

JUN 2 1981

Mr. J. H. Taylor
Manager, Licensing
Babcock & Wilcox Company
Power Generation Group
P. O. Box 1260
Lynchburg, Virginia 24505

Dear Mr. Taylor:

During recent months we have had a series of meetings concerning the potential for extended (higher than the traditional 28,000 to 33,000 Mwd/t) burnup of LWR fuel. We have used these meetings to discuss the basis for operation of fuel to extended burnups, including available operating data, analytical models, and test programs concerning burnup-related fuel performance phenomena.

As pointed out during the meetings, we believe that present licensing requirements as described in the Standard Review Plan (SRP) are adequate for extended burnup considerations, and what is needed, therefore, is a review of present methods and safety analyses to assure their validity over the extended burnup range proposed. After reflecting upon the information presented and discussed in our meeting, we have concluded that a considerable amount of information exists and that extended burnup operation is justifiable. The information that would lead to this conclusion has not been documented, however, and is in a mixed form that does not lend itself to a systematic and orderly review. Accordingly, you may want to prepare and submit for our review a topical report that covers your extended burnup experience, methods, and test data, and which will provide the basis for a generic approval of operation of your fuel to a target burnup.

You should choose a target burnup to cover fuel that you intend to operate to that target in the near future (up to 5 years) and which is justifiable by the information offered in your topical report. Assuming that you submit your report before the end of 1981, we would endeavor to complete our review by mid-1982. The approved report would then serve as a document that could be referenced by your customers in lieu of separate, plant-specific analyses that would have to be submitted and reviewed each time a licensee proposed to operate fuel beyond a previously approved burnup value.

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We are enclosing a suggested outline for the requested topical report. Based on our earlier meeting, we believe that you have much of this information available now. We appreciate your cooperation in expediting this matter. If you have any questions, please contact Dr. Michael Tokar on (301) 492-9447.

Sincerely,

*(Original signed by
L. S. Rubenstein*

L. S. Rubenstein, Assistant Director
for Core and Containment Systems
Division of Systems Integration

*ENCLOSURE:
As stated*

DISTRIBUTION:
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IDENTICAL LETTER SENT TO: T. M. Anderson, Westinghouse
R. H. Buchholz, General Electric
G. F. Owsley, Exxon
A. E. Scherer, Combustion Engineering
J. H. Taylor, Babcock & Wilcox

OFFICE	DSI:CPB	DSI:CPB	DSI:CPB	AD:CCS-DSI		
SURNAME	MTokar:ld	RMeyer <i>RM</i>	Acting BC <i>RM</i>	LRubenstein		
DATE	5/28/81	5/28/81	5/28/81	6/2/81		

SUGGESTED TOPICAL REPORT OUTLINE

"EXTENDED BURNUP OPERATION OF LWR FUEL RODS"

ABSTRACT

SUMMARY

1. INTRODUCTION

(This section should be a brief introduction to the report, including pertinent background information and report objectives.)

2. ISSUES CONCERNING EXTENDED BURNUP OPERATION

2.1 Normal Steady-State Operation.

2.2 Power Ramping Operation.

2.3 Transient and Accident Operation.

(This section should include a review of specific fuel rod behavior phenomena affected by burnup or residence time. Examples of specific technical areas which should be considered are: cladding creepdown, cladding axial growth, PCI, corrosion, fission gas release, operation of defective fuel, and neutronics. Items should include, but should not necessarily be limited to, those shown in Table II of an NRC memorandum, M. Tokar to W. V. Johnston, "Extended Burnup Fuel -- Generic Kickoff Meeting," February 18, 1981. Assurance should be provided either that all the acceptance criteria in SRP Section II.A.1, 2 & 3 are not affected or that appropriate modifications have been made and justified for extended burnup.)

3. REVIEW OF CURRENT DATA BASE

3.1 Normal Steady-State Operation.

3.2 Power Ramping Operation.

3.3 Transient and Accident Operation.

(This section should summarize the available data and define its extent for each of the items identified in Section 2. Only the high exposure interaction with those phenomena (not the items per se) need to be addressed. Data regarding advanced high burnup fuel designs including PCI-remedy designs, should also be presented if such designs are to have imminent use.)

4. CODE QUALIFICATION

(This section should include model-to-data comparisons to show that burnup-dependent and residence-time-dependent phenomena are explicitly modeled in vendor fuel performance codes and that the models are qualified to the desired burnup. Submodel qualification rather than whole-code qualifications is sufficient.)

5. CURRENT AND PLANNED EXPERIMENTAL PROGRAMS

5.1 Normal Steady-State Operation.

5.2 Power Ramping Operation.

5.3 Transient and Accident Operation.

(Scope and schedule of planned programs that provide data in the above areas should be discussed. Specific non-destructive and destructive measurements should be identified. Emphasis should be placed on how the experimental programs will supply data to resolve issues identified in Section 2 and support code qualification to extended burnups.)

6. CONCLUSIONS

(By operating experience, prototype testing, and analytical predictions, the information provided in the report should demonstrate that every applicable part of the safety analysis is valid out to the target burnup or that burnup and exposure do not influence the items significantly.)

7. REFERENCES

8. APPENDICES AS REQUIRED

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DATE	5/22/81	5/28/81	5/25/81	6/2/81		

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