghouse's results.

Should there be any questions, please contact us.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point - Nuclear

Attachment

TFP/RJT/rjt

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" - Evaluation Model Reanalysis

Large Break LOCA (LBLOCA)

By letter L-90-434 dated December 20, 1990, Florida Power and Light Company (FPL) reported a peak clad temperature of 2171°F in the event of a worst case large break LOCA (LBLOCA) transient. This value included a calculated temperature of 2051°F plus 120°F increment due to reduced safety injection flow, increased containment spray flow, transition core penalty, containment purge coincident with a LBLOCA, increased steady-state pressurizer pressure uncertainty band and LOCTA coding errors.

Westinghouse recently performed a reanalysis of Turkey Point's worst case Large Break LOCA using the fuel assembly spacer grid model in the BART LBLOCA analysis code. The new analysis included reduced safety injection flow, increased containment spray flow, and elimination of the LOCTA coding errors. In addition, Westinghouse reassessed the remaining evaluations performed to the LBLOCA analysis of record. The results of the reanalysis for Turkey Point Units 3 and 4 resulted in a peak clad temperature of 2132°F. This value includes a calculated temperature of 2082°F plus 50°F increment due to containment purging, steady state pressurizer pressure uncertainty, transition core penalty and steam generator tube collapse during an earthquake.

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

Small Break LOCA (SBLOCA)

By letter L-90-434 dated December 20, 1990, Florida Power and Light Company (FPL) reported a peak clad temperature of 2060°F in the event of a worst case small break LOCA (SBLOCA) transient. This value included a calculated temperature of 1605°F plus 455°F increment due to delayed AFW Enthalpy Switchover, AFW initiation delay time, open blowdown sample lines, thimble plugs removal, increase in allowed containment temperature, increase in pressurizer pressure uncertainty, transition core penalty, reduced fuel rod gap pressure, power increase due to K(z) discrepancy and LOCTA coding errors.

L-91-165
Attachment
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Westinghouse recently performed a new Turkey Point Small Break LOCA analysis using the NOTRUMP digital computer code. Peak clad temperature calculations were performed with the LOCTA-IV code using the NOTRUMP calculated core pressure, fuel rod power history, uncovered core steam flow and mixture heights as boundary conditions. The results of the limiting small break LOCA analysis is a maximum calculated peak clad temperature of 1749°F. This value translates into a reduction in peak clad temperature of 311°F for the small break LOCA transient.

Summary

The revised peak clad temperatures of 2132°F for the worst case large break LOCA and 1749°F for the worst case small break LOCA are summarized in Tables 1 and 2 (enclosed). These results are below the limit of 2200°F in accordance with the acceptance criteria of 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

Evaluations specified in L-90-434

| | |
|---------------------------------------|------|
| 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 |
| Implementation of Debris Resistant FA | 3°F |
| Pressurizer Pressure Uncertainty | 8°F |
| Transition Core Penalty | 10°F |
| Further Reduced RHR Flow | 7°F |
| LOCTA Coding Errors | 25°F |
| Stainless Steel Rods - Cycle 12 Fuel | 2°F |

Total LBLOCA PCT specified in L-90-434 2171°F

LBLOCA Reanalysis since issuance of L-90-434

Analysis of Record 2082°F

Evaluations:

| | |
|--|------|
| Effect of Containment Purging | 9°F |
| Pressurizer Pressure Uncertainty | 8°F |
| Implementation of Debris Resistant FA | 3°F |
| Transition Core Penalty | 10°F |
| Stainless Steel Rods in Fuel Assemblies | 2°F |
| Steam Generator Tube Collapse During an Earthquake | 18°F |

Total Estimated LBLOCA PCT 2132°F

TABLE 2
TURKEY POINT UNITS 3 AND 4
PREDICTED PEAK CLAD TEMPERATURES
CURRENT SBLOCA EVALUATIONS
THAT HAVE ASSESSED PCT PENALTIES

Analysis of Record 1605°F

Evaluations specified in L-90-434

| | |
|--|-------|
| Open Blowdown Sample Lines | 19°F |
| Thimble Plugs Removal | 21°F |
| Increase in Allowed Containment
Temperature | 31°F |
| Pressurizer Pressure Uncertainty | 13°F |
| Implementation of Debris Resistant FA | 27°F |
| Delayed AFW Enthalpy Switchover | 223°F |
| Increase in AFW Initiation Delay Time | 50°F |
| LOCTA Coding Errors | 25°F |
| Reduced Reload Gap Pressure | 40°F |
| Stainless Steel Rods - Cycle 12 Fuel | 2°F |
| Power Increase Due to K(z) Discrepancy | 4°F |

Total SBLOCA PCT specified in L-90-434 2060°F

SBLOCA Reanalysis since issuance of L-90-434

SBLOCA Analysis of Record 1749°F

Total Estimated SBLOCA PCT 1749°F