

May 2, 2000

Terrance Rieck, Chairman
Commonwealth Edison Company
1400 Opus Place
Suite 400
Downers Grove, IL 60515

Dear Mr. Rieck:

As a follow up to the meeting held on March 30, 2000 to discuss fuel cladding rulemaking and fuel burnup extension, as agreed, the staff has prepared the attached written comments on the draft document entitled "Process for Establishment of Licensing Criteria for Fuel Burnup Extension Beyond 62 Gwd/tU" which was transmitted by letter dated March 21, 2000. The presentations and the discussion provided the NRC staff with information that will be very useful as we proceed with our work on these issues.

In general the NRC staff believes that the approach outlined in the draft licensing criteria document is reasonable and that the level of detail is appropriate. We recognize that developing a document of this nature requires considerable effort and we welcome the opportunity to work with the Robust Fuel Program Working Group 2 to provide comments as the process progresses and the document is finalized.

In addition, we suggest that the burnup extension program address the processes for the preparation, irradiation, and examination of lead test assemblies and fuel performance monitoring. Both of these areas were included in the burnup extension guidelines presented to the industry in the meetings held in 1999. The NRC staff considers them to be very important parts of the burnup extension program.

We are prepared to discuss our comments with you, and we look forward to continuing the dialogue with the industry on this issue. Please contact Margaret Chatterton of my staff at 301-415-2889 if you have any questions.

Sincerely,

/RA/
Jared S. Wermiel, Chief
Reactor Systems Branch
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation

cc: See next page

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Terrance Rieck, Chairman

2

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Comments on the draft document "Process for Establishment of Licensing Criteria for Fuel Burnup Extension Beyond 62 Gwd/tU"

In general the approach described in the document is very good. The level of detail is about right. We recognize that the document is a draft, that the examples represent "work in progress", and that they may not be complete. The following are some general and specific comments on the document..

General Comments

1. How will new limits or analysis methods that are not currently used but which may be needed for burnup extension be identified? For example: a limit on corrosion and spallation.
2. In areas where data are needed, data should be developed up to the requested target burnup with prototypical operating conditions including power distributions and power histories.
3. There are several types of data that will be needed including data to establish the effect of burnup on a particular parameter or phenomena, data to justify an existing criterion or justify revised criteria, and data to show compliance with the criteria. It would be useful to include tables differentiating between data needed to justify or establish criteria and data needed to verify compliance with criteria. These tables should include the type of data needed, where and how it will be obtained, the time frame for acquisition and analysis, the amount of data, the test conditions and other pertinent details.

Specific Comments

4. Design Stress

Stage II Q2.2 Mechanical property tests should not only be to the target burnup level but should include samples with the maximum corrosion and spallation if that will be allowed.

Stage IV Last sentence states that the "corrosion data is ... bounding for all burnup and power levels". Bounding power histories should be considered as well.

5. Internal Pressure -

Stage IV Last sentence should include power history in list of variables.

6. Excessive Fuel Enthalpy

Stage 1 Regulatory Requirement

This section should be reorganized since GDC 28 is the actual regulatory requirement and Regulatory Guide 1.77 only specifies one (previously acceptable) way to meet the regulatory requirement.

Stage II Q2.2 The discussion of hydrides is confusing. It should be rewritten to reflect the fact that cladding properties from uniform hydride distributions generally do not apply to in-reactor high burnup cladding.