

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

500C Chestnut Street Tower II

February 20, 1979

Director of Nuclear Reactor Regulation
Attention: Mr. Karl Kniel, Chief
Core Performance Branch
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Kniel:

PROPOSED TOPICAL REPORT ON LATTICE PHYSICS METHODS AND CORE
SIMULATIONS

In reference to your June 6, 1978, letter to Mr. Watson, the Tennessee Valley Authority (TVA) submits for your review 40 copies of each of the following topical reports, TVA-TR78-02, "Methods for the Lattice Physics Analysis of LWR's," TVA-TR78-03, "Three-Dimensional LWR Core Simulation Methods," and TVA-TR79-01, "Verification of TVA Steady-State BWR Physics Methods."

Beginning with Browns Ferry unit 3, cycle 4, TVA intends to perform the steady-state final fuel cycle design analyses including the calculation of reactivity characteristics to be used as input to transients analyses performed by the General Electric Company. Browns Ferry unit 3, cycle 4 is scheduled to be loaded in the fall of 1980 and TVA's calculations to support this reload effort must begin in the fall of 1979. We plan to use the methods described in the topical reports to perform all steady state physics calculations for BWR reload fuel cycle planning, design and licensing applications. Included are the following activities:

1. Specification of number and type of fuel assemblies;
2. Development of loading patterns;
3. Determination of cycle exposure capability;
4. Specification of EOC target exposure distribution;
5. Evaluation of shutdown margin;
6. Evaluation of worth of Standby Liquid Control System; and
7. Development of kinetics input data for transient analyses.

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Director of Nuclear Reactor Regulation

Therefore, it would be appreciated if your review and acceptability determinations for the three enclosed topicals could be completed by September 1, 1979. We would be pleased to meet with your staff to discuss the contents of the reports if you believe it would be helpful.

Also enclosed is a copy of TVA's Relcad Design Analysis Plan that was requested in the August 15, 1978, meeting with you and the NRC staff.

Very truly yours,


J. E. Gilleland
Assistant Manager of Power

Enclosures

ENCLOSURE

TVA's RELOAD DESIGN ANALYSIS PLAN

In 1977 TVA management endorsed a five year program to acquire the capability to independently perform reload fuel cycle design analyses and to use that capability for planning and licensing purposes. This ability is to be used in successive phased stages recognizing that the fuel suppliers will retain detailed design responsibility for the individual fuel assembly. The application of that program to steady-state design and operational transients will enable TVA to license reload cycles for operation with significantly less analytical support from the fuel supplier. The attached table describes our overall program that gradually assumes increasing responsibility in an orderly and planned manner consistent with demonstrated capabilities.

<u>TVA Topical</u>	<u>Submittal Date</u>	<u>NRC Approval Requested</u>	<u>Vendor Topical Equivalent</u>
1. Lattice Physics Methods	February 79	September 79	NEDE-20953
2. Nodal Simulator Methods	February 79	September 79	NEDE-20913 P
3. BWR Physics Methods Verification	February 79	September 79	NEDO-20946 A NEDO-20939
4. BWR Operational Transients	March 80	March 81	
5. PDO-7 Model for PWR	October 80	October 81	
6. PWR Physics Methods Verification	October 80	October 81	
7. PWR Operational Transients	October 80	October 81	