



Southern Nuclear Operating Company

*the southern electric system*

J. D. Woodard  
Vice President  
Farley Project

July 29, 1992

Docket Nos. 50-348  
50-364

U. S. Nuclear Regulatory Commission  
Region II  
P. O. Box 2257  
Atlanta, GA 30301

Joseph M. Farley Nuclear Plant  
Reply to Inspector Follow-up Items  
Report Number 50-348, 364/92-14  
Item Numbers 50-348, 364/92-14-02 and 92-14-03

Gentlemen:

By Inspection Report 50-348, 364/92-14 dated June 29, 1992, two Inspector Follow-up Items were identified concerning the following Farley Nuclear Plant (FNP) practices:

- 1) The incore/excore nuclear instrumentation correlation test is routinely performed at power levels substantially below that specified in the Final Safety Analysis Report for the initial performance of this test.

IFI 50-348 and 50-364/92-14-02: Re-evaluate and justify conducting the incore/excore nuclear instrument correlation test at reduced power.

- 2) Post trip reviews conducted by the licensee were judged to be weak in that no consideration was given to plotting post-mortem data to gain insight on the interaction and interdependences of plant variables and systems during the transient. Furthermore, plant procedures do not require that these data be archived in an easily retrievable manner for later analysis, if desired.

IFI 50-348 and 50-364/92-14-03: Evaluate and justify not retaining all available post-mortem data related to a reactor trip.

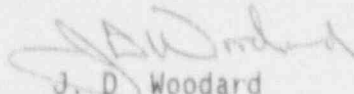
Responses to these Inspector Follow-up Items are included as Attachment 1 and 2 respectively.

If you have any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

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J. D. Woodard

JDW/RDR:mef  
Attachments

cc: Mr. S. D. Ebner  
Mr. S. T. Hoffman  
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## ATTACHMENT 1

IFI 50-348 AND 50-364/92-14-02

### NRC Concerns Summary

Our understanding of NRC concerns as identified in the inspection report and transmittal letter is summarized as follows:

- FNP's practice of performing this procedure below 75% power results in reduced precision and questionable applicability to full power operation. Plant initial startup testing criteria (75% RTP) for the initial conduct of the incore/excore cross-calibration procedure is referenced.
- A true incore/excore correlation and detector slope (current per unit of axial offset) determination is only performed at the beginning of the cycle. The monthly STP-121 is thought to adjust only the zero offset of the full power currents and not the slope of the currents. This does not adjust for core flux leakage characteristics which are different at full power and for possible detector response dependency upon core burnup. Adjusting only the zero-offset currents does not appear to be adequate to ensure that the delta flux inputs to the over-temperature delta-temperature trip circuits reflect actual flux differences.
- Trip # 78 on Unit 2 (LER 92-006-00) was a direct result of FNP's efforts to improve the quality of the data for the incore/excore correlation procedure performed at low power. Induced noise from unshielded DVMs used for precision measurement of NI currents resulted in cycling of the 35% power P-8 permissive bistable and failure of NI control power fuses. The NRC's understanding of FNP's proposed corrective action is that it includes further reducing the reactor power for conducting STP-121.

### FNP Practices and Justification Response

During the Unit 1 and Unit 2 initial startups, as described in the FSAR for initial startup testing, the incore/excore cross-calibration was performed at 75% power. Subsequently, the incore/excore calibration test continued to be performed at 70% - 75% power through Cycle 7 and Cycle 4 operation of Unit 1 and Unit 2, respectively.

Beginning with Unit 1 Cycle 8 and Unit 2 Cycle 5 refueling startups, the incore/excore calibration procedure was changed to be performed at approximately 35% power (supplemented by a calibration adjustment at 75% - 100% power). A 10 CFR 50.59 evaluation was completed for this procedure change. Initially, to confirm the validity of this method, an independent, supplemental calibration was performed. This consisted of taking additional flux maps at different axial offsets during power ascension between 50% and 70% power and comparing the results of the latter with the 35% power calibration.

This practice of performing the incore/excore cross calibration at approximately 35% power has been reevaluated and it is our position that continuing it is justified. The justification for continuing this practice is as follows:

- 1) Accuracy of data obtained at approximately 35% power is adequate because
  - i) At lower power levels AFD can be varied more than at a higher power level. This allows more accurate determination of detector current slopes than at a higher power level.
  - ii) Cycle startup procedures require verifying the accuracy of the cross calibration when power levels exceed 75% power (typically performed at 100% power). If recalibration is required the zero offsets and slopes of the power range currents are adjusted. Cumulative calibration results show that data at low power is consistent with data from high power.
- 2) The FSAR and Technical Specifications do not require that the incore/excore cross-calibration procedure be performed at 75% power for refueling startups or during cycle operation. The FNP Technical Specifications require evaluation of the incore/excore calibration every 31 EFPD using flux map data and recalibration of the PRNI channels as required to meet the Technical Specification limits.
- 3) Monthly (every 31 EFPD) the adequacy of incore/excore cross calibration is checked. If this check determines calibration drift or error, procedures require recalibration which adjusts both the zero offsets and the slope of the power range currents.
- 4) Computer analysis of core flux distributions have shown negligible variations in incore/excore axial offset calibration slope between 35% power and 100% power.
- 5) By performing the incore/excore cross calibration at 35% power, the QPTR and AFD are reliable prior to increasing power above 35% power.

With regard to the NRC's understanding of our corrective action as a result of Trip #78, FNP did discuss further reducing the power level for conducting the incore/excore calibration. However, after further evaluation, FNP decided to continue performing this procedure at 35% power.

## ATTACHMENT 2

IFI 50-348 AND 50-364/92-14-03

### NRC Concerns Summary

Our understanding of NRC concerns as identified in the inspection report and transmittal letter is summarized as follows:

FNP's ability to perform root cause analysis of trip events appears to be weakened by the following:

- There is no procedural requirement to archive the contents of the plant computer trip history buffer to magnetic tape for further qualitative analysis.
- Consideration is not given to plotting applicable variables that would provide insight to response of plant systems to operator actions.

### FNP Practices and Justification Response

Pre- and post-trip information is stored on the plant computer until a permissive to overwrite the data is manually input to the plant computer and the next reactor trip breaker actuation occurs. The inspection report incorrectly states that trip data on the plant computer is lost upon resetting the trip breakers. Assessment of our pre- and post-trip data archiving practices has identified an opportunity for enhancement of data archiving practices. Accordingly, FNP has established procedural requirements to archive the plant computer pre- and post-trip histories to magnetic tape.

Existing FNP procedures require review of appropriate data for determination of the cause of the reactor trip prior to restarting the unit. Data plotting is performed when necessary to determine the cause of the trip and uses information such as recorder charts, plant computer data output, and the DEH turbine control system history storage and retrieval features. FNP will continue data plotting when appropriate to the determination of the cause of a reactor trip. Reassessment of the trip review procedure has identified enhancements which will be made to clarify trip information presentation capabilities of the plant computer. This will assist Operations and other plant personnel in performing reactor trip reviews.