

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
Washington, D. C. 20555  
November 5, 1985

MFN 141-85

Ms. J.S. Charnley, Manager  
Fuel Licensing  
General Electric Company  
175 Curtner Avenue  
San Jose, California 95125

17

Dear Ms. Charnley:

SUBJECT: Acceptance for Referencing of Licensing Topical Report NEDE-24011-P-A Rev. 6,  
Amendment 11, "General Electric Standard Application For Reactor Fuel"  
(GESTAR II)

We have completed our review of the subject topical report submitted by the General Electric Company (GE) letter dated February 27, 1985. We find the report to be acceptable for referencing in license applications to the extent specified and under the limitations delineated in the report and the associated NRC evaluation pertaining to treatment of uncertainties in the calculation of Operating Limit MCPR values, which is enclosed. The evaluation defines the basis for acceptance of the report.

We do not intend to repeat our review of the matters described in the report and found acceptable when the report appears as a reference in license applications, except to assure that the material presented is applicable to the specific plant involved. Our acceptance applies only to the matters described in the report.

In accordance with procedures established in NUREG-0390, it is requested that GE publish accepted versions of this report, proprietary and non-proprietary, within three months of receipt of this letter. The accepted versions shall incorporate this letter and the enclosed evaluation between the title page and the abstract. The accepted versions shall include an -A (designating accepted) following the report identification symbol.

Should our criteria or regulations change such that our conclusions as to the acceptability of the report are invalidated, GE and/or the applicants referencing the topical report will be expected to revise and resubmit their respective documentation, or submit justification for the continued effective applicability of the topical report without revision of their respective documentation.

Sincerely,

Cecil O. Thomas, Chief  
Standardization and Special Projects Branch  
Division of Licensing

Enclosure:  
As stated

**ENCLOSURE**  
**EVALUATION OF AMENDMENT 11 TO NEDE-24011-P-A**

By letter dated February 28, 1985 (Reference 1) General Electric Company (GE) submitted Amendment 11 to the GE Licensing Topical Report NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel" (GESTAR II). Additional information was submitted in a meeting on June 21, 1985 and subsequently in Reference 2 in response to a request from the staff (Reference 3). The Core Performance Branch and the Reactor Systems Branch have reviewed the information submitted and prepared the following evaluation.

Amendment 11 to GESTAR II alters the document to include an updated version of the ODYN code among the calculational techniques used for plant transient analyses and alters the manner in which calculational uncertainties are treated in obtaining core operating limits. A description and justification of the code revisions were included in References 1 and 2. The changes to the ODYN calculational model include:

1. Improved Neutronics Methods

These methods are described in Reference 4, which has been reviewed and approved by the staff (Reference 5).

2. Inclusion of GESTR-M Fuel Performance Model

This model has been approved by the staff as part of the approval of Amendment 7 to GESTAR-II (Reference 6).

3. Improved Bulkwater Model

Improvements include more detailed nodalization, use of a drift flux rather than a homogeneous formulation in the void correlation and use of a void profile and feedwater quenching. Reference 2 presents comparisons of both the new and current void correlations with experiments and demonstrates the superiority of the new correlation.

4. Improved Upper Plenum Model

The improved model uses a drift flux rather than a homogeneous model and an improved calculation of the mass holdup.

5. Improved Separator Mass Storage Model

The improved model uses a transient, homogeneous mass balance rather than a quasi-steady-state mass balance.

Data were provided in Reference 2 on the results of comparisons of the old and new ODYN calculations to the Peach Bottom turbine trip tests. These data showed that the new ODYN results provided generally better agreement with the test data than did the old ODYN calculations. Breakdown of the calculations to separate out the effects of the various improvements showed that most of the improvement occurred from the inclusion of the previously approved methods in the calculations. Based on improved agreement with experiments and the refinement of the calculational models as described above we conclude that the improvement to the ODYN code are acceptable.

In addition to implementing the new model, GE intends to continue use of the current model for appropriate non-limiting calculations. We find this acceptable.

Amendment 11 also revised the manner in which code uncertainties are handled in obtaining the Option A and Option B MCPR operating limits. However insufficient justification has been provided for this change and we conclude that the currently used treatment of uncertainties must continue to be used. This has been discussed with GE and they concur in this condition to the staff approval of this amendment.

## REFERENCES

1. Letter, J.S. Charnley (GE) to C.O. Thomas (NRC), "Amendment 11 to GE LTR NEDE-24011-P-A", February 27, 1985.
2. Letter, J.S. Charnley (GE) to C.O. Thomas, (NRC), "Response to Request No. 1 for Additional Information on NEDE-24011 Rev. 6, Amendment 11," July 18, 1985.
3. Letter, C.O. Thomas, (NRC) to J.S. Charnley (GE), "Request Number 1 for Additional Information on NEDE-24011 Rev. 6, Amendment 11", May 9, 1985.
4. NEDE-30130-A, "Steady State Nuclear Methods", May, 1985.
5. Letter, C.O. Thomas (NRC) to J.S. Charnley (GE), "Acceptance for Referencing of Licensing Topical Report NEDE-30130, 'Steady-State Nuclear Methods' December 22, 1983". (See also page following the title page of the approved report).
6. Approval letter, C.O. Thomas (NRC) to J.S. Charnley (GE), dated March 1, 1985.