MAR 16 1987

Docket Nos. 50-250, 50-251
50-335 and 50-389

LICENSEE: Florida Power and Light Company (FP&L)

FACILITY: St. Lucie Plant, Unit Nos. 1 and 2
Turkey Point Plant, Unit Nos. 3 and 4

SUBJECT: SUMMARY OF JANUARY 13, 1987 MEETING WITH FP&L AND NRC STAFF REGARDING FP&L RETRAN TOPICAL REPORT

Introduction

NRC staff met with FP&L personnel on January 13, 1987 in Bethesda, Maryland, to discuss the topical report on the above subject. Representatives from the NRC staff consultant, International Technical Services, Inc., were also in attendance. FP&L submitted the subject topical report by letter dated January 7, 1986. By letter dated September 15, 1986, the staff sent a request for additional information to FP&L for Turkey Point. By letter dated November 21, 1986, the staff sent a request for additional information to FP&L for St. Lucie. The meeting was chaired by the NRC Project Manager for St. Lucie. The agenda for the meeting is contained in Enclosure 1. Enclosure 2 identifies the meeting attendees. A summary of the meeting follows.

Summary

Most of the meeting centered on what was the scope of review for the topical report. The parties devoted a significant amount of time to discussing what FP&L needs to do to demonstrate its qualification to use the code and to demonstrate applicability of the code for St. Lucie and Turkey Point licensing applications. This was reflected in the staff questions sent to FP&L. Both steps do not have to be taken at the same time. The staff would be willing to review FP&L's qualifications to use the code for all categories of plant safety analyses and issue a safety evaluation. If this approach is taken, FP&L would then need to demonstrate the plant specific applicability of the code for all categories of plant safety analysis in a subsequent submittal. It was agreed that if this approach is taken, it would be very resource intensive for both NRC and FP&L. Another approach discussed was to pick one category of safety analysis, and to have FP&L demonstrate (1) its qualification to use the code and (2) its plant specific applicability, at the same time. Once this was accomplished, FP&L could repeat this approach for other categories of safety analyses. This approach would also be resource intensive but it would be stretched out over a period of time and selected licensing actions could be taken sooner. If the approach is pursued, all the questions sent to FP&L would not be valid at this time.

The staff and FP&L agreed that the scope of review needs to be changed. The scope of review that was agreed to consisted of qualifying FP&L for one category of analysis and plant specific methodology would be included for that category. In this light, a new question set for each plant would need to be sent to FP&L, and the previous question sets withdrawn. The staff agreed to take the next step and send a new set of questions to FP&L. A copy of FP&L's passout is contained in Enclosure 3.

Conference Call of January 16, 1987

As a result of briefing upper staff management as to the results of the meeting, upper management had an administrative concern that was discussed with FP&L on January 16, 1987. The staff requested FP&L to submit a letter asking for a change of work scope and withdrawing the previous request. The licensee representatives wanted to discuss this with their management before proceeding. As a result of this call, the staff is awaiting feedback from the licensee before a new question set is generated.

Original signed by

E. G. Tourigny, Project Manager
PWR Project Directorate #8
Division of PWR Licensing-B

Enclosures:
As stated

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See next page

*See previous white for concurrences.

PBD#8	PBD#8	PAD-2	PAD-2	PBD#8
PKreutzer*	ETourigny;cf	DMiller*	DMcDonald	AThadani
2/26/87	3/12/87	2/26/87	3/12/87	3/16/87

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Conference Call of January 16, 1987

As a result of briefing upper staff management as to the results of the meeting, upper management had an additional concern that was discussed with FP&L on January 16, 1987. The staff requested FP&L to submit a letter asking for a change of work scope and withdrawing the previous request. The impetus for the request was to formally withdraw the previous submittal which was being performed under the topical report program and initiate new plant specific reviews which will be performed on a fully recoverable fee basis. The licensee representatives wanted to discuss this with their management before proceeding. As a result of this call, the staff is awaiting feedback from the licensee before a new question set is generated.

E. G. Tourigny, Project Manager
PWR Project Directorate #8
Division of PWR Licensing-B

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As stated

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See next page

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PKreutzer	ETourigny:cf	DMcDonald	DMcDonald	AThadani
2/26/87	2/26/87	2/26/87	2/ /87	2/ /87

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MEETING SUMMARY DISTRIBUTION
PWR PROJECT DIRECTORATE #8

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Enclosure 1

RETRAN TOPICAL REPORT
FLORIDA POWER AND LIGHT MEETING WITH NRC

1. Introduction

2. Objective of Topical Report
   a. NRC Generic Letter 83-11
   b. FPL Analysis Experience

3. FPL SER Objective
   a. Supplemental Information
   b. Two Site Issue

4. Discussion of NRC Questions
   a. Specific Concerns Relating to Questions
   b. Questions Requiring Clarification

5. FPL Future Plans
   a. Reactor Trip Setpoint Change on Turbine Trip

6. Discussion

Enclosure 2

FP&L/NRC RETRAN TOPICAL REPORT MEETING
January 13, 1987
Attendance List

Name	Affiliation
Ed Tourigny	NRC/DPLB
Rudy Karsch	NRC/DPLB
Matt Mathavan	FP&L
Chu-yu Liang	NRC/DPLB
Daniel G. McDonald	NRC/DPLA
Richard Lobel	NRC/DPLA
Ed Weinkam	FP&L
Heidi Komoriya	ITS
Paul Abramson	ITS
George Arpa	FP&L
Ralph D. Hankel	FP&L
Joel Handschuh	FP&L

Enclosure 3

RETRAN TOPICAL REPORT
FLORIDA POWER AND LIGHT MEETING WITH NRC

1.	INTRODUCTION	Joel Handschuh
2.	OBJECTIVE OF TOPICAL REPORT a. FPL Analysis Experience b. NRC Generic Letter 83-11	Dr. Ralph Hankel
3.	FPL SER OBJECTIVE a. Supplemental Information b. Two Site Issue	Joel Handschuh
4.	DISCUSSION OF NRC QUESTIONS a. Specific Concerns Relating to Questions b. Questions Requiring Clarification	Dr. Matt Mathavan
5.	FPL FUTURE PLANS a. Reactor Trip Setpoint Change on Turbine Trip	Joel Handschuh
6.	DISCUSSION	

Mr. Hawkel

FPL TRANSIENT ANALYSIS EXPERIENCE

1977-1981	RETRAN CODE VERIFICATION, CONTRIBUTION TO RETRAN USERS MANUAL, VOLUME 4, APPLICATIONS TRANSIENTS: UNCONTROLLED ROD WITHDRAWAL, LOSS OF FLOW, RCS PUMP COASTDOWN
1977-1978	SAFETY & FUEL MANAGEMENT ANALYSIS METHODS TOPICAL REPORT BASED ON THE DYNODE AND COBRA CODES, NRC SUBMITTAL OF JULY 1978 TRANSIENTS: UNCONTROLLED ROD WITHDRAWAL, LOSS OF LOAD, CEA EJECTION LOSS OF FLOW, ROD DROP, STEAMLINE BREAK
1980-1983	NATURAL CIRCULATION COOLDOWN CURVES FOR ST. LUCIE 1, NRC SUBMITTAL OF DECEMBER 1980, NRC SER ISSUED APRIL 1983 TRANSIENTS: REACTOR COOLDOWN WITHOUT RCS PUMPS
1982-1984	ANALYSIS OF PTS OVERCOOLING TRANSIENTS TRANSIENTS: SBLOCA, STEAMLINE BREAK
1982	ST. LUCIE 1, CYCLE 6 VENDOR ANALYSIS VERIFICATION TRANSIENTS: LOSS OF LOAD, MAIN STEAMLINE BREAK, LOSS OF FLOW, TM/LP SETPOINT VERIFICATION
1983	ANALYSIS OF ST. LUCIE 1 PRESSURIZER SETPOINT TRANSIENT: LOSS OF LOAD
1984-1986	REACTOR TRIP PREVENTION TRANSIENTS: FEEDWATER CONTROL, TURBINE RUNBACK, AUTOMATIC CONTROL ROD MOTION, REACTOR TRIP ON TURBINE TRIP, RPS SETPOINTS, MSIV AND STEAM DUMP EFFECTS

Dr Hankel

OBJECTIVES OF FPL RETRAN TOPICAL REPORT

DEMONSTRATION OF COMPETENCE (NRC LETTER 83-11)

SET UP INPUT DECK
INTERPRET RESULTS
COMPARISON OF RESULTS

SCOPE OF TOPICAL REPORT

14 BENCHMARK COMPARISONS
2 PLANT MODELS
TRANSIENT FOR EACH MAJOR EVENT CATEGORY
PLANT TEST DATA
UNUSUAL PLANT EVENTS
FSAR ANALYSES
PTS TRANSIENTS

CONCLUSION

TECHNICAL COMPETENCE OF LICENSEE
VALIDATES ADEQUACY OF BASE MODELS FOR NON-LOCA ANALYSIS

Joel H.

FPL SER OBJECTIVE

- COMPETENCY

- LICENSING METHODOLOGY

- LIMITED LICENSING SER
  - Competency with SER in one category (Loss of Load)

Joel H.

TWO SITE ISSUE

- DUPLICATION OF EFFORTS

- SPECIFIC SITE CALCULATIONS
  - Rod Withdrawal
  - Possibly SLB

CONCERNS

1. TURKEY POINT: Question-8, page-3

CONCERN:

Not significant in demonstrating capability

Will be addressed as part of methodology

CONCERNS

1. ST. LUCIE: Question-1, page-1

   Not significant in demonstrating capability

   Will be addressed as part of methodology

2. ST. LUCIE: Question-2, General

   CONCERN:

   Same as above.

3. ST. LUCIE: Question-2f, page-3

   "Demonstrate the analytical capability of the code by comparing results of the RETRAN analysis to separate effects tests and integral tests."

   CONCERN:

   Information already provided to the NRC for generic code approval.

4. ST. LUCIE: Question-2f, page-3

   "Explain the differences between the RETRAN analysis and the FSAR analysis in terms of differences in the modeling of the two codes."

   CONCERN:

   - Each code has been reviewed and approved by the NRC on its own merit.

   - Vendor codes are proprietary and not readily accessible.

5. ST. LUCIE: Question-4a, page-4

   "- - - -compare the RETRAN nodalization with the CESEC nodalization used in the FSAR, - - - -justify the differences, if any, between the two nodalizations."

   CONCERN:

   Same as above.

6. ST. LUCIE: Question-4b, page-5

Main Steam Line Break

"State how close the initial conditions of the Henry-Fauske model matched with those used with CESEC."

CONCERN:

Same as above.

7. ST. LUCIE: Question-5e, page-6

Loss of Load

"Include an explanation of differences in modeling (RETRAN versus CESEC) and how those differences translate into differing results."

CONCERN:

Same as above.

8. ST. LUCIE: Question-8a, page-7

Inadvertent Opening of the PORV

"Please explain this pressure difference in terms of the models in the two codes (RETRAN versus CESEC) and state which model is most realistic."

CONCERN:

Same as above.

CLARIFICATION REQUIRED

1. TURKEY POINT: Question-1, page-1

"In all transients where the "actual" data are used in the calculations, discuss degrees of uncertainties associated with data used in computations and later compared."

CLARIFICATION REQUIRED

1. ST. LUCIE: Question-3c, page-4

Natural Circulation Cooldown

"Explain why the code's computation of natural circulation in the upper head predicted onset of natural circulation to be more than an hour earlier than that observed at the test at SONGS."

Turkey Point

Enclosure

1. In all transients where the "actual" data are used in the calculations, discuss degrees of uncertainties associated with data used in computations and later compared. Explain each substantial change in slope of all plant parameters in the plots presented for each transient.

2. (Loss of 1 MFW Pump event) (i) Why do the results not agree well for 40-50 seconds after the reactor trip? (ii) What caused the steep change in slope in all the plant data at approximately 50 seconds and in the pressurizer at 50 & 55 seconds, in the steam generator pressure at 120 seconds, and at approx. 50, 75 and 80 seconds in the RETRAN analysis? (iii) The data indicate cycling in the pressurizer pressure from 20 to 50 seconds into the event yet this was not predicted by RETRAN. Please comment. (iv) In addition, demonstrate the adequacy of modeling the reactivity due to manual insertion of control rods by an input table. (v) Provide plots of core power, feedwater flowrate, auxiliary feedwater flowrate, and steam generator mixture level for both steam generators together with hot and cold leg pressure and temperature for both loops and the pressurizer pressure and level. (vi) In discussing the results, cross reference these plots. (vii) Finally, was the pressurizer on the affected loop?

3. (RCP Coastdown Test) The RETRAN simulation of this transient was performed for the first 20 seconds only. The flows for the case of one pump coastdown appear to begin diverging when the calculations were terminated. Provide further evidence that this is not the case, and if they are in fact diverging, explain and justify the divergence. If RETRAN auto initializer was used, what parameters were permitted to be adjusted by the code? If not, what adjustments to loss coefficients were made to obtain initial pressure profile and flowrate? Compare those coefficients to known friction losses. Were reverse flow loss coefficients through the pumps different than forward flow? Give numerical values and justify by comparison to plant or pump data.

   If these analyses were used to establish loss coefficients used in other transients for which the flow went down to natural circulation flowrates (such as Stuck Open Steam Generator relief valve and SBLOCA), carry the transient out to natural circulation flow and justify the end result. Plot and compare temperature as well as flowrate for each loop against data for the full length of the transient for which data are available.

   Explain what is meant by the "best estimate parameters taken from test data (p. 5-2)."

4. (Uncontrolled RCCA Withdrawal). Describe how the rod insertion was modeled and justify the rod insertion rate (i.e., reactivity insertion rate); the rate appears to be slower with RETRAN than that used in the FSAR.

   Explain the changes in slope in RETRAN results at approximately 20, 25, 52, 55 seconds. Explain why the slope of the temperature vs time is different in the RETRAN results from those of the FSAR. Explain why the two computations predict different trip times. Explain and justify why RETRAN seems to have a different total scram reactivity insertion than the FSAR computation. Plot reactivity, power, hot leg temperature, core inlet and outlet temperature, core flow and pressure vs. time.

5. More complicated transients, such as SBLOCA, Stuck-open steam generator relief valve (SGRV) and steam generator tube rupture require detailed and thorough discussions and analyses of results supported by plots and tables. Since only a handful of plots and limited thermal-hydraulic analyses were presented in the Westinghouse generic analysis, the liensee cannot demonstrate its analytical skills by comprison of his results to the generic study.

   For their SBLOCA analysis, the licensee presented plots of downcomer P and T, break flow and injection flow, accompanied by brief analysis. Here, the licensee has the opportunity to analyze a challenging transient. To do so, the licensee should plot and inter-compare hot and cold leg flows for both loops, pressurizer pressure and level, upper head void fraction and flows, core mixture level, (if the primary voids enough) void fractions in the hot legs and (if there was enough void) discuss countercurrent flows and recirculating natural circulation flow. In addition, from the plots that were presented, the licensee should discuss and explain the changes in slopes at roughly 2000, 2300, 3000 and 3700 seconds.

   In addition if the licensee intends that this analysis be used to meet PTS criteria, justify that a two inch break on the hot leg side will result in the worst case SBLOCA with respect to PTS. Compare the sequence of events between the Westinghouse generic analysis and the FPL analysis and explain differences, if any. Finally, compare the break flow (the crucial parameter) to the Westinghouse break flow and discuss how and why they are different.

6. (Stuck Open SGRV) The results presented for this analysis appear to be significantly different, with the RETRAN analysis under-predicting the overcooling in the early part of the transient (compared to Westinghouse's analysis) and in the long run over-predicting the overcooling by nearly 30 degrees. Explain the cause of this difference and, in addition, discuss why the initial conditions for the core inlet coolant temperature were not matched. Compare and discuss the differences in the SGRV flowrates computed by these codes, and compare and discuss the heat transfer coefficients used in these codes which may also contribute to the difference. In discussing these differences, refer to the following plots: steam generator pressure, mixture level, steam flowrate through the SGRV, heat transfer rate across the steam generator tubes, feedwater flow, hot and cold leg temperatures, flow rates and void fractions, upper head void fraction for the first 2000 seconds and, for the period from 2000 to 4000 seconds, plot and inter-compare affected loop hot and cold leg pressure, temperature and flow, PORV and charging flow and affected steam generator AFW and steam flowrate.

7. (SGTR) Provide, at a minimum, the following: break flow, steam generator pressure and temperature, affected steam generator mixture level, steam generator relief valve flow, AFW and MFW flows, SI flow, upper head void fraction together with details of the operator actions modeled. All of these should be accompanied by a thorough and specific discussion of each curve, cross referencing both phenomena and other plant parameters. In addition, justify the statement that the cold side break is the worst case.

8. We have insufficient data to assess the ability of FPL to perform licensing-type analysis, since FPL presented only one such transient analysis (Uncontrolled RCCA Withdrawal) in which they did not discuss the specific assumptions which they have made which are required for licensing purposes and which are different from best estimate analysis. Provide and justify all initial conditions and modeling assumptions as compared with nominal plant operating conditions to demonstrate that such choices will provide a conservative analysis.

Generically, for each transient:

i(a) describe the nodalization and justify its adequacy for the phenomena peculiar to that particular transient.

In addition, the submittal states that "reasonable" noding and parameter values were utilized. Justify the nodalization for each transient on the basis of the phenomena characteristic of that transient; specifically, address the following items:

i(b) Where there is an asymmetric loop condition which can impact the analysis of the transient, justify not using a split-core nodalization.

i(c) SLOBCA transient behavior is known to be very sensitive to the secondary nodalization (see ANL/LWR/NRC 83-12); therefore justify the nodalization used by providing results of sensitivity analyses to demonstrate the solution is converged.

i(d) Where steam generator flows govern the transient, justify using a non-recirculating, single volume boiling region nodalization.

i(e) Where primary flows become two phase (i.e., the pressurizer empties), justify the upper head nodalization and nodalization of the loop seals in the cold leg region.

(ii) describe in detial the plant control systems which were modeled for that transient and explain how their modeling conforms to the actual plant controls;

(iii) present enough plots of physical parameters throughout the plant and discuss the major changes of slope in each by reference to physical phenomena and justify such explanations by use of the plots of other variables.

ENCLOSUPE 1

REVIEW OF FLORIDA POWER AND LIGHT COMPANY'S (FP&L)
RETRAN CODE FOR ST. LUCIE UNITS 1 AND 2
REQUEST FOR ADDITIONAL INFORMATION

1. FP&L's RETRAN topical report covers both St. Lucie (a CE design) and Turkey Point (a Westinghouse design). Since there are substantial differences between these two plants, including control system differences, the staff cannot consider analyses performed for one plant to be applicable to the other. To determine that FP&L's RETRAN code can properly analyze all non-LOCA transients and accidents for St. Lucie, Units 1 and 2, provide the following information to address all catagories of non-LOCA transients and accidents for St. Lucie, Units 1 and 2.

   a. describe the nodalization for the reactor coolant system and the secondary system for each type of transient, and justify adequacy of the nodalization for the phenomena peculiar to that particular transient;

   b. describe in detail the plant control systems which were modeled for each type of transient, and explain how FP&L's modeling conforms to the actual plant controls;

   c. present enough plots of physical parameters throughout the plant to verify the modeling and discuss the major changes of slope in each plot by reference to physical phenomena. Justify explanations by use of the plots of other variables.

2. Justify the nodalization for each category of transient on the basis of the phenomena characteristic of that category of transient including the following:

   a. For transients in which there is an asymmetric loop condition which can impact the analysis of the transient, justify not using a split-core nodalization.

   b. For transients in which steam generator flows govern the transient, justify using a non-recirculating, single-volume-boiling-region nodalization.

   c. For transients in which primary flows become two phase (i.e., the pressurizer empties), justify the upper head nodalization and nodalization of loop seals in the cold leg regions.

   d. In all transients where "actual" data are used in the calculations, discuss the uncertainties associated with the data. In addition, demonstrate a thorough understanding of the transient by explanation of each substantial change in slope of all plant parameters.

   e. State which version of RETRANO2 was used to analyze each transient. If a version other than RETANO2/MODO2, which is an approved version, was used, state the principal differences between the two versions, and discuss the effects of the differences.

f. Explain the differences between the RETRAN analysis and the FSAR analysis in terms of the differences in the modeling of the two codes. Demonstrate the analytical capability of the code by comparing the results of the RETRAN analysis to separate effects tests and integral tests. The results of the separate effects tests and the integral tests may be more useful because of availability of the more extensive data and prior analyses. For each specific analysis demonstrate that the transient and the plant specific portions of the RETRAN analysis are proper.

3. In the natural circulation cooldown transient analysis, FP&L used a developmental version of RETRAN01 which had no capability to model non-equilibrium effects in the upper head. In addition, it is the staff's understanding that the developmental version may have had a significant number of modeling errors which were corrected by the RETRAN developers in their efforts to obtain NRC acceptance of the code eventually granted for RETAN01/MOD03 and RETRAN02/MOD02.

In view of the above discuss the following:

a. State whether FP&L's anlysis was carried out until stable natural circulation conditions would be achieved. If the analysis was not carried through to the time of stable natural circulation conditions, then provide a revised analysis, or state why another analysis is not necessary.

b. Explain why RETRAN01 over-predicted the primary fluid contraction for the first 3.5 hours but predicted a lower primary pressure for only the first 1.5 hours.

c. FP&L stated that "code validation is provided by the code's ability to calculate natural circulation conditions and the onset of void formation in the upper head." Explain why the code's computation of natural circulation in the upper head predicted onset of natural circulation to be more than an hour earlier than that observed at the test at SONGS.

d. FP&L also states that it used a "fast-running (i.e., few nodes) model which was detailed enough to calculated upper head temperature." These two goals appear to be mutually exclusive. Justify FP&L's use of the "fast-running model" by showing that the fast running model can accurately calculate upper head temperature by providing plots of temperature, flowrates and void fractions for the upper head region, and RCS flowrate.

4. Provide the following information for the main steam line break analysis:

a. Provide details of the RETRAN nodalization and compare the RETRAN nodalization with the CESEC nodalization used in the FSAR. Include cross flow modeling for this transient, and justify the differences, if any, between the two nodalizations.

b. Describe in detail what is meant by "a conservative, licensing type model," and justify its use, e.g., provide the justification for using the Henry-Fauske break flow model. State how close the initial conditions of the Henry-Fauske model matched with those used with CESEC.

c. Explain the nature of the anomalous behaviors in total reactivity and pressurizer pressure computed by RETRAN from roughly 140 sec to 200 sec. The core inlet temperatures show the same trend in both RETRAN and CESEC computations.

d. Explain in detail why RETRAN did not compute a return to power Plot all reactivities and compare the RETRAN value with those computed by CESEC.

5. FP&L states that the purpose of the loss-of-load transient analysis is to demonstrate the technique of turning the RETRAN base model into a licensing type model. Provide more discussion to demonstrate how this is accomplished including the following:

a. It does not appear that the RETRAN results compare well with the FSAR predictions, i.e., the difference between the results of pressurizer pressure grows monotonically such that by the end of the calculation the difference exceeds 100 psi. Explain this difference.

b. Explain the source of the wave effect in the pressurizer pressure and the average RCS temperature between roughly 50 to 200 seconds. In addition, compare the hot and cold leg temperatures separately. Also, explain this effect by either comparing and/or providing plots of the secondary side parameters.

c. If FP&L compares the RETRAN analysis to the CESEC analysis, include a thorough discussion of the difference between the results obtained by the two codes. Include an explanation of differences in modeling and how those differences translate into differing results. In addition, if a loss of load has happened or been simulated at the plant, it may be helpful to resolve the differences between the two models by comparing the model predictions to actual plant data.

6. In FP&L's generator trip transient analysis, the so-called "inflection" in the steam generator pressure at roughly 10 sec is too strong to be caused by "small differences between the actual and calculated energy removal rates of the steam dump and bypass system." Although the difference is probably due to differences in steam dump flowrate, this inflection causes a substantial difference and may be the source of all ensuing differences. Perform parametric analyses to determine if the difference in the steam dump flowrate are the cause and show the long-term impact of the differences in steam dump flowrate.

7. In FP&L's main steam isolation valve (MSIV) closure analysis, provide the following information:

   a. Explain why RETRAN predicted the PORV opening almost 1 second earlier than the data, although it predicted the reactor trip and the turbine trip occurring at roughly the same time as the plant data.

   b. Explain why RETRAN depressurized at roughly the same rate to the same pressure although it predicted the mixture level about 6% of the pressurizer level higher than crossed over the data without this behavior translating to the primary pressure behavior, i.e., explain the pressurizer level behavior predicted between 100 to 500 sec.

8. In FP&L's analysis of an inadvertent opening of the PORV provide the following information:

   a. The purpose of this analysis was to justify the RETRAN non-equilibrium pressurizer model. However, the comparison of the RETRAN results to the CESEC results indicates pressure differences in the reactor coolant system of approximately 100 psi over the time period from 60-120 sec. Please explain this pressure difference in terms of the models in the two codes and state which model is most realistic.

b. Explain why the main steam safety valves cycled at least 5 times in the FSAR calculation yet RETRAN computed only 4 times.

c. Provide the flowrate through the PORV's for the course of this transient. State whether the PORV flow became two phase. If two phase flow was used, explain and justify the flowrate computation. In addition, discuss and justify the critical flow model chosen for this flow.

9. State the purpose of the loss of forced flow analysis. If the purpose was to validate the pump characteristics, the loop hydraulic resistance, and the reactor protection systems, the flow (which was only taken down to roughly 45% of nominal) is hardly sufficient to check out either the pump characteristics or the loop hydraulics. If the purpose was to estimate DNB, state whether RETRAN was used to examine this. If RETRAN was used, provide results. Compare the core exit temperature(s) to the FSAR value(s).

10. For FP&L's control element assembly drop analysis, provide the following information:

a. The slopes of core power drop are very different between the two analyses. Explain the difference between the negative reactivity insertion simulation in the two analyses. Provide a comparison

of each reactivity feedback during the transient. Explain why RETRAN computed about 75% of the return to power that CESEC computed. The RETRAN analysis resulting in about 91% peak power, while the FSAR value was 93%.

b. Explain why the RETRAN primary pressure continues to drop when the other parameters appear to return to about the original value.

c. Explain why RETRAN computed a lower core heat flux, average core coolant temperature, and core power although the computed pressurizer pressure was higher for the first 40 seconds.

FPL FUTURE PLANS

- TURKEY POINT Rx TRIP BYPASS INCREASED
  - SETPOINT CHANGED FROM 10% to 30%
  - SUBMITTAL PLANNED 3/1/87
  - SUPPLEMENTAL INFORMATION PROVIDED

- ST. LUCIE Rx TRIP BYPASS INCREASED (eg. 15 → 25% planned)
  - AWAITING TEST RESULTS FOR SDBS (Steam Dump and By Pass System)

- ADDITIONAL PLANS FOR 1987
  - VIPRE AND DNB CORRELATION TOPICAL
  - DNB TRANSIENTS LICENSING METHODOLOGY

- LONGER TERM PLANS
  - SUPPLEMENTAL LICENSING METHODOLOGY
  - TECHNICAL SPECIFICATION AMENDMENTS AND PLANT CHANGES
  - SETPOINT METHODOLOGY FOR PSL SITE