

December 11, 1987

Project No. 669

Mr. E. E. Kintner, Chairman
ALWR Utility Steering Committee
GPU Nuclear Corporation
One Upper Pond Road
Parsippany, New Jersey 07054

Dear Mr. Kintner:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATIVE TO CHAPTERS
3 AND 4, ALWR REQUIREMENTS DOCUMENT

Enclosure 1 provides additional staff questions and comments relative to Chapters 3 and 4 of the ALWR Requirements Document. Preliminary copies of these items were previously handed or mailed to representatives of EPRI, S. Levy, Inc. and MPR Associates.

We recognize that responding to this request by December 31, 1987 will not be possible. However, please inform me if you expect the time required will be more than another 2 or 3 weeks.

Sincerely,

original signed by

Paul H. Leech, Project Manager
Standardization and Non-Power
Reactor Project Directorate
Division of Reactor Projects III, IV,
V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: J. Yedidia, EPRI
R. Engel, S. Levy Inc.
D. Chapin, MPR Associates

DISTRIBUTION:

Central File

NRC PDR

PDSNP Reading

EHylton

LRubenstein

Pleech

ACRS (10)

EJordan

JPartlow

OGC-BETH

PDSNP *PL*
Pleech:cw
12/11/87

8712160395 871211
PDR PRDJ PDR
669A

~~PDSNP~~
~~EHylton~~
~~12/11/87~~

PL
PDSNP
LRubenstein
12/11/87

Proj #669



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

December 11, 1987

Project No. 669

Mr. E. E. Kintner, Chairman
ALWR Utility Steering Committee
GPU Nuclear Corporation
One Upper Pond Road
Parsippany, New Jersey 07054

Dear Mr. Kintner:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATIVE TO CHAPTERS
3 AND 4, ALWR REQUIREMENTS DOCUMENT

Enclosure 1 provides additional staff questions and comments relative to Chapters 3 and 4 of the ALWR Requirements Document. Preliminary copies of these items were previously handed or mailed to representatives of EPRI, S. Levy, Inc. and MPR Associates.

We recognize that responding to this request by December 31, 1987 will not be possible. However, please inform me if you expect the time required will be more than another 2 or 3 weeks.

Sincerely,

A handwritten signature in cursive script that reads "Paul H. Leech".

Paul H. Leech, Project Manager
Standardization and Non-Power
Reactor Project Directorate
Division of Reactor Projects III, IV,
V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: J. Yedidia, EPRI
R. Engel, S. Levy Inc.
D. Chapin, MPR Associates

OFFICE OF NUCLEAR REACTOR REGULATION
REQUEST FOR ADDITIONAL INFORMATION AND COMMENTS RE CHAPTERS 3 & 4
EPRI'S ALWR REQUIREMENTS DOCUMENT
PROJECT NO. 669

Materials Engineering Branch

Chapter 3

31. Paragraph 3.4.2.1 prohibits antimony in pump bearings exposed to reactor coolant. EPRI may also wish to consider prohibiting lead in bearing materials with low melting temperatures.
32. Paragraph 4.4.1 - boric acid corrosion-resistant steam generator primary closure bolting should be used. Boric acid corrosion is a significant safety factor per NRC Information Notices 82-02, 82-06, and 86-108 (including Supplements 1 and 2).
33. Paragraph 4.4.1.1.3 advocates belt polishing without limiting contaminant levels of abrasive adhesives. This is not acceptable.

Chapter 4

34. Paragraph 2.3.1.3 prohibits the use Inconel filler material. This appears somewhat inconsistent with Paragraph 5.3.A.3.b. of Chapter 1.
35. Paragraph No. 2.3.1.6 should include requirements for unirradiated and irradiated (60 years of service) Charpy upper-shelf energy, as defined in Regulatory Guide 1.99, for the most limiting location of the reactor pressure vessel.
36. Paragraph No. 2.3.1.7 needs a better rationale, expanded requirements, or should be deleted. Maintaining a low RT_{NDT} does not eliminate the need for special low temperature overpressure protection. Also, please clarify what is meant by "special" low temperature overpressure protection versus items b., c., and d. in the topic paper entitled "Additional Low-Temperature Overpressure Protection for Light Water Reactor" which was submitted by letter dated July 8, 1986.
37. Paragraph No. 2.3.1.8 should be clarified by adding a statement that the surveillance program shall comply with 10 CFR 50, Appendix H and ASTM E-185. The materials placed into capsules shall be the limiting materials (base metal, HAZ and weld metal) defined in paragraph 2.3.1.6. Paragraph 2.3.1.8 does not appear to be compatible with paragraph 2.3.1.8.2 in that changes in fuel management may become desirable but lead to an EOL dose of greater than 10^{17} n/cm². A surveillance program is required in any event.
38. Paragraph No. 2.3.1.8.1 - fracture toughness specimens and test procedures should be described and meet a standard design or must be submitted for staff review. Provide a requirement for pressure-temperature limits for operation of the reactor vessel. The limits shall be in accordance with 10 CFR 50, Appendix G.

39. Paragraph 2.3.2.1.1 - a dosage limit for internals (including bolting) should be stated.
40. Topic Paper, "Additional Low Temperature Overpressure Protection of Light Water Reactor," submitted by letter dated July 8, 1986, states that "primary system components shall be.... composed of materials.... with the goal that no special low temperature overpressure limits will be required; i.e., with the goal that low temperature overpressure protection need be no different from that applied at operating temperature." Describe the material requirements and setpoints that ensure that the low temperature overpressure protection setpoints will be the same as the reactor vessel protection setpoints at operating temperature.
41. Paragraph 6.3.2.5 allows the use of Inconel X-750 for high strength bolting applications in BWRs. In section 5 of Chapter 1, triple heat-treatment of Inconel X-750 is specified for such applications in the BWR. However, a different heat treatment is specified for use in the PWR primary coolant environment because the triple heat treatment will produce a micro-structure susceptible to stress corrosion cracking. Recently, a hydrogen water environment which is similar to the PWR primary coolant environment has been recommended for operating BWRs to mitigate the IGSCC problems in the austenitic stainless steel materials. Therefore, a precautionary note should be added in Chapter 1 to identify a potential IGSCC concern for the use of the triple heat treated Inconel X-750 in a BWR hydrogen water environment.

MECHANICAL ENGINEERING BRANCH

Chapter 3

42. Paragraph 2.2.8 requires the maximum average liquid velocity in the reactor coolant piping to be less than 60 ft/sec. (a) Provide justification why a similar criterion is not stated for other systems such as the Component Cooling Systems (Paragraph 3.4.2.2), Oil Systems (Paragraph 3.4.2.4), and the Process Sampling Systems (Section 7). (b) Provide justification why effects of vibrations induced by flow thru these systems should not be considered in their standard design.
43. Paragraph 2.4.4, "Hydraulic Snubbers". Functional testing will be required in accordance with Standard Technical Specifications as shown in Generic Letter 84-13.
44. No mention is made of mechanical snubbers. Provide a statement that such snubbers will not be used in an ALWR plant.
45. Relative to Paragraph 3.4.3.3 "Surge Line," provide an explanation of the term "thermal stripping." (a) Is this the same as "thermal stratification"? (see 3.4.3.5.7). (b) This effect is required to be minimized. Indicate why it is not to be included in the design of the surge line. (c) Indicate if this effect is significant in the RCS or other piping systems.

46. In Paragraph 4.3.2.4 "Steam Piping Support Design Bases," state that the supports will be designed on the basis of the steam lines filled with water under both static and dynamic loading.
47. In Paragraph 5.3.1.5, the basis for the design of the steam line supports appears to be different from that stated in Paragraph 4.3.2.4. Provide further justification for this difference.