

SSSES-FSAR

QUESTION 231.1

Section 4.2 of the FSAR references NEDO-20944 as the sole input for fuel design. In our review of this GE topical, one further report was generated, "BWR/4 and BWR/5 Fuel Design, Amendment 1," NEDE-20944-1P, January, 1977. This report should be applicable to Susquehanna and should be referenced.

RESPONSE:

NEDE-20944-1P (Amendment One to NEDE-20944-P) is applicable to Susquehanna SES.

References have been added to Section 4.2 and Section 1.6.

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QUESTION 231.2

Recently we questioned the validity of fission gas release calculations in most fuel performance codes including GEGAP-III for a burnup greater than 20,000 MWd/tU. General Electric Co. was informed of this concern on November 23, 1976 and was provided with a method of correcting gas release calculations for burnups greater than 20,000 MWd/tU. Since there was no question of the adequacy of GEGAP-III for burnups below 20,000 MWd/tU, your calculations are acceptable for operation early in life until the peak local burnup reaches 20,000 MWd/tU. For burnups in excess of that value, GEGAP-III calculations (and other affected analyses) must be redone using the correction method mentioned above or such modified methods that might be submitted by Pennsylvania Power and Light Co. or General Electric Co. and approved by us.

RESPONSE:

This information is provided in Subsection 4.2.3.2 of the Susquehanna SER (NUREG-0776).

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QUESTION 231.3

Recently NRC has questioned the validity of fission gas release calculations in most fuel performance codes including GEGAP-III for a burnup greater than 20,000 MWd/tU. General Electric was informed of this concern on November 23, 1976 and was provided with a method of correcting gas release calculations for burnups greater than 20,000 MWd/tU. Since there was no question of the adequacy of GEGAP-III for burnups below 20,000 MWd/tU, the Susquehanna 1 and 2 calculations are acceptable for operation early in life until the peak local burnup reaches 20,000 MWd/tU. For burnups in excess of that value, GEGAP-III calculations (and other affected analyses) must be redone using the correction method mentioned above or such modified methods that might be submitted by Pennsylvania Power and Light or General Electric and approved by the NRC.

RESPONSE:

See response to Question 231.2.

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QUESTION 231.4

Our requirement for routine fuel surveillance is discussed in paragraphs I.D and II.D of Section 4.2 (Revision 1) of the Standard Review Plan. Please refer to that document and submit a description of the on-line rod failure detection methods and a description of the post-irradiation fuel surveillance program planned for Susquehanna 1 and 2.

RESPONSE:

See FSAR Subsection 4.2 for a reference to the subject document and surveillance program. See FSAR Section 11.5 for on-line monitoring system descriptions.

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QUESTION 231.5

The NRC staff has been generically evaluating three materials models that are used in ECCS evaluations. Those models predict cladding rupture temperature, cladding burst strain, and fuel assembly flow blockage. We have (a) discussed our evaluation with vendors and other industry representatives (Reference 1), (b) published NUREG-0630, "Cladding Swelling and Rupture Models for LOCA Analysis" (Reference 2), and (c) required licensees to confirm that their operating reactors would continue to be in conformance with 10 CFR 50.46 if the NUREG-0630 models were substituted for the present materials models in their ECCS evaluations and certain other compensatory model changes were allowed (References 3 and 4).

Until we have completed our generic review and implemented new acceptance criteria for cladding models, we will require that the ECCS analyses in your FSAR be accompanied by supplemental calculations to be performed with the materials models of NUREG-0630. For these supplemental calculations only, we will accept other compensatory model changes that may not yet be approved by the NRC, but are consistent with the changes allowed for the confirmatory operating reactor calculations mentioned above.

REFERENCES

1. Memorandum from R.P. Denise, NRC, to R. J. Mattson, "Summary Minutes of Meeting on Cladding Rupture Temperature, Cladding Strain, and Assembly Flow Blockage," November 20, 1979.
2. D. A. Powers and R. O. Meyer, "Cladding Swelling and Rupture Models for LOCA Analysis", NRC Report NUREG0630, April 1980.
3. Letter from D. G. Eisenhut, NRC, to all Operating Light Water Reactors, dated November 9, 1979.
4. Memorandum from H. R. Denton, NRC. to Commissioners, "Potential Deficiencies in ECCS Evaluation Models," November 26, 1979.

RESPONSE:

FSAR Subsection 6.3.3.7.1 provides a reference to a detailed evaluation which responds to this question.