UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

December 8, 1980

MEMORANDUM TO: P. S. Check, Assistant Director
Plant Systems, DSI

L. Rubenstein, Assistant Director
Core and Containment Systems, DSI

FROM: T. M. Novak, Assistant Director
for Operating Reactors, DL

SUBJECT: ANO-2 CYCLE 2 RELOAD REVIEW

ANO-2 is currently scheduled to shutdown for the first refueling on March 15, 1981. There are several areas of the reload design that may require substantial review because of system design changes. Therefore, we have suggested that AP&L Co. develop an overall plan for the core reload application. In response they have provided the information in the enclosure.

We request that the enclosure be reviewed by Plant Systems and Core and Containment Systems to identify as early as possible the potential problem areas. We also request feedback regarding who the reviewers are to be and whether there is reasonable assurance that the schedules identified in the enclosure can be met. It is expected that I&CSB and CPB (all three sections) will have the principal areas of review.

The TACS number is 12078 and the PM is R. Martin (28460). Your response is requested within two weeks of the date of this memorandum.

T. M. Novak, Assistant Director
for Operating Reactors
Division of Licensing

Enclosure:
As stated

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Rcvd 12/3/80

ANO-2 CYCLE 2 RELOAD SUBMITTAL ACTION PLAN

I. INTRODUCTION

The ANO-2 reactor system design and analysis for the Cycle 2 reload is essentially complete. The COLSS/CPC software updates for Cycle 2 operation are also nearly complete. Consequently, the time is appropriate to formally establish a plan for the review of the reload design by the NRC in order to obtain approval for Cycle 2 operation in the required time frame. Hence, the objective of this action plan is to outline such a plan or strategy that will expedite the reload design review process and ensure NRC approval is obtained in a timely manner.

The action plan addresses three major areas related to the ANO-2 Cycle 2 reload design review. First, the action plan establishes the schedule for submittal and review of the reload documentation. Second, the action plan will identify the specific documents to be submitted to the NRC. Lastly, the action plan will identify specific areas of the reload design that may require more effort for review because of system design changes and will identify specific areas of the reload design that are common with or interface with other ongoing licensing efforts.

II. CYCLE 2 RELOAD DESIGN DESCRIPTION

The ANO-2 Cycle 2 reactor system design and operating characteristics are generally identical to ANO-2 Cycle 1. There are sixty Batch D assemblies in the reload batch that will replace sixty Batch A assemblies. The Cycle 2 core will then contain one Batch A assembly, sixty Batch B assemblies, fifty-six Batch C assemblies and sixty Batch D assemblies. Two of the Batch D assemblies will contain fuel rods of various advanced designs that are being tested as a result of a Department of Energy contract for high burnup demonstrations. A review of all postulated accidents and anticipated operational occurrences has shown that the ANO-2 Cycle 2 reactor system design meets the applicable safety criteria.

The Cycle 2 reload will incorporate several changes in the COLSS/CPC system software. One change to the COLSS/CPC system software will be to replace the COSMO/W-3 DNBR methodology presently utilized in the Cycle 1 software with the TORC/CE-1 DNBR methodology. Another change will be the application of an improved statistical combination of uncertainties methodology to determine and combine the uncertainties embodied in the COLSS/CPC thermal margin calculation. The statistical combination of uncertainties methodology is an extension of the methodology applied for ANO-2 Cycle 1 and is very similar to the statistical methodology recently submitted by Baltimore Gas & Electric. Both the TORC/CE-1 DNBR methodology and the statistical combination of uncertainties methodology may require more review effort than a typical reload. Additionally, the

Cycle 2 reload will include a technical specification change related to the CPC system that will change the steam generator level setpoint and, therefore, the CPC system will provide the leading trip for the asymmetric steam generator transient.

III. SCHEDULE

The schedule for the planned ANO-2 Cycle 2 refueling outage and for the submittal of the Cycle 2 reload documentation is shown by Figure III-1. Also, Table III-1 provides specific dates for the events shown in Figure III-1.

IV. CYCLE 2 RELOAD DOCUMENTATION

The ANO-2 Cycle 2 Reload Analysis Report will be the primary document submitted for the Cycle 2 reload approval. The reload report will describe the Cycle 2 reactor system design in detail. Table IV-1 shows the Table of Contents for the reload report. Two additional reports will be submitted that will be referenced by the reload report. The content of these reports will support the reload report and provide more detailed information on the CPC software change and the statistical combination of uncertainties applied to the COLSS/CPC thermal margin calculation. The first of these two reports is CEN-139(A)-P, Statistical Combination of Uncertainties, November 1980, and the second is CEN-143(A)-P, Mod 4 CPC Software Revision, November 1980. The Statistical Combination of Uncertainties report is similar to CEN-124(B)-P, Statistical Combination of Uncertainties, recently submitted by Baltimore Gas & Electric. Table IV-2 is a partial list of other documents to be referenced by the reload report.

TABLE III-1

Event Schedule for Reload Submittal

November 25, 1980	AP&L Submit Statistical Combination of Uncertainties Report to NRC
December 15, 1980	AP&L Submit Reload Report and CPC Report to NRC
March 15, 1980	ANO-2 Shutdown for First Refueling
May 25, 1980	NRC Approve Reload Report
May 25, 1980	ANO-2 Cycle 2 Startup Tests Begin
May 31, 1980	ANO-2 Cycle 2 Operation Begins

FIGURE III-1 RELOAD SUBMITTAL SCHEDULE

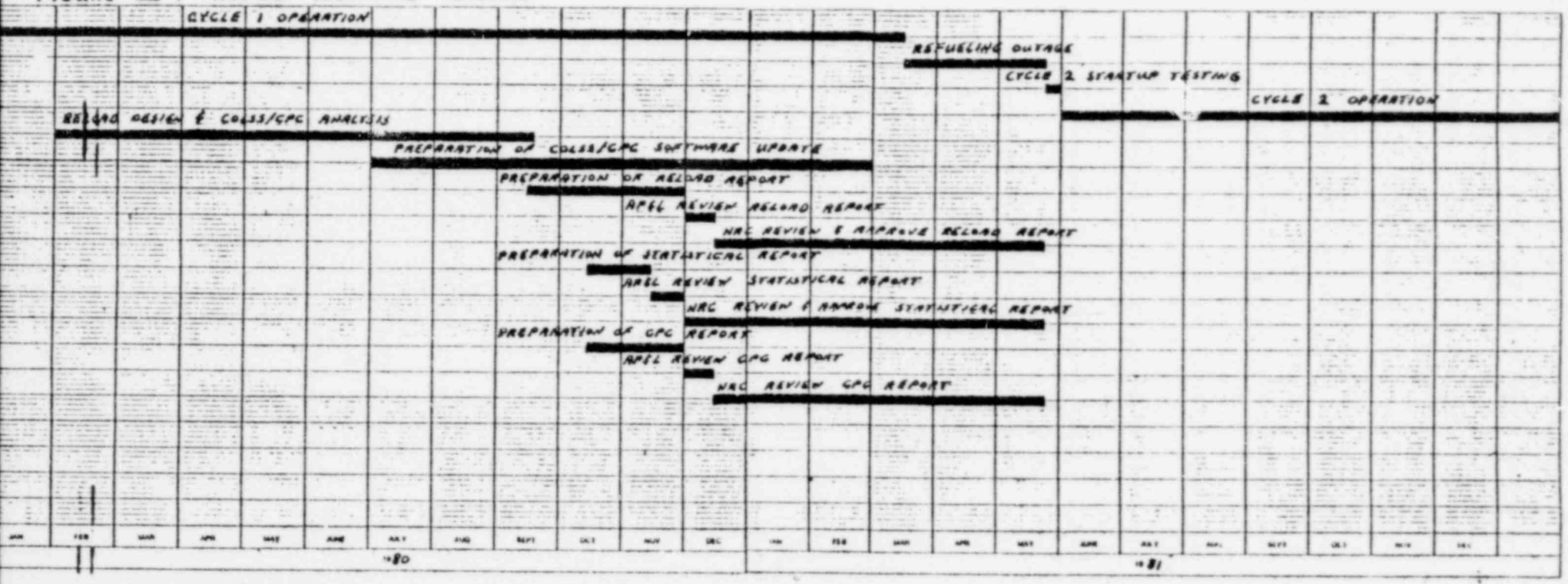

TABLE VI-1

Arkanas Nuclear One - Unit 2

Cycle 2 Reload Report

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TABLE IV-2

Partial List of Reload Report References

1. "Final Safety Analysis Report", Arkansas Power & Light Company, Docket No. 50-368.

2. "Startup Report", Arkansas Power & Light Company, Docket No. 50-368.

3. CENPD-153-P, Rev. 1-P-A, "INCA/CECOR Power Peaking Uncertainty", May 1980.

4. CENPD-161-P, "TORC Code, A Computer Code for Determining the Thermal Margin of a Reactor Core", July 1975.

5. CENPD-162-P-A, "Critical Heat Flux Correlation for CE Fuel Assemblies with Standard Spacer Grids, Part 1, Uniform Axial Power Distribution", April 1975.

6. CENPD-206-P, "TORC Code, Verification and Simplified Modeling Methods", January 1977.

7. CENPD-225-P, Supplement 3-P, "Fuel and Poison Rod Bowing", June 1979.

8. CENPD-107-P, "CESEC Digital Simulation of a Combustion Engineering Nuclear Steam Supply System", April 1974.

9. CEN-39(A)-P, Revision 2, "CPC Protection Algorithm Software Change Procedure", December 21, 1978.

10. CEN-39(A)-P, Supplement 1-P, Revision 1, "CPC Protection Algorithm Software Change Procedure", January 5, 1979.

11. CENPD-170-P, "Assessment of the Accuracy of PWR Safety System Acuation as Performed by the Core Protection Calculations", July 1975.