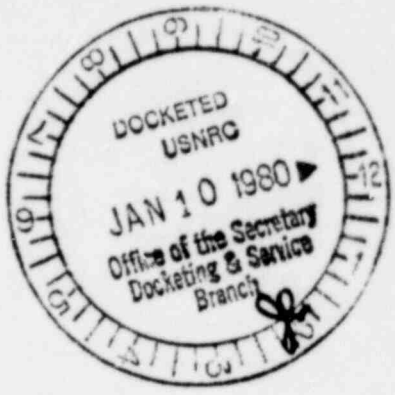
LBP-80-2



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Charles Bechhoefer, Chairman
Dr. George C. Anderson, Member
Ralph S. Decker, Member

In the Matter of	)	
	)	
DAIRYLAND POWER COOPERATIVE	)	Docket No. 50-409
	)	(SFP License Amendment)
(La Crosse Boiling Water Reactor)	)	

SERVED JAN 10 1980

INITIAL DECISION
(January 10, 1980)

Appearances

Messrs. O. S. Hiestand, Jr. and Kevin P. Gallen, Washington, DC, for Dairyland Power Cooperative, Applicant

Mr. Robert H. Owen, Jr., Madison, WI, and Messrs. George R. Nygaard, Mark Burmaster, and Ms. Anne K. Morse, La Crosse, WI, for the Coulee Region Energy Coalition, Intervenor

Ms. Colleen Woodhead and Messrs. Richard J. Goddard and Edwin J. Reis, for the Nuclear Regulatory Commission Staff

1763 280

8001170579

INDEX

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
DAIRYLAND POWER COOPERATIVE	)	Docket No. 50-409
	)	(SFP License Amendment)
(La Crosse Boiling Water Reactor)	)	

INITIAL DECISION

I. INTRODUCTION AND BACKGROUND

This proceeding involves the application of Dairyland Power Cooperative (Applicant or DPC) for an amendment to Provisional Operating License No. DPR-45 to permit the expansion of the capacity of the spent fuel storage pool (SFP) at the La Crosse Boiling Water Reactor (LACBWR), a nominal 50 MWe reactor located in Genoa, Vernon County, Wisconsin. The Applicant submitted its application for the amendment by letter dated April 20, 1978, which has been supplemented subsequently by a number of other filings. On May 25, 1978, the Commission published a Notice of Opportunity for Hearing on the proposed amendment (43 Fed. Reg. 22462).

Another proceeding involving LACBWR is progressing simultaneously with this spent fuel pool expansion proceeding. This reactor was initially constructed as a demonstration project by the United States Atomic Energy Commission under the cooperative power reactor development program. It was licensed to operate

in July, 1967, while still owned by the AEC (with operating authority first granted to Allis Chalmers and thereafter, on October 31, 1969, transferred to Dairyland). Later, ownership was transferred to Dairyland, which received a provisional operating license (with a term of 18 months) in 1973 (Tr. 253).[1/] On October 9, 1974, prior to the expiration of that license, the Applicant sought to convert its provisional license to a full-term operating license. Pursuant to 10 CFR §2.109 (which parallels a similar provision in the Administrative Procedure Act, 5 U.S.C. §558(c)), the provisional license remains in effect until a final NRC determination on the full-term license is rendered. The Notice of Opportunity for Hearing on that license application was not published until April 10, 1978 (43 Fed. Reg. 15021), about a month prior to the publication of the notice concerning the spent fuel pool expansion proceeding.

Petitions for leave to intervene were received in each of the proceedings. The Commission established the same Licensing Board to consider both sets of petitions and, thereafter, to conduct both hearings. 43 Fed. Reg. 21955 (May 22, 1978) (operating

---

1/ Throughout this Decision, transcript references to the special prehearing conference and the evidentiary hearing shall appear as Tr. ____. Because of an error by the reporter, the transcript pages for the second prehearing conference include some of the same page numbers as the evidentiary hearing. Therefore, when referring to the second prehearing conference, we will designate the references as Pre. Conf. Tr. ____.

license); 43 Fed. Reg. 28261 (June 29, 1978) (operating license); 43 Fed. Reg. 30939 (July 18, 1978) (spent fuel pool expansion); 43 Fed. Reg. 34564 (August 4, 1978) (spent fuel pool expansion); 43 Fed. Reg. 37017 (August 21, 1978) (both proceedings); 43 Fed. Reg. 46911-12 (October 11, 1978) (both proceedings).

This Decision primarily concerns the spent fuel pool expansion proceeding. The operating license proceeding will be discussed herein only to the extent it bears upon the matters at issue in the other license-amendment proceeding.

Timely petitions for leave to intervene in the spent fuel pool proceeding were filed by the Coulee Region Energy Coalition (CREC) and by Ellen Sabelko and David Simpson. By Memorandum and Order dated July 14, 1978 (unpublished), we granted CREC's petition, and a Notice of Hearing was thereafter published. 43 Fed. Reg. 34564 (August 4, 1978). (CREC previously had been admitted as a party to the operating license proceeding.) By Memorandum and Order dated August 14, 1978 (unpublished), we denied the Sabelko/Simpson petition. (The Appeal Board upheld that denial in ALAB-497, 8 NRC 312 (1978).) On August 17, 1978, we conducted a consolidated special prehearing conference with respect to both of the proceedings (Tr. 1-236).

At the consolidated conference, we granted the Applicant's request to proceed with the fuel pool expansion proceeding ahead

of the full-term operating license proceeding. We ruled on various contentions offered for the spent fuel pool proceeding and discussed contentions relevant to the other proceeding (setting a framework for further negotiations among the parties with respect to the operating license contentions). See Prehearing Conference Orders, dated September 5, 1978 (unpublished).

We also set a preliminary schedule for the two proceedings, based on the assumption that the Staff's Safety Evaluation Report (SER) and Environmental Impact Appraisal (EIA) for the spent fuel pool proceeding, and the Final Environmental Statement (FES) for the operating license proceeding, would be available late in 1978 (Tr. 130, 149). The Applicant initially expressed the hope that its proposed license amendment could be acted upon by early 1979, so that construction work (if authorized) could be accomplished prior to the fuel loading scheduled for the spring of 1979. Under our preliminary schedule, we had expected that the spent fuel pool proceeding would go to hearing by December, 1978 or January, 1979, and that the environmental hearings in the operating license proceeding would follow shortly thereafter. We established discovery schedules for this proceeding with that timetable in mind. The SER and EIA were substantially delayed, until July, 1979, and the FES has still not been issued. (It is currently scheduled for the first quarter of 1980.) On March 8, 1979, the Applicant advised us and the parties that it had entered a one-time only arrangement with General Electric Co. to ship a number of spent

fuel assemblies to GE's Morris, Illinois facility for temporary storage pending the completion of this proceeding. That arrangement permitted LACBWR to continue operation until the next refueling date, scheduled for the spring of 1980 (Pre. Conf. Tr. 251-52).

All parties engaged in discovery efforts during the fall and winter of 1978. Shortly after issuance of the SER and EIA, the Staff (on July 30, 1979) and the Applicant (on July 31) filed motions for summary disposition of all of CREC's contentions and for dismissal of the proceeding. CREC filed no response to these motions. Notwithstanding that circumstance, we determined that there were significant unresolved questions to which certain of the contentions gave rise, as well as other matters which warranted our sua sponte inquiry. We scheduled a prehearing conference for September 20-21, 1979 (see 44 Fed. Reg. 50105, August 27, 1979) and, by Memorandum and Order dated September 7, 1979 (unpublished), we also set forth specific questions which we desired the Applicant and Staff (and CREC if it wished) to address.

The Applicant and Staff filed written responses to our questions; CREC did not do so. We discussed the contentions with the parties at the prehearing conference, in which the Applicant, the Staff, and CREC all participated. When specifically asked if they still believed there were factual matters still in dispute that should go to hearing, the CREC representatives admitted that they had no factual information or even further arguments to offer (Pre. Conf. Tr. 256-258). We

determined that summary disposition would be granted with respect to every CREC contention (Pre. Conf. Tr. 393) (but subject to certain conditions). Our ruling on these contentions appears in Part II of this Decision.

Prior to the second prehearing conference, on September 20, 1979, we took a tour of the spent fuel pool area of the plant. We announced our desire to take such a tour in our Notice of Prehearing Conference and Evidentiary Hearing, dated August 21, 1979 (published at 44 Fed. Reg. 50105, August 27, 1979). In that Notice, we requested the Applicant "to make arrangements for the Board and parties to participate in such a tour."

At both the special and second prehearing conferences, CREC was not represented by an attorney but rather by three of its members. At the time established for the tour, all three representatives appeared at the site to take the tour. The Applicant stated that an invitation was extended to only one of those representatives (whom it had selected) and that it would not permit the two other members to take the tour, for both space and security reasons. (The spent fuel pool at LACBWR is inside the containment building.) The Intervenors objected, both on the basis of the limitation to one representative and on the Applicant's selection of that representative; but when the Board inquired whether another of the three representatives wished to take the tour, the Intervenors indicated they would only participate in the tour if all three representatives could do so.

The Applicant indicated that it selected the particular representative because that person had been the one with whom it had dealt most frequently in its contacts with CREC. The Applicant also cited 10 CFR §73.55(d)(7), which provides that "[a]ccess to vital areas for the purpose of general familiarization and other non-work-related activities shall not be authorized except for good cause shown to the licensee." The Applicant expressed its understanding that the purpose of inviting all parties on the tour was to prevent the appearance of ex parte contacts and, given that purpose, "good cause" had been demonstrated only for the admittance to the spent fuel pool area of the selected individual.

The Board upheld the Applicant in this regard. All parties were invited on the tour, not for discovery purposes, but to avoid any appearance of ex parte contacts proscribed by 10 CFR §2.719. Given the Applicant's primary responsibility for the security of its facility, its selection of only one of the Intervenor's representatives to accompany the tour was not unreasonable.

Faced with our decision to uphold the Applicant in this matter, the Intervenor's selected representative declined to participate in the tour. To facilitate our desire to avoid the appearance of any ex parte contact, the Applicant invited an

individual not associated with any of the parties to accompany the group, and he did so. (This individual was the Assistant Lockmaster of the Corps of Engineers Lock and Dam No. Eight, a U. S. Government employee.)[2/]

At the prehearing conference, we determined that there should be an evidentiary hearing on one issue: the need for the power to be produced by LACBWR prior to the completion of the Commission's environmental review of the full-term operating license (Pre. Conf. Tr. 393-94). As will be described in greater detail later in this Decision, we were motivated in this ruling in large measure by claims made in limited appearance statements at that prehearing conference, to the effect that LACBWR was both unreliable and expensive as a source of electricity and that to permit the spent fuel pool expansion to take place would amount to "throwing good money after bad." The Applicant and Staff claimed we had no jurisdiction to consider that issue. We rejected those claims (Pre. Conf. Tr. 403, 406-12; Tr. 278-81) but indicated that we would afford the parties a further opportunity to brief the jurisdictional question. We also determined that, because of the schedule sought by the Applicant for performing construction activities, it would be necessary for us to hold the hearing expeditiously in order to permit us to rule in time to accommodate the Applicant's proposed schedule. We thus permitted the

---

2/ Details concerning the arrangements for the plant tour are set forth at Pre. Conf. Tr. 241-249 and 385-388.

parties to brief the jurisdictional question simultaneously with the filing of their proposed findings and conclusions. On October 3-6, 1979, we held a four day evidentiary hearing on the need-for-power question.[3/] The Applicant, CREC and the Staff each filed proposed findings of fact and conclusions of law on the testimony taken at the hearing. The Applicant filed a response to the other parties' findings, as it was permitted to do. The Applicant and Staff also filed briefs on our jurisdiction to consider the "need-for-power" issue. The basis for our jurisdictional ruling, which we here reaffirm, is set forth in Part III of this Decision; our findings on the "need-for-power" issue appear in Part IV.

During the course of this proceeding, we heard limited appearance statements at the special prehearing conference, the September, 1979 prehearing conference, and the evidentiary hearing itself. We provided the Applicant and Staff an opportunity to respond to the questions raised (Pre. Conf. Tr. 370-85). The evidentiary hearing itself — and this decision — constitute responses to questions raised concerning need for the LACBWR facility.

For the reasons hereinafter set forth, we conclude that expansion of the spent fuel pool at LACBWR should be authorized, subject to certain conditions. In addition, as we previously advised the parties, we are referring our ruling on our jurisdiction to consider the "need-for-power" issue (as set forth in Part III of this Decision) to the Appeal Board for its review.

3/ Notice of this hearing was published at 44 Fed. Reg. 50105 (August 27, 1979) and modified at 44 Fed. Reg. 56066 (September 28, 1979).

II. MOTIONS FOR SUMMARY DISPOSITION AND BOARD QUESTIONS

The Staff's motion for summary disposition of CREC's contentions was supported by the affidavits of Dr. John R. Weeks, Leader of the Corrosion Science Group in the Department of Nuclear Energy at Brookhaven National Laboratory;[4/] Millard L. Wohl, a nuclear engineer in the Commission's Environmental Evaluation Branch, Division of Operating Reactors;[5/] Dr. Jack N. Donohew, a Senior Nuclear Engineer in the same branch;[6/] and Robert G. LaGrange, an Applied Mechanics Engineer in the Commission's Engineering Branch, Division of Operating Reactors.[7/] The Applicant's motion for summary disposition was supported by the affidavit of Dr. Seymour J. Raffety, a Reactor Engineer employed by the Applicant.[8/]

As we indicated previously, CREC failed to respond to the Staff's or Applicant's motions. Nonetheless, we propounded a number of questions to the parties arising in part from CREC's contentions and in part from our own exploration of the Applicants's proposal and the Staff's review of that proposal in the SER. The Applicant and Staff each provided answers to our questions. The

---

4/ Weeks, Affidavit I (dated July 16, 1979).

5/ Wohl Affidavit (dated July 24, 1979).

6/ Donohew, Affidavit I (dated July 24, 1979).

7/ LaGrange Affidavit (dated July 10, 1979).

8/ Raffety, Affidavit I (dated July 31, 1979).

Applicant's answers were supported by the affidavits of Dr. Raffety,[9/] Alfred H. Yoli, the Vice President of Engineering of Nuclear Energy Services,[10/] and Robert J. Prince, a Radiation Protection Engineer with the Applicant.[11/] The Staff's responses were supported by affidavits of Dr. Weeks,[12/] James Shea, the LACBWR project manager within the Commission's Division of Operating Reactors,[13/] and Dr. Donohew.[14/]

At the second prehearing conference, we further discussed the motions and the responses to our questions with the parties. We indicated that we were granting summary disposition with respect to each contention (Pre. Conf. Tr. 393). In Section II.B of this Decision, we set forth our reasons for doing so. To the extent that answers to the Board's questions bear on our rulings on various contentions, we will discuss the answers in that context. We also there discuss answers to Board questions not arising out of the contentions.

A. A brief description of the reactor and spent fuel pool (SFP) follows to set the stage for our subsequent discussion and

---

9/ Raffety, Affidavit II (dated September 19, 1979).

10/ Yoli Affidavit (dated September 19, 1979).

11/ Prince Affidavit (dated September 19, 1979).

12/ Weeks, Affidavit II (dated September 13, 1979).

13/ Shea Affidavit (dated September 17, 1979).

14/ Donohew, Affidavit II (dated September 18, 1979).

findings concerning the contentions themselves and the supplementary Board questions.

The reactor is a nominal 50 MWe boiling water reactor located in the cavity of a cylindrical biological shield. The spent fuel pool is outside but immediately adjacent to the biological shield. A short fuel transfer canal connects the pool with the reactor cavity. The top of the biological shield, transfer canal and SFP are all at the same level. All three, along with the plumbing and equipment necessary to cool the SFP water, are located within the cylindrical containment building. A large tank under the containment building dome contains emergency coolant water.

The LACBWR contains 72 fuel assemblies using fuel rods clad with stainless steel. Each fuel assembly nominally includes 100 rods, arranged in a 10 x 10 array. EIA, Staff Exh. 1A, §4.1. During normal refueling, about one-third of the core is removed from the reactor, stored in the spent fuel pool, and replaced with fresh assemblies. The period between refueling normally ranges from 12 to 18 months. Occasionally, it may be necessary or desirable to remove the complete core and transfer all 72 assemblies to the SFP.

The SFP is 11' x 11' square and about 42 feet deep. The pool walls and floor are reinforced concrete lined with stainless steel. Currently, the SFP racks can accommodate 134 spent fuel

assemblies, which are normally covered by 12 feet of water (LaGrange Affidavit, p. 2). With the proposed new racks, some 440 assemblies can be accommodated, and a proposed technical specification (Staff Exh. 1B, §2.12.5) requires the fuel to be covered with at least 16 feet of water. The new racks are of an egg crate design fabricated of stainless steel, placed within the pool by the crane, and supported by the pool floor. The new racks will be a replacement for the old racks. A 3/8" stainless steel barrier plate will be provided on top of the pool floor liner under the rack structures to ensure that the existing liner will not be structurally damaged in the event of a cask drop accident (SER, Staff Exh. 1, §3.3, p. 8). There will be two racks with a 9 x 8 array of fuel storage locations and two racks with a 4 x 10 array. An upper tier of racks with the same capacity and configuration is supported by the lower tier. In addition to spent fuel, a portion of the pool floor is set aside for the storage of the spent fuel shipping cask and the core spray bundle used during refueling operations.

B.1. As accepted, CREC Contention 1 includes four separate subparts (1(b), 1(c), 1(d), and 1(f)). We will consider them separately.

a. Contention 1(b) states:

> It is CREC's contention that the application to amend submitted by Dairyland Power is incomplete, as it does not address the following issues: Applicant has not discussed the long-term integrity of the various components of and in the spent fuel storage pool in light of the proposed compaction and increased amount of spent fuel at LACBWR. The health, safety, environmental and economic impact of the loss of integrity of these components due to more dense and increased storage of spent fuel must be evaluated.

(b) Applicant should examine the effects of accelerated corrosion, microstructural changes, alterations in mechanical properties, stress corrosion, cracking, intergranular corrosion, and hydrogen absorption and precipitation by the stainless steel alloys due to the proposed compaction and long-term storage of spent fuel at LACBWR.

BASIS:

The NRC Draft Generic Environmental Impact Statement On Handling and Storage of Spent Light Water Power Reactor Fuel, NUREG-0404, Volume 2, March 1978, p. H-23 states that these corrosion effects in underwater spent fuel storage require examination.

All metalic components of the modified SFP will be fabricated of stainless steel, and LACBWR uses stainless steel clad fuel elements. However, some of the Applicant's documents, and the version of the Staff's SER and proposed technical specifications submitted to us on July 16, 1979, also discuss zircaloy clad fuel.[15/] For example, in his affidavit in support of Applicant's motion for summary disposition, Dr. Raffety states (Affidavit I, p. 2) that there is a possibility that zircaloy clad fuel may also be used in the future. The Staff also refers to possible future use of zircaloy in spent fuel assemblies. Original SER at p. 8. Moreover, the original proposed technical specifications provided specifications for the storage of zircaloy as well as stainless steel clad fuel elements. On the other hand, however, the Staff argues in its motion for summary disposition (see p. 8) that the NUREG-0404 reference relied upon by the Intervenor to support this contention is "entirely irrelevant" since it discusses only zircaloy cladding not in use at LACBWR. See also Weeks, Affidavit I, p. 2. It was therefore unclear to us (and apparently to CREC) whether the proposed license amendment was intended to include authorization to store zircaloy clad fuel in the modified SFP. Furthermore, Dr. Weeks' affidavit can be read as suggesting that

---

15/ The SER and proposed technical specifications introduced into evidence in this proceeding (Staff Exhibits 1 and 1B) were revised versions which eliminated all references to zircaloy (Tr. 885).

further study of changes resulting from corrosion in connection with the long-term storage of zircaloy clad rods might well be warranted (Weeks, Affidavit I, pp. 2-3). That being so, we posed several questions to clarify whether the instant license amendment was intended to authorize storage of zircaloy-clad fuel. See Board questions A.1-6, attachment to our Memorandum and Order of September 7, 1979.

Whatever DPC's original intention may have been, and for whatever reason the Staff chose to discuss it, the Applicant's response to the Board's question (at p. 12) and the Staff's response (Weeks, Affidavit II, p. 4; Shea Affidavit, pp. 1-2) indicate that zircaloy clad fuel cannot be stored in the SFP without a further license amendment. Moreover, the Staff included a new proposed technical specification which eliminated all reference to zircaloy clad fuel. See Specification 2.12.3, Staff Exh. 1B, and Shea Affidavit, p. 2. Still somewhat concerned about the significance of the revised technical specification, at the pre-hearing conference we asked the Staff whether or not zircaloy clad fuel could be stored in the SFP without an additional license amendment and, if not, whether a notice of such a proposed amendment would be published and an opportunity for hearing afforded. We were assured that the Applicant would indeed be required to apply for a license amendment to use or store zircaloy clad fuel and that it would be pre-noticed and an opportunity for hearing would be provided. The Staff also assured us that a license

amendment would be required before zircaloy clad fuel could be brought in from another plant and stored in the modified SFP. Pre. Conf. Tr. 258-260. Whereas this may well be so, we are faced with the circumstance that the ambiguities with respect to zircaloy clad fuel were raised as a contention and had a basis which at least suggested that an authorization at this time to store zircaloy clad rods might not be appropriate. That causes us to impose a technical specification which will remove any ambiguities. To make it crystal clear that storage of any fuel other than stainless steel clad rods is not now being authorized, we require that the last sentence of the revised proposed Technical Specification 2.12.3 be modified to read:

> Only stainless steel clad fuel shall be stored in the storage well and it shall have a U-235 loading $\leq$ 22.6 grams per axial centimeter for stainless steel clad fuel assemblies.

As a result, this contention becomes moot to the extent that it is based on potential safety problems associated with the storage of zircaloy clad fuel in the SFP.

With reference to the corrosion resistance of stainless steel, Dr. Weeks of the Staff states (Affidavit I, pp. 2-6) that: (a) accelerated corrosion of stainless steel has not occurred in spent fuel pools, nor is likely to occur at SFP temperatures, (b) microstructural changes as a result of corrosion do not occur in stainless steel so as to affect long-term integrity, nor do microstructural changes from solid state diffusion occur at SFP temperatures, (c) effects on the mechanical properties of the

components of the SFP from fast neutron captures will be negligible, (d) intergranular stress corrosion cracking of the LACBWR fuel is unlikely and, even should it occur, would be localized and thus of insignificant safety concern, and (e) hydrogen absorption and precipitation do not occur on stainless steel at SFP temperatures. Dr. Seymour Raffety for DPC (Affidavit I) corroborated Dr. Weeks' assessments and emphasized that predicted material behavior, empirical evidence, and industrial operating experience to date all indicate that the occurrence of significant degradation of spent fuel components of the type proposed for use at LACBWR is extremely unlikely. At no time did Intervenor present any information (other than the cited basis, above) contrary to the Staff's or Applicant's affidavits. Nor does the Board know of any reason to question them, or to believe that the long-term integrity of the various components of or in the SFP will be compromised by corrosion. Therefore, the Board finds no genuine issue of material fact to be heard with respect to this contention.

b. Contention 1(c) states:

> (c) Because of the possibility of leakage and disintegration of spent fuel and its cladding over the long-term, Applicant must discuss the desirability of and methods for sensitivity monitoring to identify defective fuel elements.

BASIS:

> In Behavior of Spent Nuclear Fuel in Water Pool Storage, September 1977, Battelle North West Laboratories [sic] established on p. 76 the need for selected, focused, exploratory surveillance at present to confirm wet storage as an option and to define the condition of pool-stored spent fuel when removed to any alternative storage or to a reprocessing plant.

Applicant must also analyze the desirability of monitoring each individual spent fuel assembly.

Dr. Raffety (Affidavit I) states that: (a) DPC tests all fuel assemblies to determine their integrity prior to placing them in the pool, (b) DPC monitors radioactivity in the pool water, and (c) visual inspection will be conducted whenever fuel assemblies are moved for other purposes. He concludes that, in light of industry's extensive experience with the storage of irradiated fuel assemblies in water for long periods of time indicating that significant degradation does not occur in storage, and Dairyland's own prior experience with storage of the LACBWR fuel, additional monitoring is not warranted. In the Staff affidavit, Dr. Weeks summarizes the experience reported in the Battelle Northwest report BNWL-2256 cited by the Intervenor. Therein, no evidence of degradation of spent fuel during pool storage times of up to 12 years was reported for stainless steel clad fuel. Weeks, Affidavit I, at p. 6. Again, the Intervenor offered nothing to the contrary. Therefore, the Board finds no genuine issue of material fact warranting a hearing on this contention.

c. Contention 1(d) states:

> (d) Applicant should discuss the desirability of and various methods and effectiveness of encapsulating defective spent fuel elements upon discovering leakage or disintegration due to loss of cladding integrity. This discussion is essential when considering longer-term storage and increased density of spent fuel at LACBWR. Applicant should delineate anticipated thicknesses of crud layers and crud tendency to influence corrosion of spent fuel and its cladding in light of increased spent fuel storage as proposed for LACBWR.

For the same reasons we expressed in connection with Contention 1(c), we find that fuel element degradation due to longer term (or more dense) storage in the modified SFP is highly unlikely. Furthermore, in his affidavit for the Staff, Dr. Weeks points out (Affidavit I, p. 9) that crud deposits on the surface of fuel elements occur during the operation of the reactor, not during storage of the fuel, and that there is no evidence that these crud deposits influence the corrosion of stabilized stainless steel such as Type 343H with which LACBWR fuel is clad. Consequently, Dr. Weeks concludes that there is no need for encapsulating defective fuel elements before placing them in the SFP. On the basis of the Intervenor's responses to DPC's interrogatories as cited on page 7 of the Applicant's motion for summary disposition, DPC concludes that CREC has no factual information tending to support this contention.

For these reasons, we find that the possibility or desirability of encapsulation is not a subject meriting a hearing in this proceeding.

d. Contention 1(f) states:

> (f) Applicant should analyze problems in handling spent fuel (e.g., including but not limited to transfer from one pool to another or within one pool during reracking, repositioning upon removal from the nuclear core and placement in spent fuel pools, encapsulation of defective spent fuel elements, placement in or removal from shipping casks), resulting from loss of integrity of spent fuel and its cladding as well as other components of and in the spent fuel storage pool due to more dense and increased storage of spent fuel as proposed by applicant.

Mr. Wohl states in his affidavit for the Staff (page 2) (a) that procedures for handling damaged fuel at LACBWR are the same as those used for handling normal fuel, (b) that operational

experience has shown these to be adequate, and (c) that when a fuel element was seriously damaged previously during transfer, the problem was handled safely. In addition, we note that both the Applicant and Staff state that the fuel failure problems which heretofore existed have been effectively addressed and that the significant fuel failures which occurred are unlikely to recur (Raffety, Affidavit I, p. 12; Wohl Affidavit, p. 2; Donohew, Affidavit I, p. 12). In the absence of contrary information from the Intervenor, and on the basis of facts summarized above for parts b, c and d of Contention 1, the Board finds insufficient basis in material fact to warrant a hearing on this contention.

2. Contentions 5(a), (b)(1) and (b)(2) state:

> It is CREC's contention that an increase in the number of spent fuel locations from 134 to 448 would present a threat to the safety of the public and the maintenance workers that would be completely unacceptable for the following reasons:
>
> (a) The design calls for an even smaller cask drop area.16/
>
> (b)(1) The two-tier design greatly increases the chances for, and potential magnitude of, accidents in fuel handling and storage.
>
> (b)(2) The two-tier and higher density design makes detection of problems in the lower tier difficult if not impossible.

16/ Since Contention No. 5(a) is subsumed within Contention No. 6, this portion of Contention No. 5 will be addressed in the section of this Initial Decision dealing with Contention No. 6.

a. Contention 5(b)(1). The Board agrees with the Intervenor that the two-tier SFP design increases the chances for fuel handling accidents. From the brief description of how fuel elements and racks will be maneuvered during the SFP modification alone (SER Section 3.7), it is clear that many more fuel element movements will be made than would otherwise have been necessary. We further believe that there is at least the possibility that the consequences could be greater in the event one freshly discharged fuel element is dropped directly on another freshly discharged element which is stored in an upper rack position directly above still another freshly discharged fuel element. See Board question B, pp. 3-4 of the attachment to our September 7 Memorandum and Order. In response to this question, the Staff states that the fission product release and consequent dose could be 50% higher under such circumstances but would still be less than the guidelines of 10 CFR Part 100. Moreover, the Staff gives reasons for its belief that its analysis of a fuel handling accident involving freshly discharged elements is conservative. See SER Section 3.6.1. For example, it is assumed that the containment building is not isolated at the time of or following the postulated accident. The Staff states that if the containment building were isolated shortly following an accident, as would automatically occur upon a signal from installed radiation monitors or by operator action, the calculated dose would be substantially reduced. See Donohew, Affidavit II, p. 6.

Thus, while we agree with the Intervenor that the chances for and potential consequences of fuel handling accidents are greater with the proposed two-tier design, we also find that even under very conservative assumptions, the estimated dose falls within the guidelines of 10 CFR Part 100. From the standpoint of design of the SFP and related components, the Commission's requirements thus appear to be satisfied.

Notwithstanding this conclusion, it appeared to the Board that the potential consequences of a fuel handling accident might call for an enhanced emergency plan. These consequences were stated to be 162 rem to the thyroid and 2 rem to the whole body at the exclusion area boundary, assuming freshly discharged elements were not stored over other freshly discharged elements, and greater if a freshly discharged element were stored over another such element. SER, §3.6.1. The enhanced plan might be founded upon the Environmental Protection Agency's "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," dated September, 1975 (EPA-520/1-75-001), Tables 2.1 and 2.2, which recommends evacuation or other protective action where the exposure to the individual is 1-5 rem whole body and 5-25 rem thyroid. We thus posed questions in order to ascertain whether the Applicant's emergency plan was sufficient to provide evacuation

or other protective action at the EPA-recommended levels.17/

The responses to our questions indicated that, in the event of a maximum fuel handling accident at LACBWR, and using both the conservative assumptions appropriate for Part 100 determinations and the realistically calculated exposure-level determinations appropriate for EPA evaluations, the maximum exposures at the LPZ boundary are less than the EPA exposure guidelines (Donohew, Affidavit II, p. 4; Prince Affidavit, p. 14), assuming freshly stored fuel elements are not stored over other freshly stored elements. If freshly stored elements are stored over other freshly stored elements, the potential consequences of a fuel handling accident exceed EPA levels at the exclusion area boundary (243 rem thyroid, 3 rem whole body, for a 2 hr. exposure, according to the Staff; 162 rem thyrod, 2 rem whole body, according to the Applicant). But the Applicant and Staff each indicate that the Applicant's Emergency Plan specifies protective action where EPA guideline levels are exceeded (Donohew,

---

17/ The EPA levels are being used by the States of Wisconsin and Minnesota. Shea Affidavit, p. 4; Prince Affidavit, p. 15; Pre. Conf. Tr. 282-83. A joint NRC-EPA task force has recommended that the EPA Protective Action Guides be utilized for emergency planning purposes (NUREG-0396, December 1978), and the Commission recently endorsed the concepts in that report. 44 Fed. Reg. 61123 (October 23, 1979). Moreover, the Commission is in the process of upgrading its emergency planning rules (see 44 Fed. Reg. 75167, December 19, 1979) and, for the interim, has decreed that special attention be given to emergency planning matters. Although the latter direction focuses on construction permit and operating license proceedings, we note that, in evaluating a proposed amendment such as this, we are to be "guided by the considerations which govern the issuance of initial licenses * * * to the extent applicable and appropriate." 10 CFR §50.91.

Affidavit II, p. 5; Prince Affidavit, p. 14). That being so, we find currently applicable evacuation standards to be satisfied and no issue of material fact concerning this contention remaining to be litigated.

b. Contention 5(b)(2). Unchallenged by CREC, both the Staff and Applicant state that problems in fuel stored in the lower tier of the proposed new racks can be detected and the elements inspected by television. See Raffety, Affidavit I, pp. 7, 10 (Applicant) and LaGrange Affidavit, pp. 1-2 (Staff). While detection and inspection appear to the Board to be more difficult, we find no evidence that it cannot be done as Intervenor contends and no reason to hear further evidence on this contention.

3. Contention 5(c) states:

> (c) The two-tier design reduces the level of water over the assemblies from ten feet [sic] to thirty inches, and thus reduces the margin of safety so far as loss-of-coolant accidents in the SFP are concerned to an unacceptable level.

In responding to Contention 5(c), the Staff pointed to proposed Technical Specification 2.12.5, which provides that the water level in the SFP "shall be at least 16 feet above any fuel stored" in the storage racks (with a depth of about 23 feet during core refueling operations). It contrasted this proposed requirement to the present situation, where water level is maintained at 12 feet (Affidavit of Robert G. LaGrange, page 2). The Applicant referred to the same requirement.

The water level over the spent fuel affects the degree of occupational exposure received by workers. In our questions to the parties, and at the prehearing conference (Pre. Conf. Tr. 270-274), we inquired whether there would be occupational exposure differences if the SFP were kept full (i.e., at a 700 foot elevation). In its response, the Staff indicated that, although the dose rate from the fuel would be lowered if the pool were full, the dose from radionuclide concentrations in the SFP water would increase, as would leakage. Donohew, Affidavit II, pages 10-11.
The 16-foot level was described by the Applicant as an optimum point where the lessening of activity from spent fuel assemblies was not offset by the increase in radiation associated with the shorter distance between the surface of the water and the location of workers (and thus the greater dose rates to workers from radioactive contaminates in the water) (Pre. Conf. Tr. 274).

The Board finds that the proposed Technical Specification 2.12.5 adequately responds to the question posed by Contention 5(c). Its provisions should be incorporated into the Applicant's license.

In addition, we note that nothing in that technical specification precludes raising the water level up toward the 700-foot elevation if it turned out to be beneficial in terms of lowering of the overall dose rate to workers (ibid.).

4. Contention 5(d) states:

> (d) Increased fuel would increase maintenance exposures because of an increase in the number of filter changes and resin volumes and intensities.

The additional annual occupational dose resulting from operating the enlarged capacity pool is estimated to be 1.5 man-rem or less. This is less than 1% of the average total occupational exposure at the plant and should not affect the licensee's ability to maintain individual occupational exposures as low as reasonably achievable (ALARA) and within the limits of 10 CFR Part 20. Donohew, Affidavit I, p. 7; Raffety, Affidavit I, p. 10. In the absence of any information to the contrary from CREC or elsewhere, the Board finds that there is no issue of material fact to be heard under this contention.

5. Contention 6 states:

> CREC contends that a significant increase in the SFP capacity and the resultant increase in spent fuel handling necessitated by Applicant's proposed amendment increases the risk of accidental releases to employees and the public in the event of a cask drop accident to an unacceptable level.

The potential consequences of accidentally dropping a spent fuel cask onto fuel elements stored in the SFP has been analyzed by the Staff. Due to fission product decay, only fuel recently removed from the reactor would significantly contribute to the radiological consequences of such an accident. The Staff's analysis assumes that a full core has been removed from the reactor, placed in the pool, and that all these elements are damaged by the accidental cask drop. New technical specfications require isolation of the containment if the shipping cask is moved over or near the SFP within 43 days following a normal discharge of 24 fuel elements or within 51 days if the full core is discharged. On this basis, the Staff concludes that the potential consequences of a cask drop accident will be well within the exposure guidelines of 10 CFR Part 100 and therefore acceptable. See SER, Staff Exh. 1, §3.6.2; Raffety, Affidavit I, pp. 11-12; and Donohew, Affidavit I, pp. 7-8. In response to Board question D, the Staff also states that when the cask drop accident is analyzed in realistic terms the expected radiological consequences to an individual at the site boundary would be less than one rem thyroid dose. The population dose out to 50 miles would be less than 25 man-rem. These levels of exposure would not require protective actions under the EPA Protective Action Guides. See Donohew, Affidavit II, pp. 7-8. On the basis of information provided by the Applicant

and Staff in support of their motions for summary disposition and in response to our own questions, and in the absence of any contrary information from CREC or elsewhere, we are satisfied that the cask drop accident has been adequately analyzed, that the potential consequences are within NRC and EPA guidelines, that the proposed new technical specifications are necessary, and that the consequences of a potential cask drop accident do not rule out the proposed modification to the SFP. Further, we find no basis for requiring a hearing on this contention.

6. Contention 7 states:

> CREC further contends that Applicant's proposed amendment to its provisional operating license should be denied due to the increased threat to the environment generally, and to maintenance personnel specifically. The increased threat to which we refer is that of the storage of failed fuel rods, including several grossly failed rods, which results in a more dangerous and shortened storage life and increased storage costs. As stated in NUREG 0032, fuel failures 'compound the problems of storage, waste reprocessing, and disposal.' As fuel failures are predicted for the future, ACRS, January 26, 1978, p. 173, and expansion of SFP capacity would serve to produce even more unacceptable hazards and increase maintenance exposures at LACBWR, which is already above the average for the nuclear industry in that regard.

The Applicant and Staff provide thorough discussions in response to this contention in the affidavits accompanying their motions for summary disposition. See Raffety, Affidavit I, pp. 12-13, and Donohew, Affidavit I, pp. 8-14. Without

further clarification from the Intervenor, we find nothing about this generalized or summary contention which enlarges the issues already covered previously (see, particularly, our discussion of Contention 1(f)). Thus, again, we find no controverted factual matters warranting a hearing on this contention.

7. Board question C states:

> It appears from Section 3.6 of the SER that offsite doses for the fuel handling accident were calculated assuming that the containment building is not isolated. Is this the case? If so, how much would the offsite doses be reduced if the containment building were isolated (1) at the time of the accident, and (2) as soon thereafter as practically achievable. Please discuss whether containment building isolation should be required during fuel handling.

In response to this question, the Applicant and Staff state that, since the containment building is not normally isolated, fuel handling accidents were calculated assuming no containment isolation. In the event of an accident, the containment building would automatically isolate within seconds on a high radiation signal or by the operator on intercom notice from the fuel handling crew. Thus the actual off-site dose would be much lower than that calculated by the Staff. This being so, why should not all fuel transfer operations be conducted with containment isolated? The Applicant and Staff respond that, if they were, higher airborn concentrations would prevail inside the containment building, resulting in higher doses to fuel transfer workers. Additionally, as we also learned during our tour of the LACBWR facility, the humidity inside the containment

would also rise to near saturation, thus creating a climate which (we speculate) could itself lead to hasty work and possibly increased risk of accident. Consequently, we have no inclination at this time either to require isolation during fuel handling or to require hearings to examine the matter further.

8. Board questions E and H relate to what we perceived as possible failures which might lead to a sufficient loss of pool cooling water to uncover fuel elements, followed by possible fuel melting and high fission product releases.

a. Board question E states:

> From the material provided to the Board, we have been unable to determine the surface elevation of water on the reactor side of the fuel transfer canal gate under various conditions, e.g., during reactor operation, during fuel transfer, and during shipping cask movements. Please provide this information. However, it now appears that water pressure on the fuel transfer canal gate will be higher for the new rack design and under the proposed new technical specifications. Moreover, it appears that the depth of water covering the new racks will be much less than for the existing design in case of a fuel transfer canal gate failure. If so, the Board questions why a gate or pressure vessel to cavity seal failure accident was not analysed and discussed in the SER.

In response, the Applicant states that the surface elevation of water on the reactor side of the fuel transfer canal gate under various conditions is:

During reactor operations and shipping cask movement:	no water in the reactor cavity or fuel transfer canal. Canal gate is closed. Water level in the pool is about 12 feet above the bottom of the transfer canal.
During fuel transfer:	the gate is removed and the reactor upper cavity, transfer canal and SFP are filled essentially to the maximum possible level.

With this understanding in hand, it is clear that if the fuel transfer canal gate should fail completely during reactor operation when the reactor cavity is dry, the water level in the pool would drop about 14 feet so that the spent fuel in the upper tier would be covered by only about 3 feet of water. These elements would continue to be cooled but the shielding effect of the water above them would be drastically reduced and the dose rate at worker locations sharply increased. However, the gate is a one inch thick aluminum plate about 20 inches wide and 21 feet in height. It is sealed and bolted on the pool side of the 15 3/4 inch canal width. Water pressure at the bottom of the gate is 6-7 psig. DPC has tested the gate for leakage with the water level at the top of the SFP (or about 22 feet above the top of the fuel racks) without causing measurable leakage through the gate seals. Based on this information, we believe that the probability of a gate seal leak rate in excess of the pool make-up water fill rate is extremely low. Moreover, should this improbable

accident nevertheless occur, we see no reason why the reactor could not be shut down and the upper reactor cavity, transfer canal, and pool refilled to the top, thus restoring shielding for workers above the pool. As a result of these considerations, we see no need for a hearing on this question at this time.

b. Board question H states:

> Should the integrity of the fuel pool liner, walls, drain lines, and valves somehow be lost, it appears that fuel melting could occur which could result in large fission product releases. If so, what emergency provisions are there to either prevent or limit melting or to mitigate the consequences?

Both the Applicant and Staff state that they consider a loss of integrity of the massive reinforced concrete walls and floor so improbable as to be incredible. The Applicant points out further that the pool and drain line have been analyzed and found capable of withstanding seismic events. Apparently on this basis, the Staff considers leakage from the pool to constitute a Class 9 accident. Therefore, it did not offer a detailed response to that part of our question relating to means of preventing or mitigating the consequences. Shea Affidavit, p. 8, and cover letter from Staff counsel to Licensing Board dated September 18, 1979.

For reasons immediately to follow, we do not believe it necessary to decide whether or not a loss of pool cooling water at LACBWR is properly characterized as a Class 9 accident at this

time. We emphasize, however, that mis-operation or large leaks in pool cooling water lines, pumps and heat exchangers might also result in loss of sufficient pool water to cause fuel melting. While outside the envelope of the pool itself, these components nevertheless constitute part of the pool cooling water boundary.

In this respect, the Applicant states that two additional check valves are to be added in the pool drain line. It also states that water coverage of fuel could be maintained to the pool by gravity flow from the overhead storage tank and from other sources. Moreover, the Applicant claims that melting of uncovered fuel could occur only in the most recently discharged fuel. We are also reminded that any fission products released would be contained by the containment building. Raffety, Affidavit II, pp. 25-26.

We note further that the cask drop accident previously discussed assumed that a full core load of 72 elements was severly damaged and that the consequences fell within current siting criteria. We realize, of course, that the scrubbing action of pool water above the damaged elements would no longer be effective in the fuel melt accident we postulated. On the other hand, the cask drop accident analysis did not take credit for containment isolation.

For all these reasons, we find (a) that a loss of SFP water sufficient to uncover and cause melting is quite

improbable, (b) that unlike the design basis LOCA, water temperatures and pressures are mild and any leakage would likely be so slow as to permit corrective action, (c) that there are several sources of make-up water, and (d) that containment isolation is available to minimize releases to the environment. Taking these considerations into account, we find no basis for exploring this hypothetical accident further through the hearing process.

We suggest, however, that, given the "lessons learned" from the Three Mile Island accident, it may not be appropriate for the Staff to continue to consider any loss of coolant water in the SFP which would result in fuel melting to be a Class 9 accident. It may be important to analyze, as the Applicant has done here, means of preventing or mitigating the consequences of a loss of pool cooling water.

III. JURISDICTION TO CONSIDER NEED FOR POWER

A. The need for the power generated by LACBWR was initially raised by CREC as a matter to be resolved in the companion operating license proceeding, in terms both of the economic cost-benefit balance not favoring issuance of a full-term operating license and of the Applicant's failure to stress energy conservation programs which would obviate the need for LACBWR.[18/] At the special prehearing conference, however, CREC took the position that the operating license proceeding (or at least the environmental phase of that proceeding) should be considered prior to, or at the same time as, the spent fuel pool expansion proceeding (Tr. 11, 13, 73, 131, 143, 153). If that time sequence for considering issues had been adopted, we would not have been faced with the enigma of possibly authorizing a major license amendment without any inquiry as to whether the amendment (and the potential environmental and financial impacts brought about by such amendment, including those emanating from continued operation of the reactor) was in fact necessary or desirable. The inquiry would already have been undertaken, albeit as part of the operating license proceeding, and the answer there reached would also govern this proceeding. Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 41, 46 n. 4 (1978), remanded on other grounds sub

---

18/ CREC Contentions 19 and 22. We formally accepted these contentions (which incorporated claims from certain of CREC's other contentions as initially submitted) by our Order of November 30, 1979 (unpublished).

nom Minnesota v. NRC, 602 F.2d 412 (D.C. Cir. 1979).

The possibility that it might not be necessary to incur either the environmental impacts or the financial costs of the spent fuel pool expansion (to say nothing of the environmental effects of continued reactor operation) was strongly emphasized by those who made limited appearance statements at the second prehearing conference. See, e.g., Pre. Conf. Tr. 318-19, 327, 340-42, 346, 350, 363-64, 389, 392. The statements tended to undercut the conclusion in the EIA that, if expansion were not authorized and the reactor had to cease operation, there would be an extra expense to ratepayers for purchased power (EIA, Staff Exh. 1A, p. 13). Complaints were also expressed that the Applicant was unduly secretive with respect to the release of information about its operation. Pre. Conf. Tr. 318-19, 326, 328-31, 343, 350-51.[19/] Furthermore, it was stressed that the operations of Dairyland, an agricultural cooperative, were not subject to the oversight of the Wisconsin Public Service Commission; as a result, NRC was viewed as the only agency which could look at the need-for-power questions (Pre. Conf. Tr. 300-01, 317). Although these limited appearance statements are not evidence, and cannot be considered by us as such, they did raise a question as to whether further inquiry on

---

19/ We commend the Applicant's attorney for proposing to recommend to Dairyland that it undertake an informational program to keep the public better informed on developments at the plant. Pre. Conf. Tr. 374-75.

our part might not be desirable. When, in responding to questions raised in the limited appearance statements, the Applicant and Staff failed even to allude to the need-for-power assertions,[20] we concluded that the questions raised were of sufficient importance to warrant elucidation on the public record.

Postponing the consideration of the need-for-power issue to the operating license proceeding would perhaps have been sufficient if, at the time of the prehearing conference, we had some assurance that this review could have been carried out shortly after the completion of the spent fuel pool proceeding. This had been our contemplation when, in 1978, we initially established the schedule for this license amendment proceeding. If that schedule could have been followed, the only risks to the public would have been the incurring of impacts (both environmental and financial) of carrying out the pool expansion prior to any review of the need for LACBWR.[21] Further operation (at least to any significant extent) would not likely have occurred prior to the conclusion of the environmental review. But at the second prehearing conference, the Staff announced that the issuance of the FES had been

---

20/ Prior to most of the limited appearance statements, the Applicant had made a brief one-sentence statement concerning increasing demand in its service area. Pre. Conf. Tr. 309.

21/ As will be seen, the Staff in its EIA judged the environmental impacts of the pool expansion alone to be not great enough to affect significantly the quality of the human environment, and in this Decision we are accepting that evaluation (p. 102, infra).

delayed until the end of 1980, and that the reports which the Staff would issue in conjunction with its safety review of the full-term operating license would not be completed for two years — i.e., until the fall of 1981 (Pre. Conf. Tr. 284). That would have resulted in the postponement of the evidentiary hearing on environmental matters until March or April of 1981 at the earliest (allowing at least 45 days for ruling on motions for summary disposition) and, under such schedule, a delay of the issuance of a partial initial decision on environmental matters until the summer of 1981. In other words, LACBWR would have been permitted to operate for over a year with the capacity of its spent fuel pool expanded before there would have been any complete review of the need for this facility.

Those circumstances shaped our perspective of the timing for consideration of the need-for-power questions. Instead of those questions being reviewed almost simultaneously with the spent fuel pool expansion, their consideration would not have been completed until more than a year after final action on the license amendment. Given our conclusion that the need-for-power questions were of sufficient importance to warrant elucidation on the public record in the same time frame as our consideration of the spent fuel pool expansion, it became apparent to us that consideration of need for power should not be delayed in its entirety until the operating license hearings. We therefore determined that a hearing on some aspects of need for the power

produced by LACBWR should be held at the earliest possible date, prior to the issuance of any authorization of expansion of the spent fuel pool.

It is true that, on October 29, 1979 — after the conclusion of the evidentiary hearing, and concededly as a result of urging by this Board (Tr. 976) — the Staff advised us and the parties that the FES is now scheduled for issuance early in 1980. We need not determine whether, if we had been aware of that schedule, we would nevertheless have ordered hearings on the need-for-power questions as part of the spent fuel pool expansion proceeding. Because those hearings have already been held, and because we conclude we have jurisdiction over such questions, we will proceed to make findings of fact and conclusions of law based on the evidentiary record before us.

B.1. In asserting that we lack jurisdiction to consider the need for LACBWR in the spent fuel pool expansion proceeding, the Applicant advances essentially three lines of reasoning. First, citing the Appeal Board's decision in Prairie Island, ALAB-455, supra, as well as a number of licensing board decisions, it claims that the issue of "need for power" (which it also characterizes as an "alternative to continued operation") has been ruled to be beyond the scope of this type of proceeding. Second, it asserts that we have failed to identify circumstances (within the meaning of 10 CFR §2.760a) which would permit us to consider an issue beyond the contentions raised by a party and

admitted as issues in controversy into this proceeding. Finally, the Applicant claims that, even assuming we had authority to consider need for power, we abused our discretion by raising the issue at such a late date.

For its part, the Staff also claims that we have not fulfilled the regulatory requirements for considering issues beyond those raised by parties; it asserts that there are no significant environmental effects stemming from expansion of the capacity of the spent fuel pool (or, indeed, stemming from continued operation for three years) which would constitute a "serious" environmental matter, within the meaning of 10 CFR §2.760a. Further, it claims that the National Environmental Policy Act (NEPA), 42 U.S.C. 4321, is not retroactive and that an impact statement need not be prepared either with respect to continued operation of the facility (which began operation prior to the passage of NEPA) or with respect to a license amendment not engendering significant environmental impacts. In that connection, the Staff equates the performance of an environmental review with the preparation of an impact statement. It recognizes that where supplementary Federal actions are needed after the passage of NEPA to allow continuation of activities approved before the passage of NEPA, an environmental impact statement may be required; but it contends that such requirement does not come into play "[w]here the supplementary action does not substantially change that which was originally authorized."

(It lists four facilities licensed before the passage of NEPA where spent fuel pool expansion had been authorized without the preparation of an environmental impact statement.)

In addition, the Staff likewise relies on Prairie Island, ALAB-455, supra, for the proposition that the only environmental inquiry permitted is "whether the amendment still would bring about significant environmental consequences beyond those contemplated at the time of the grant" of the operating license. It further disclaims any intent to rely on incremental decision making as proscribed by cases such as Scientists' Institute for Public Information (SIPI) v. AEC, 481 F.2d 1079 (D.C. Cir. 1973).

Finally, the Staff claims that, under the Commission's regulations, no environmental weighing of the benefits of a proposed action is to be made unless it is first determined that the action either "significantly affects" the environment or "has substantial adverse environmental impacts" (and hence requires preparation of an impact statement). It cites a number of licensing board decisions which concluded that no cost-benefit balance or weighing of alternatives is required in the absence of a showing that a proposed action will have significant environmental impacts, and one Appeal Board decision which ruled that, in the particular circumstances, there was no necessity of searching out alternatives to actions not involving any such impacts. Portland General Electric Co. (Trojan Nuclear Plant), ALAB-531, 9 NRC 263 (1979).

2. We need not dwell long on the Applicant's argument that we abused our discretion (to the extent we might have had such discretion) by raising the need-for-power issue at a late date. We did not become aware of the potential magnitude of the problem and hence of the importance of the issue until we had listened to the limited appearance statements to which we previously referred. Nor did we know about the significant delay in the issuance of the FES until the September, 1979 prehearing conference. We acknowledge that we then set a rather expedited schedule for the evidentiary hearing on the need-for-power issue, but we were motivated by a desire to conclude our consideration of the spent-fuel-pool expansion in a time frame which (assuming approval of the amendment) would disrupt the Applicant's schedule as little as possible. We recognize the inconvenience which our scheduling may have imposed, but we do not regard such inconvenience as a valid reason for our eschewing consideration of an issue which we consider to be important. Cf. Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-124, 6 AEC 358 (1973).

3. Nor is there any merit to the Applicant's and Staff's claims that the circumstances permitting us to examine issues sua sponte, pursuant to 10 CFR §2.760a, do not exist. As we previously stated (Pre. Conf. Tr. 420), we regard the need for LACBWR, in the context of the limited appearance statements touching upon and raising questions concerning such need, as a serious environmental

matter, within the meaning of 10 CFR §2.760a. Indeed, if we view the issue (as the Applicant seems to do) as an exploration of the alternative of doing nothing, there are a number of judicial decisions which have indicated the importance of such exploration. E.g., Environmental Defense Fund, Inc. v. Corps of Engineers, 492 F.2d 1123, 1135 (4th Cir. 1974); Trinity Episcopal School Corp. v. Romney, 523 F.2d 88, 93 (2d Cir. 1975). We also regard the combination of circumstances surrounding this individual proceeding — in particular, the lack of any previous NEPA review of the question, the extended delay in the operating license review, the depth of feeling of those who expressed concern about NRC's authorizing an activity which produces both environmental and financial impacts without even inquiring as to whether the activity is necessary or desirable, and the claimed (and not controverted) lack of any forum other than NRC where that issue might be considered — as constituting "extraordinary circumstances" within the meaning of that section.[22/] We find these circumstances place the question we have raised well within the boundaries of the authority provided by 10 CFR §2.760a for us to raise issues sua sponte.

4. Both the Applicant and Staff rely on the Appeal Board's decision in Prairie Island, ALAB-455, supra, for the proposition that a licensing board has no authority to consider need for power (or the alternative of "doing nothing") in a proceeding considering

---

22/ Effective November 30, 1979, the Commission deleted the "extraordinary circumstances" criterion of 10 CFR §2.760a. In doing so, it commented that the "amended rules eliminate an apparent constraint on boards as well as more accurately reflect current NRC adjudicatory board practice," of which it indicated its approval. 44 Fed. Reg. 67088 (November 23, 1979).

spent fuel pool expansion. The entire relevant part of that decision appears in footnote 4 and reads as follows:

> Because the practical effect of not now increasing the capacity of the Prairie Island spent fuel pool would be that that facility would have to cease operation, the MPCA [intervenor] appears to believe that what is being licensed is in reality plant operation. Therefore, according to MPCA, the license amendment could not issue without a prior exploration of the environmental impact of continued operation and the consideration of the alternatives to that operation (e.g., energy conservation). We do not agree. The issuance of operating licenses for the two Prairie Island units was preceded by a full environmental review, including the consideration of alternatives. See LBP-74-17, 7 AEC 487 (1974), affirmed on all environmental questions, ALAB-244, 8 AEC 857 (1974). Nothing in NEPA or in those judicial decisions to which our attention has been directed dictates that the same ground be wholly replowed in connection with a proposed amendment to those 40-year operating licenses. Rather, it seems manifest to us that all that need be undertaken is a consideration of whether the amendment itself would bring about significant environmental consequences beyond those previously assessed and, if so, whether those consequences (to the extent unavoidable) would be sufficient on balance to require a denial of the amendment application. This is true irrespective of whether, by happenstance, the particular amendment is necessary in order to enable continued reactor operation (although such a factor might be considered in balancing the environmental impact flowing from the amendment against the benefits to be derived from it).

7 NRC at 46-47 (emphasis supplied).

A careful reading of this decision indicates that it is not applicable to the case at bar. Here, unlike in Prairie Island, there has not yet been a NEPA environmental review and, accordingly, there never has been an exploration of the need for

the power produced by LACBWR or (in contrast) an examination of "doing nothing" and allowing the plant to shut down as a result. The Prairie Island holding is founded wholly upon the lack of any requirement in NEPA to re-examine matters which had been thoroughly considered in an earlier proceeding. (NEPA itself explicitly includes language designed to encourage the avoidance of "duplication of effort and expense." 42 U.S.C. 4345(2).)

The Applicant characterizes the dissimilarity between this proceeding and Prairie Island, to which we have just alluded, as "a classic case of a distinction without a difference." As grounds for that argument, it attempts to show that need for power has in fact been considered at an earlier date, so that the ruling in Prairie Island would indeed be applicable in the instant factual situation. It cites the 1962 LACBWR contract between Dairyland and the Atomic Energy Commission which provided, inter alia, that Dairyland was to purchase the plant if two conditions were met; namely,

> 1. The reactor plant 'can reasonably be expected to serve as a reliable source of steam to meet Nuclear Power Plant requirements while operating as a base load plant * * *,' and
>
> 2. The 'probable cost of energy produced * * * will not exceed the cost of energy that would otherwise be produced in a hypothetical new fossil-fuel power plant of comparable size and location * * *.'

Because the sale to Dairyland in fact was consummated, the Applicant asserts that these conditions must have been satisfied. It further asserts that the issuance of the provisional operating license to Dairyland was necessarily based "on the mutual recognition by DPC and the Commission that the reactor plant was economical and was needed to meet DPC's power needs."

We do not agree. The contractual conditions in question establish no more than that the plant was considered at the time of transfer to be a reliable source of base load energy and the electricity it would produce would be no more costly than that from a new fossil fueled plant. The satisfaction of the two conditions — which for present purposes we will agree took place — in no way constitutes an exploration of whether the power produced by LACBWR were needed, much less a determination that it was needed.

Moreover, the agreement by two contracting officers concerning the two contractual provisions in no way can be deemed equivalent to a NEPA review. No impact statement was prepared; no public participation was solicited or permitted; the satisfaction of the two conditions was not open to review in either the construction permit (authorization) or provisional operating license proceedings. Indeed, both those proceedings predated the passage of NEPA (although the issuance of the provisional operating license

did not occur until sometime after the passage of that Act). That being so, the conditions required by Prairie Island for obviating the NEPA review of benefits or alternatives in a spent fuel pool expansion proceeding are not present in this case, and Prairie Island (or its progency) do not deprive us of authority to consider need for power in this proceeding.

The other Appeal Board and Licensing Board decisions cited by the Applicant or Staff are distinguishable on the same basis: none involved a situation where there had not previously been an environmental review of benefits and alternatives. Trojan, ALAB-531, supra; Duquesne Light Co. (Beaver Valley Power Station, Unit No. 1), LBP-78-16, 7 NRC 811 (1978). Under the earlier Prairie Island ruling, there was no need in any of those proceedings to replow ground already covered and to reconsider the benefits from or alternatives to further operation of the reactors in question.

The Staff also calls our attention to four facilities licensed before the passage of NEPA (Dresden, Ginna, Oyster Creek, and Yankee Rowe) where spent fuel pools were expanded. Although not expressly stated, we presume that none of those facilities had had any environmental review prior to authorization of the spent fuel pool expansion. We note, however, that none of those proceedings was apparently the subject of an adjudicatory hearing; hearings in those situations are not mandatory and only occur if

properly requested by an interested party. 10 CFR §2.105. If there had been such a hearing, and if a party or the licensing board in question had desired to consider need for power or alternatives, we could not say that such consideration would have been inappropriate or beyond the licensing board's jurisdiction. In any event, the fact that there may not have been such a review in those cases serves as no precedent for determining our jurisdiction here to consider need for power or alternatives.

In sum, it is clear that our authority to consider need for power or alternatives is not barred or even undermined by any NRC decision cited to us or of which we are aware. We turn now to the source of our authority to consider such questions.

5. The basic thrust of both the Applicant's and Staff's positions is that NEPA only imposes obligations on an agency in situations where a major federal action results in significant environmental impacts and hence requires the preparation of an impact statement. Put another way, benefits and alternatives become irrelevant absent the presence of significant environmental impacts which would cause NRC to prepare an environmental impact statement. We disagree.

To begin with, we acknowledge that the impacts of this spent fuel pool expansion are not great enough to require the preparation of an environmental impact statement. (Our findings of fact on this question appear in Part IV of this Decision.) But

there are a number of bases for our nevertheless concluding that we have authority to consider benefits from or alternatives to the proposed action (particularly the alternative of "doing nothing").

First, the Appeal Board in Prairie Island stated that the environmental impact flowing from a license amendment might be balanced against the benefits to be derived from it (7 NRC at 46-47, n.4); the statement was made in the context of a spent-fuel-pool expansion proceeding where, as here, the environmental impacts emanating from the amendment were not deemed large enough to warrant preparation of an environmental impact statement. Moreover, although the statement only suggested that consideration could be given to the benefits of continued reactor operation flowing from the amendment, surely it cannot be read to preclude a contrary showing that reactor shutdown might be beneficial (at least in a situation where that question had not previously been explored). What is important is the balancing which was sanctioned.

Second, the consideration of alternatives (including the alternative of "doing nothing") is governed by two separate sections of NEPA. Section 102(2)(C)(iii), 42 U.S.C. §4332(2)(C)(iii), requires consideration of alternatives in impact statements. It is only applicable in situations where an impact statement must be prepared — i.e., where there is a proposed action "significantly affecting the quality of the human environment." Section 102(2)(C). As we have seen, we find that

situation not to prevail here. But Section 102(2)(E), 42 U.S.C. §4332(2)(E), also requires the consideration of alternatives.[23] That requirement is imposed whether or not a proposal involves significant environmental impacts. A proposed action not involving significant impacts may nevertheless be halted if alternatives (particularly the alternative of taking no action) have not been adequately considered. Trinity Episcopal School Corp. v. Romney, supra, 523 F.2d at 93;[24] Environmental Defense Fund, Inc. v. Corps of Engineers, supra, 492 F.2d at 1135; Monroe County Conservation Council, Inc. v. Volpe, 472 F.2d 693, 697-98 (2d Cir. 1972); Calvert Cliffs' Coordinating Committee v. AEC, 449 F.2d 1109, 1114 (D.C. Cir. 1971); see also Natural Resources Defense Council v. Callaway, 524 F.2d 79, 93 (2d Cir. 1975); Environmental Defense Fund, Inc. v. Corps of Engineers, 470 F.2d 289, 296 (8th Cir. 1972), certiorari denied, 412 U.S. 931 (1973); Monarch Chemical Works v. Exon, 466 F. Supp. 639, 650 (D. Neb. 1979); accord, Environmental Defense Fund Inc. v. Callaway, 497 F.2d 1340, 1341 (8th Cir. 1974) (per curiam).

These courts have treated the obligations under Section 102(2)(C)(iii) and current Section 102(2)(E) to be entirely separate. The latter requirement is said to "ensure that each agency decision maker has before him and takes into proper account all possible approaches to a particular project (including total abandonment of

---

23/ Prior to 1975 (P.L. 94-83), subpart (E) of Section 102(2) was lettered as subpart (D). The wording of the subpart was not changed by that amendment.

24/ The Staff attempts to distinguish this case on the ground that it is "predicated on avoiding environmental harm." Even were that so, it is still clear that there need not be sufficient impact to call for the preparation of an impact statement. All there need be is "differing impacts on the environment," whether or not they be significant. Ibid. That situation clearly obtains here (see pp. 53, 63, 86, infra).

the project) which would alter the environmental impact and the cost-benefit balance." Calvert Cliffs, supra, 449 F.2d at 1114. In appropriate circumstances, the Section 102(2)(E) discussion may be incorporated into an impact statement. E.g. Environmental Defense Fund v. Corps of Engineers, supra, 470 F.2d at 296. But again, the obligations imposed by the two sections are separate and distinct, and Section 102(2)(E) comes into play irrespective of the magnitude of environmental impacts in question and irrespective of whether an impact statement must be prepared.

The applicability of Section 102(2)(E) of NEPA does depend upon there being a "proposal which involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. §4332 (2)(E). That situation was found to exist in connection with a proposal to erect a public housing project at a given location, where the controversy centered on the appropriate use to be made of an urban renewal site. Trinity Episcopal School Corp. v. Romney, supra. And it was found to exist in conjunction with the proposed construction of three electrical transmission towers along an interstate highway through the New Haven harbor area. City of New Haven v. Chandler, 446 F. Supp. 925 (D. Conn. 1978). Although we need not establish a boundary for the applicability of that section, it seems clearly to come into play in a situation where, as here, we are presented with a construction project costing over a million dollars and involving environmental impacts which, even though not sufficient to require preparation of an impact statement, are manifestly different from those resulting from "doing nothing" (e.g., the potential purchase of needed power, the differing impacts which would then be incurred, or the possibility that LACBWR power would not be needed and, if that were so, the avoidance of impacts of reactor operation).

Furthermore, in this case, the "unresolved conflicts concerning alternative uses of available resources" may also be viewed as centering on whether a resource (LACBWR) should be used or not used pending a final determination of the question whether LACBWR's provisional license should be converted to a full-term license. As so viewed, the "alternative uses" question is somewhat different from that presented by the judicial precedents cited, in that it is circumscribed from the point of view of time and cast in terms of "use" versus "non-use" of a resource. As we previously suggested, it is unfortunate that the timing of the environmental review of the application for conversion to the full-term operating license was such that it could not be accomplished prior to or in conjunction with this SFP proceeding, because that review clearly is broad enough to include the question posed here.

Although the question is a close one, we believe that §102(2)(E) requires NRC to consider at this time the alternative of taking no action. In the absence of any prior assessment of the need for LACBWR, the impacts of the SFP expansion and the reactor's continued operation, on an interim basis, should be compared to the impacts of its shutdown pending review of the application for a full-term operating license. If LACBWR were not to be needed during this interim period, it would be better to defer acting on DPC's request for authorization to expand the spent fuel pool storage capacity until it is determined whether the facility should be authorized a full-term operating license. While this of course would result in a decision not to use a resource (LACBWR), it would prevent a needless expenditure of other resources prior to consideration of the long-term need for and acceptability of LACBWR, a consideration which will properly focus on the overall costs and benefits of LACBWR.

A third basis for our considering either need for power or the alternative of "doing nothing" is that the Staff has discussed these matters in its EIA. Under the heading of "Alternatives" (§7.0), the EIA states as follows:

> Shutdown of Facility
>
> If LACBWR were forced to shutdown for lack of space to store spent fuel, there would be the loss of the economic benefit from the facility (generation of electric energy) and a cost associated with purchase of replacement energy and maintaining the facility in a standby condition far in excess of the cost of the proposed modification.
>
> The licensee estimates that the loss of revenues from the idle plant would be about $28,800/day. This is consistent with comparable data for other operating reactors.

EIA (Staff Exh. 1A) §7.4, p. 13. In summarizing the alternatives, the EIA concludes that "[a]lternative (4), plant shutdown, would be much more expensive than the proposed action because of the need to provide replacement power" (EIA, §7.5, p. 13).

The assertions made in the limited appearance statements directly contradict the conclusions reached by the Staff in its EIA. The EIA is, of course, part of the Staff's case in support of the license amendment. If we have jurisdiction to consider the EIA, we likewise have jurisdiction to entertain information tending to contradict conclusions reached in the EIA.

The Applicant and Staff each draw our attention to the fact that the Commission's regulation dealing with EIAs (10 CFR §51.7(b)) makes no mention of any requirement to discuss alternatives

or to perform a cost-benefit balance, whereas, in contrast, the regulations dealing with impact statements explicitly require discussion of those topics (10 CFR §§51.20(a) and (b), and 51.23). We cannot agree, however, that the silence with respect to whether to discuss alternatives or perform a cost-benefit balance in an EIA means that these subjects are inappropriate for an EIA. Moreover, the EIA here did in fact include such subjects. We do not know what authority the Staff was relying on when it included a discussion of alternatives and a cost-benefit balance in its EIA, but we presume it must have been §102(2)(E) of NEPA, which we heretofore have considered. In any event, we conclude both that it was proper for the Staff to include these subjects in its EIA and that, as a result, our consideration of information tending to contradict the Staff's conclusions was also appropriate and within our jurisdiction.

Finally, there are several other bases on which our jurisdiction to consider need for power and alternatives may be founded. Even though a project was authorized prior to the enactment of NEPA, subsequent Federal involvement in the project, by way of approving changes, has been held to trigger the need for an environmental review — even though the impacts of the change were less adverse, or at least no more severe, than those approved earlier. Minnesota PIRG v. Butz, 498 F.2d 1314 (8th Cir. 1974); Hart v. Denver Urban Renewal Authority, 551 F.2d 1178 (10th Cir. 1977); State of Wisconsin v. Callaway, 371 F. Supp. 807 (W.D. Wis. 1974). So-called "continuing projects" begun prior to the passage of NEPA have also

been found to require an environmental review. Lee v. Resor, 348 F. Supp. 389, 397 (M.D. Fla. 1972).

In addition, a preliminary review at this time might be warranted in the operating license proceeding (over which we clearly have been delegated authority). The very delay in that proceeding might well mandate such a review. Cf. Northwest Airlines v. CAB, 539 F.2d 748 (D.C. Cir. 1976). In that connection, we reiterate that the Applicant has heretofore received only an 18-month provisional operating license which under its own terms expired in 1974. Its continued validity is maintained as a matter of law (10 CFR §2.109) but only as a result of the NRC's delay in completing its review of the full-term operating license application. No party disputes that such application requires a full NEPA environmental review. Even though NRC regulations impose no time limit on such continued validity, it is clear to us that at some point in time the NRC's lack of action must be deemed fatal to the continuation of the provisional license. Otherwise, the Applicant could conceivably operate LACBWR for another 30 years or so without the completion of any environmental review. We need not determine the exact date after which a license extension pursuant to 10 CFR §2.109 becomes unreasonable in order to find that, in the circumstances of this proceeding, at least a preliminary environmental review of continued operation is appropriate at this juncture.

In short, we conclude that there are several independent bases which confer jurisdiction upon us to consider need for power

(or the alternative of doing nothing) at this time.

C. Prior to the evidentiary hearing, the Applicant asked us to certify or refer the jurisdictional question we have just discussed to the Appeal Board for its review. We declined to do so at that time, because we felt that the delay (assuming we were upheld by the Appeal Board and a hearing would still be held) would make it impossible for us to render a decision in the time frame in which the Applicant sought approval of the license amendment.

We recognize, of course, that the legal question we have discussed may well be considered a close question. We also recognize that, because it has prevailed on the merits, the Applicant would not normally be permitted to appeal our decision. See, e.g., Toledo Edison Co. (Davis-Besse Nuclear Power Station), ALAB-157, 6 AEC 858, 859 (1973).[25/] Furthermore, although we have not investigated the question, our ruling may well be relevant to other proceedings where applicants are seeking to expand the capacity of their spent fuel pools without having earlier been subjected to an environmental review.[26/] For these reasons, we announced at the

---

25/ If another party were to appeal this Decision, the Applicant could, of course, defend the result reached "on any ground presented in the record, including one rejected" by us. Public Service Co. of Oklahoma (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC ___, ___ (December 7, 1979) (slip op. p. 27).

26/ The applicability would be limited, of course, to proceedings where a review of benefits or alternatives was sought by a party or by a licensing board. 10 CFR §2.105.

hearing that we would refer this ruling to the Appeal Board (Tr. 281). Pursuant to 10 CFR §2.730(f), we find that prompt decision on this question would be in the public interest and hereby refer it to the Appeal Board (see 10 CFR §2.785(b)(1)) for its determination.27/

One further comment is also in order. We have characterized the jurisdictional question as one which many may regard as a "close question." Despite this characterization, we strongly believe that there are several bases upon which our jurisdiction properly rests; but we recognize that the arguments for the contrary position are not frivolous. In such a situation, however, we believe it important to resolve any doubts in favor of an on-the-record hearing on the issues in question (i.e., need for

---

27/ In conjunction with this referral, we call the Appeal Board's attention to the following documents:

1. Applicant's Request for Reconsideration, or, in the alternative, Certification or Referral to the Appeal Board, dated October 1, 1979.
2. Pre. Conf. Tr. 392-438 (September 21, 1979).
3. Tr. 246-281 (October 3, 1979).
4. CREC's Proposed Findings of Fact, dated October 31, 1979, par. 121-123.
5. NRC Staff's Brief in Opposition to Licensing Board's Sua Sponte Consideration in this Proceeding of the Need for LACBWR, dated November 5, 1979.
6. Applicant's Reply to CREC's Proposed Findings of Fact, dated November 7, 1979, Part V.

power and the alternative of "doing nothing"). With respect to those issues, the views of those who made limited appearance statements at the second prehearing conference were both strongly held and diligently presented. As it turned out (see Part IV, infra), some of those views had at least a plausible foundation; others proved to be neither factually well founded nor based upon a broad enough perception of applicable factors to produce a sound conclusion. Faced with such strongly held differences of opinion, it is important to resolve the questions in a public forum, unless clearly prohibited by applicable rules.

The Atomic Energy Act designates the public adjudicatory hearing as such a forum (42 U.S.C. §2239(a)). It provides a unique vehicle for obtaining answers in public to controversial questions. In doing so, it also provides an effective method for implementing the "full disclosure" goals of NEPA. To have allowed the Applicant and Staff to have worked out answers to the need for power questions (or the alternative of "doing nothing") without public participation, or to have permitted them to avoid these questions altogether, would scarcely have answered the outstanding questions. Nuclear power is sufficiently controversial that its problems or apparent problems must be dealt with and resolved on the merits in full view of the public. The Atomic Energy Act and NEPA demand no less.

IV. FINDINGS ON NEED FOR POWER

A. Before embarking on our findings with respect to need for power (or the alternative of "doing nothing"), we turn first to the scope of the issue which is now before us and the applicable standards for considering that issue. In doing so, it is important to remember that need for power is also an issue before us in the companion operating license proceeding. The scope of these two proceedings is not co-extensive. For that reason, it is not necessary for us to consider now whether LACBWR will be needed for the entire term of its proposed operating license. That is the very issue which is before us in the other proceeding. At this time, we need only make the narrower determination of whether LACBWR is needed during the period in which the full-term environmental review is being performed. The narrower review is sufficient to assure that operation of the reactor with its modified SFP will not occur absent an environmental review of such operation. At the second prehearing conference, it appeared to us that this period would likely extend for two or three years. (It appears now that it could be less.) We therefore established as the period with respect to which we would consider need for power (or the alternative of "doing nothing") in this proceeding as the period ending December 31, 1982 (Pre. Conf. Tr. 416, 421).

As the Appeal Board observed in Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), ALAB-422, 6 NRC 33, 90 (1977), "'[n]eed for power' is a shorthand expression for the 'benefit' side of the cost-benefit balance which NEPA mandates" for certain licensing proceedings. Considered in the context of the alternative of "doing nothing," the issue may be characterized

as an exploration of the consequences of not having the power produced by the plant available for use during the period under review. For, in this proceeding at least, there is no serious dispute that, absent approval of the amendment authorizing expansion of the SFP capacity, the plant would have to be shut down at its next refueling for lack of storage space for the spent fuel rods (EIA, Staff Exh. 1A, §7.5, at p. 13). What we have before us, therefore, is a balance of the benefits (if any) of LACBWR operation until December 31, 1982 against the costs (both environmental and economic) of such operation (including the cost of SFP expansion) or, alternatively, an exploration of the costs (if any) of not having the power produced by LACBWR available.

Appeal Board holdings on need for power indicate that "need" may be demonstrated in a variety of forms. Most obvious is the obligation of a utility to satisfy power demands in its service area. Niagara Mohawk Power Corp. (Nine Mile Point, Unit 2), ALAB-264, 1 NRC 347 (1975). In satisfying this obligation, a utility must also meet the reserve margin requirements of power pools in which it is a participant. Id. at 358; Tennessee Valley Authority (Hartsville Nuclear Plant, Units 1A, 2A, 1B, 2B), ALAB-367, 5 NRC 92, 96-98 (1977). Need may also be demonstrated by means of the "substitution" theory — e.g., that the operation or availability of a given plant will enhance system reliability by lessening an existing dependence of the utility upon scarce fuels such as oil or gas. Nine Mile Point, ALAB-264, supra,

1 NRC at 353; Public Service Co. of Indiana, Inc. (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 186 (1978); Seabrook, ALAB-422, supra, 6 NRC at 95-99. Or a utility may show that the electrical power generated by a given plant is needed to satisfy energy requirements currently being met directly by scarce fuels such as natural gas. Kansas Gas and Electric Co. (Wolf Creek Generating Station, Unit 1), ALAB-462, 7 NRC 320, 327-28 (1978), affirmed (per curiam), Mid-America Coalition for Energy Alternatives v. NRC, 590 F.2d 356 (D.C. Cir. 1979). In short, in determining whether a plant is needed, many factors bearing upon system reliability may be examined.

We do not view the need factors heretofore sanctioned by the Appeal Board as circumscribing the scope of inquiry with respect to need for a particular facility. The Applicant asserts, however, that "any benefit whatever" from the continued operation and availability of LACBWR is sufficient to "tip the scale" in favor of granting the proposed amendment. As a basis for this proposition, the Applicant cites two authorities: first, the Appeal Board's statement in Consumers Power Co. (Midland Plant, Units 1 and 2), ALAB-458, 7 NRC 155, 162-63 (1978), to the effect that certain cost items are to be left "to the business judgment of the utility companies and to the wisdom of the [responsible] State regulatory agencies;" and, second, the conclusion of the Licensing Board in Portland General Electric Co. (Trojan Nuclear Plant), LBP-78-32, 8 NRC 413, 454 (1978), aff'd., ALAB-531, 9 NRC 263 (1979), that, in a spent fuel pool expansion proceeding

where adverse environmental impacts of the expansion are "negligibly small," consideration of alternatives is unnecessary and, further, that "any benefit whatever" would tip the scale in such circumstances.

In our view, these authorities must be distinguished on their facts from the situation before us. Both involved situations where a prior environmental review had taken place. Both involved situations where State agencies had authority to consider need for the particular facility. And both addressed only the question whether alternatives environmentally inferior to (but less costly than) the proposal in question must be examined. Here, in contrast, we are faced with the alternatives either of (1) expanding the capacity of the spent fuel pool and thereby permitting operation for the next three years, a course of action which involves some environmental impacts, albeit not to a degree sufficient to require the preparation of an impact statement; or (2) not authorizing expansion and, as a result, possibly eliminating all the impacts which otherwise would be incurred, including the impact of continuing operation.

In the situation before us, we are not prepared to go so far as to agree that "any benefit whatever" will tip the scale in favor of the amendment. We do recognize that various types of benefits may appropriately be considered. Nor does an applicant's showing with respect to any one form of benefit need to be overwhelming: as we interpret NRC holdings in this area, it appears

that a conglomeration of lesser benefits may be considered collectively to determine whether there is need for a facility. E.g., Wolf Creek, ALAB-462, supra, 7 NRC at 328; see also Long Island Lighting Co. (Jamesport Nuclear Power Station, Units 1 and 2), LBP-78-17, 7 NRC 826, 867-83 (1978). We conclude that an ad hoc judgment in each situation is necessary to determine whether the sum of the particular benefits which are claimed is sufficient to offset whatever impacts (financial and otherwise) are engendered in order to realize the particular benefits.

We also recognize, as the Appeal Board has stated, that the financial cost of an alternative is important "only to the extent it results in an environmentally superior alternative." Midland, ALAB-458, supra, 7 NRC at 163. But satisfaction of that standard does not appear to require that the impacts which may be alleviated be sufficient to require the preparation of an impact statement. We do note, however, that the environmental review undertaken in a situation where no impact statement is required need not be as detailed as where an impact statement is being prepared. Trinity Episcopal School Corp. v. Harris, 445 F. Supp. 204, 218 (S.D.N.Y. 1978), rev'd. on other grounds, sub nom. Karlen v. Harris, 590 F.2d 39 (2d Cir. 1978).

As we have indicated, need for power is relevant in the context of a NEPA cost-benefit balance or as an ingredient in evaluating the alternative of "doing nothing." To the extent it involves a cost-benefit balance, environmental costs are of

significant importance. The quantum of those costs has not been raised as an issue in this SFP proceeding, and we have found no reason to question the costs set forth in the EIA (except to the extent they bore upon the financial costs of plant shutdown). At the September prehearing conference, therefore, where we defined the issue which we were raising, we advised the parties that we would accept as the environmental impacts of expansion (and operation after expansion) the environmental costs set forth in the EIA (Pre. Conf. Tr. 423). Because many of those costs are expressed in terms of impacts additional to those considered in the Staff's Draft Environmental Statement (DES) prepared in June, 1976 (NUREG-0087), we also admitted into the record (as a Board exhibit) those portions of the DES which describe those impacts (Tr. 959-970). In performing a cost-benefit balance in order to determine whether the license amendment should be authorized, we will rely on the quantum of the impacts set forth in the EIA and DES.

In evaluating the costs of not operating LACBWR for the next three years, we are also assuming that the reactor will be maintained in a condition under which it could operate after completion of the environmental review for the full-term operating license. This is because we are not required to assume that the full-term review will be unfavorable to continued operation. Because LACBWR has been authorized to operate, we do not believe that the pendency of the full-term operating license review should prejudice the Applicant's position in that regard. All that an

adverse decision in this SFP proceeding could or should do is to prevent the Applicant from undertaking the SFP modification. If DPC found an alternate method of disposing of its spent fuel, an adverse decision in this proceeding could not prevent it from continuing to operate. Thus, by assuming that the reactor is maintained in a position in which it might operate, we are merely recognizing the realities of an outstanding and valid provisional operating license. In addition, as we later discuss, the Applicant takes the position that maintaining the reactor in this condition is the only option available to it if the SFP expansion were not to be approved. See pp. 92-94, infra.

B. The Applicant advances essentially four reasons why LACBWR should operate during the period ending December 31, 1982. First, it asserts that LACBWR's capacity is needed to enable Dairyland to meet the energy needs of its own system, to avoid generating capacity deficits in the early 1980's, and to maintain the reserve margin required of members of the power pool in which it is a member. Second, it claims that LACBWR greatly enhances the overall reliability of its system in the LaCrosse, Wisconsin area.

Third, DPC asserts that it is dependent upon coal for over 90% of its system capacity and that the continued availability of LACBWR (Dairyland's only non-coal-fired base-load plant) reduces its dependence on coal and lessens the vulnerability of its system to interruptions caused by such events as coal strikes and severe weather. Finally, the Applicant refers to a number of potential

adverse impacts and additional costs resulting from a prolonged shutdown of the reactor and turbine systems. It asserts that, if LACBWR were shut down from 1980-82, it would be forced to incur substantial expenditures purchasing replacement power to make up for the lost capacity and meet its system needs. Additionally, it points to a potential prejudice to its rights in the operating license proceeding, and to additional labor costs and other miscellaneous expenses incident to maintaining LACBWR in a cold shutdown condition and later bringing it on line. It maintains that these additional costs far outweigh any cost savings resulting from not running the reactor and, when coupled with the cost of power from alternate sources, far outdistance the cost of obtaining power from LACBWR.

We will treat these claims seriatim.

DPC Generating Capacity

1. DPC is an electrical power cooperative owned by its member distribution cooperatives, and provides electricity to 29 such cooperatives located in western Wisconsin, southeastern Minnesota, northeastern Iowa, and northwestern Illinois (Panel Testimony, p. 2).[27/] It is a member of the Mid-Continent Area

---

27/ Panel Testimony refers to the direct testimony sponsored by the witness panel consisting of Mr. John Parkyn, the Assistant Superintendent of LACBWR, Mr. Jack Leifer, the Assistant General Manager, System Engineering Group, DPC, and Mr. James Sherwood, Assistant General Manager, Administrative Services Group, DPC, and appearing in the record following Tr. 442.

Power Pool (MAPP) (id., pp. 2-3). The DPC system is directly interconnected with 28 other power suppliers, including Interstate Power Co., Wisconsin Power and Light Co., Northern States Power Co., Lake Superior District Power Co., and Northwest Wisconsin Electric Co. in Wisconsin (id., p. 2).

2. Generating facilities operated by DPC are located at five separate generating stations with a total capacity of 693 Megawatts (MW), consisting of the following units:

(a) Alma Generating Station
Unit 1 20 MW Coal-Fired Steam
Unit 2 20 MW Coal-Fired Steam
Unit 3 19 MW Coal-Fired Steam
Unit 4 61 MW Coal-Fired Steam
Unit 5 88 MW Coal-Fired Steam
Total 208 MW

(b) Stoneman Generating Station
Unit 1 19 MW Coal-Fired Steam
Unit 2 33 MW Coal-Fired Steam
Total 52 MW

(c) Genoa Generating Station
Genoa #1 12 MW Oil-Fired Steam
Genoa #2 46 MW Nuclear-Fired Steam (LACBWR)[28/]

28/ Although nominally designated as a 50 MW plant, LACBWR is currently rated at 46 MW for purposes of the MAPP pool (Tr. 486, 537, 866).

Genoa #3 350 MW Coal-Fired Steam
Total 408 MW

(d) Twin Lakes Generating Station
Units 1-4 9 MW Oil Diesel

(e) Flambeau Generating Station
Units 1-3 16 MW Hydro

Id., p. 3.

3. LACBWR is the fourth largest (in terms of capacity) of the 17 generating units presently on line in the DPC system. The electricity produced by LACBWR for the period 1975 through 1978 ranged from 3.5% to 11.2% of the total produced by the DPC system. Panel Testimony, pp. 2-4.

4. One half (175 MW) of the total capacity of Genoa No. 3 is contracted to Cooperative Power Association (CPA) (id. at p. 4). Although, on occasion, DPC has been able to purchase energy from CPA's portion of Genoa No. 3, CPA has normally scheduled its share of the unit for its own use. The contractual arrangement between DPC and CPA does not allow the Applicant to utilize any portion of CPA's 175 MW share of Genoa No. 3 in DPC's plans to meet system demands. Id., p. 4; Tr. 813-816.

5. The record indicates that an additional coal-fired unit (Alma No. 6) with a capacity of 350 MW was expected to become operational in the DPC system by the end of 1979 (Panel Testimony,

p. 4). With this unit on line, the DPC system generation capacity, exclusive of the CPA contracted share of Genoa No. 3, will be 868 MW (see Finding 2). However, a capacity exchange agreement between DPC and Northern States Power Company (NSP) calls for a sale to NSP of a portion of the generating capacity of Alma No. 6 upon completion of that unit (CREC Exh. 2; Tr. 656). The agreement continues through October, 1982 (CREC Exh. 2; Tr. 790).

6. CREC's Proposed Findings 6 and 7 refer to one recent and one future addition to CPA's generating capacity and claim that these additions will have somewhat lower incremental fuel costs than Genoa No. 3. See Tr. 855. CREC states that, because of this, CPA might have reason to sell Genoa No. 3 energy to DPC during the 1980-82 period. Mr. Leifer, for the Applicant, specifically rejected that hypothesis and added that CPA has indicated that it will continue to require the same amount of energy from Genoa No. 3 as in the past (Tr. 859). The Board finds no evidence in the record to support CREC's supposition.

7. As a member of MAPP, DPC is required to maintain a total accredited capacity of installed generating capacity and/or firm purchased capacity equal to its seasonal peak load plus a reserve capacity of 15% of that load (Panel Testimony, pp. 9, 13; Tr. 766-68, 832). This requirement would not change with LACBWR off line (Tr. 786, 832).

	Applicant		CREC	
Winter	Demand (MW)	Demand plus Reserve (MW)	Demand (MW)	Demand plus Reserve (MW)
1979-80	644	741	609	700
1980-81	697	802	639	735
1981-82	754	867	671	772
1982-83	793	912	705	811
1983-84	832[31/]	957	740[32/]	851

16. As we have also seen, DPC's capacity (not including the capacity contracted to CPA) with LACBWR is 868 MW. Without LACBWR it would be 822 MW.

17. Using the Applicant's projections, therefore, DPC either would have a deficit in, or would barely meet, its accredited capacity requirements in the 1981-82 winter season, depending upon whether or not LACBWR remains in service. Using CREC's projections, there would be a deficit by the 1983-84 winter season if LACBWR is taken out of service. Neither of these projections includes any allowance for power heretofore contracted by DPC to NSP (see Finding 5, supra). Firm purchased power would be required to make up any deficits in accredited capacity (Tr. 784-86). (As is indicated later in these findings, infra, pp. 87-91, such purchased power is likely to be more costly than production of power through LACBWR.)

31/ Derived on basis of asserted 6.6% average annual increase over a five year period. See Finding 8.

32/ Derived by applying 5% growth rate to claimed 1982-83 demand (CREC Proposed Findings 28, 30).

18. In reviewing the adjustments to DPC's projections proposed by CREC, we have found those relating to the addition of new distribution cooperatives and weather conditions to be unwarranted. We also find the Wisconsin PSC finding to be not applicable to the situation before us and decline to give it any weight. But we agree that some adjustment (although not to the extent called for by CREC) is appropriate to account for recessionary conditions. In these circumstances, it appears that demand growth will lie within the range circumscribed by the Applicant's and CREC's projections and that, without LACBWR on line, DPC will suffer a deficit in accredited capacity at some time between the 1981-82 and 1983-84 winter seasons — most likely by the 1982-83 winter season (the end of the period under review here).

19. The Appeal Board has repeatedly observed that "inherent in any forecast of future electric power demands is a substantial margin of uncertainty." Nine Mile Point, ALAB-264, supra, 1 NRC at 365 (footnote omitted); Wolf Creek, ALAB-462, supra, 7 NRC at 328. The Commission itself recently recognized that uncertainty and confirmed the earlier Appeal Board rulings which factored such uncertainty into the evaluation of demand forecasts. Carolina Power and Light Co. (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, 4), CLI-79-5, 9 NRC 607 (1979). A utility such as DPC has the responsibility to provide adequate and reliable service to all its consumers at all times (Tr. 602-03). Given that

responsibility, "the most that can be required is that [a] forecast be a reasonable one in the light of what is ascertainable at the time made." Wolf Creek, ALAB-462, supra, 7 NRC at 328 (citations omitted). Moreover, in fulfilling that responsibility, it is not unexpected, nor is it unreasonable, for a utility to be conservative and possibly to err on the high side in predicting demand growth. Duke Power Co. (Catawba Nuclear Station, Units 1 and 2), ALAB-355, 4 NRC 397, 410-11 (1976). For the consequences of an error on the low side — caused perhaps by an unexpectedly severe winter storm — could be far more severe than the adverse effects emanating from an over-estimation of demand growth. Id. at 411.

20. Applying these standards to the present situation, it is not unreasonable to predict that, by the end of the period under review, DPC may well have a deficit in accredited capacity if LACBWR is removed from service. CREC's own projection of a 5% growth rate would result in a deficit within a year of that period. For that reason, we accept the possibility of avoiding a capacity deficit by the end of 1982 as a valid benefit — albeit not a conclusive one — for keeping LACBWR on line during the next three years.

Reliability of DPC/NSP System in the La Crosse Area

21. The second major component of DPC's claim of need for LACBWR during 1980-82 is the role that LACBWR is asserted to play in alleviating the problem of providing reliable service in

the area immediately surrounding La Crosse, Wisconsin, during periods of high power demand. Currently, peak demand in the La Crosse area is approximately 400 MW (Tr. 594, 638-9). Power for the La Crosse area now is supplied by the facilities located at the Genoa site, including LACBWR (Tr. 582, 594) and, in addition, is imported via four 161 kV transmission lines which are owned and maintained by either DPC or Northern States Power Company (NSP) (Tr. 584, 635, and Exh. 1 to Panel Testimony). The capacity of these lines limits the amount of power which can be brought into this area (Tr. 839). Thus, should the Genoa No. 3 plant be down and DPC lose its 175 MW share of that 350 MW facility during periods of high demand, the reliability of service in the La Crosse area would be jeopardized, since a failure of any one of the four 161 kV transmission lines would require load shedding to prevent unacceptably low voltages and excessive overloads on the remaining lines (Tr. 581-82; Testimony of Ralph A. Stone, Superintendent of System Operation and Planning, NSP-Wisconsin, fol. Tr. 874). DPC and NSP have added capacitors and other power conditioning equipment and are now adding more in an attempt to alleviate this situation (Tr. 589). Obviously the situation worsens as the demand for power increases. Under cross-examination, Mr. Leifer testified for DPC that, at best, the addition of power conditioning equipment has and will temporarily offset the effect of growth in demand for power (Tr. 589, 601-602, 638, 641). He further testified that, assuming load growth as predicted by the Applicant occurs,

by the summer of 1981 there may be low voltage problems if Genoa No. 3 trips out during periods of high demand, even without the subsequent loss of a transmission line (Tr. 583). The addition of a fifth transmission line from Lansing, Iowa, to Genoa would solve the problem of maintaining reliable service in the La Crosse area until growth reaches levels projected for 1983 (Tr. 878). However, the earliest that this new line could be in service is August 1, 1981 (Tr. 877-78); but it likely will not be completed before the early part of 1982 (Tr. 839), and completion could be delayed until the end of that year (Tr. 590-92).

22. Until the Lansing-Genoa line is available, the reliability problem is met by operating one or both of the oil-fired turbines at NSP's French Island Plant near La Crosse. More specifically, turbines are started when the load reaches 85% of peak and when either the Genoa No. 3 plant or one of the 161 kV transmission lines is down. Operation of these nominally 70 MW turbines protects the transmission and distribution system by providing sufficient power and voltage support locally such that, if a transmission line should also trip while Genoa No. 3 is down, unacceptably low voltages, transmission line overloads, and load shedding are avoided. The use of these oil-fired turbines as a protective measure is undesirable from the cost and oil-consumption points of view. Although owned and operated by NSP, Dairyland shares the cost of their operation. In September 1979, for example, Genoa No. 3 was down for four days for boiler tube repair. The

demand on the system reached levels requiring protection during most daylight hours and 125,210 gallons of oil were used. Should LACBWR also be unavailable, it would be necessary to start the turbines at lower demand levels and thus to operate them more frequently and for longer times. Such additional use could lower the reliability of these turbines. Until a new transmission line becomes available, NSP estimates that an additional 500,000 to 700,000 gallons of oil would be consumed annually to offset the absence of LACBWR. Stone Testimony pp. 2-4; Tr. 582-83; 637-40; 836-37.

23. Intervenor takes strenuous objection to the DPC and NSP view that keeping LACBWR in operation during the next year or two so as to relieve the La Crosse area reliability problem constitutes an important benefit. Much of its cross-examination was devoted to this matter, as were 42 of its proposed findings (Tr. 582-622, 633-651, 875-77, CREC Proposed Findings 34 through 75).

24. For one thing, CREC argues that it is unnecessary to turn on the French Island turbines when Genoa No. 3 is down until after one of the transmission lines has tripped. CREC considers that the immediate load shedding which would then be required would not be a serious penalty and would not last longer than the 10-15 minutes needed to start the French Island combustion turbines. In support of this view, CREC asserts that customers frequently experience outages of equal or greater severity and

length due to wind and thunderstorm-caused distribution failures (CREC Proposed Findings 52, 54, and 55). The DPC and NSP witnesses, on the other hand, testified that DPC and NSP have an obligation to start one combustion turbine to maintain adequate voltage so that the service is not degraded to the point where recovery without damage to equipment becomes impossible (Tr. 603, Stone Testimony p. 2).

25. CREC also makes the argument that the probability of Genoa No. 3 being out during the winter peak demand period is low, as is the probability of transmission line failure. It follows that the combined probability of a line tripping out while Genoa No. 3 is down during periods of high demand is lower still. CREC Proposed Findings 41-48, 54. Moreover, the Intervenor argues that due to its low availability factor, LACBWR would not be a reliable source of backup capacity to protect against transmission outages (CREC Proposed Findings 61, 66-75). On the basis of information on historic down times, CREC calculated forced outage rates for all the transmission lines serving the La Crosse area and concluded that not more than 50 hours of outage is likely to occur while the load is over 85% of annual peak during the 1980-81 period (CREC Proposed Finding 60). The Applicant points out, however, that scheduled outages (Tr. 636-37) and momentary outages, neither of which was considered in the CREC calculations, also affect reliability in the La Crosse area.

26. In our view, CREC's attempt to minimize the reliability problem in the La Crosse area is far from persuasive. CREC's position that it is unnecessary to start the French Island turbines until after involuntary black-outs occur strikes us as cavalier. CREC's assumption that consequences would be minimal fails entirely to consider the possibility of permanent damage to customer and/or DPC/NSP equipment, the possibility that the situation might deteriorate to the point that recovery would be impossible without damage to equipment, or the utilities' legal obligations, potential liabilities and social responsibilities. Consequently, we consider CREC's position to be unacceptable. It follows that its estimates of the quantities and costs of fuel oil required to operate the French Island turbines if LACBWR were not available (CREC Proposed Findings 62, 64-65) are much too low.

27. We recognize that an operating LACBWR cannot by itself solve the La Crosse area reliability problem during the next two or three years. But conversely, its unavailability would significantly intensify the problem, not only by increasing turbine fuel oil quantities and costs, but by increasing the frequency and duration of the turbines' operation and hence decreasing their probable availability when needed (Tr. 836-38). Thus we find that the contribution LACBWR can make in alleviating the La Crosse area reliability problem during the 1980-82 period constitutes a significant benefit.

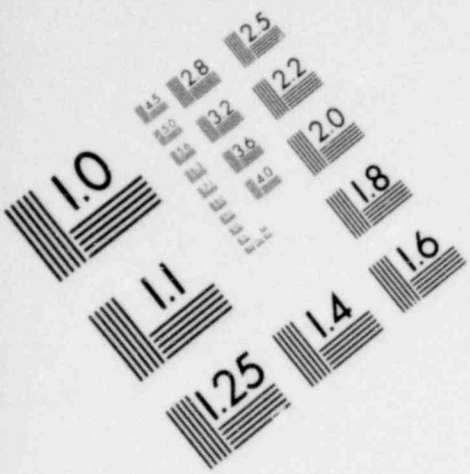
Diversification

28. With the exception of LACBWR, most of Dairyland's generating capacity derives from the combustion of coal. See Finding 2, supra. After the 350 MW coal-fired Alma No. 6 plant comes on line late in 1979, DPC's dependence on a reliable supply of coal will be even greater. Hence Dairyland contends (and CREC makes no contrary claim) that keeping LACBWR operating is important to provide at least some back-up should coal supplies be threatened. DPC points out that coal supplies can be disrupted by strikes affecting the mining and transportation of coal. The severe winter weather conditions in the DPC service area can also immobilize coal shipments. It is also possible that coal in transit or in open storage can be heavily wetted by rain or melted snow which, if it subsequently freezes, can bind the coal particles together into an unusable mass. Panel Testimony, pp. 7-8.

29. Especially where, as here, a utility is so heavily dependent upon a single type of fuel, the Board agrees that diversification is justifiable and finds the continued operation of LACBWR to be beneficial in terms of diversification.

Costs Incident to Non-Operation of LACBWR

30. The last benefit advanced by DPC in support of continued LACBWR operation is the avoidance of the additional financial and other costs which, it claims, would be incurred



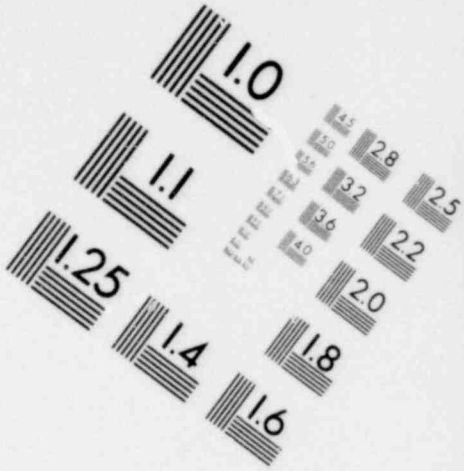
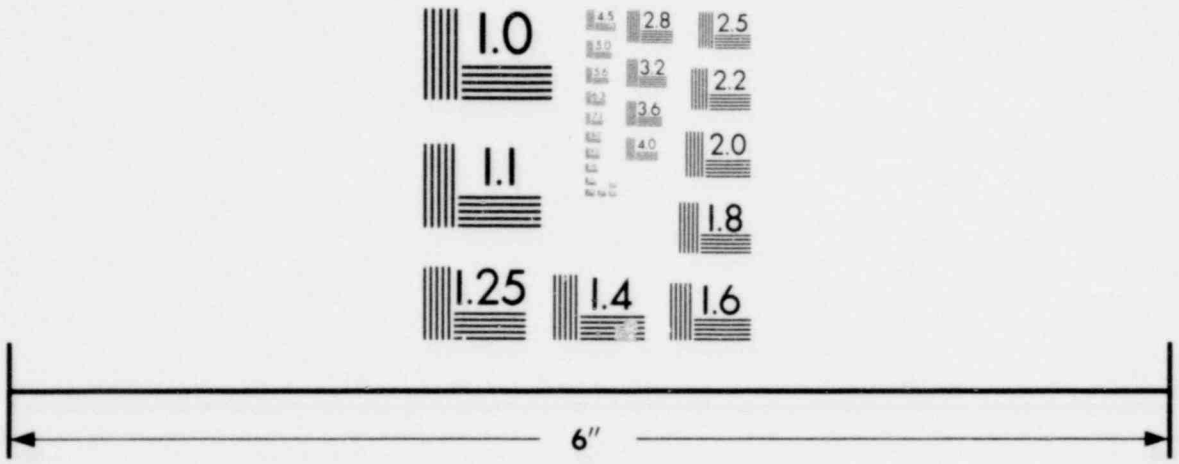
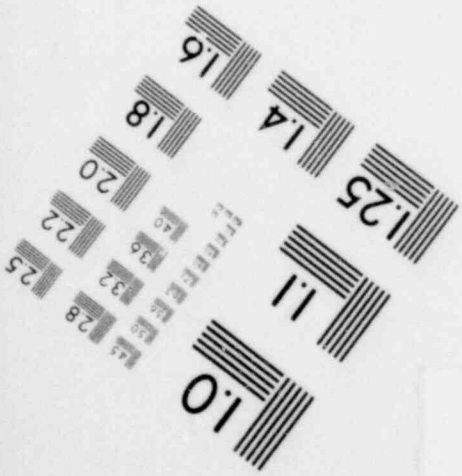
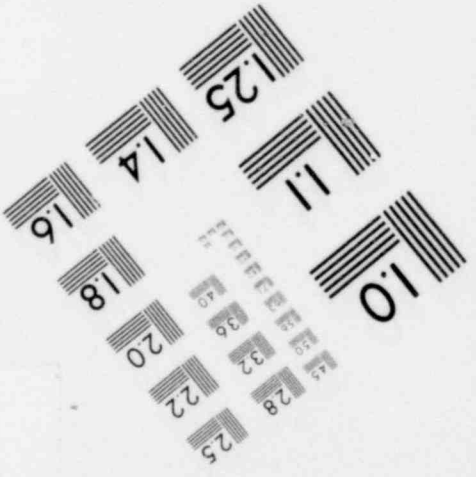


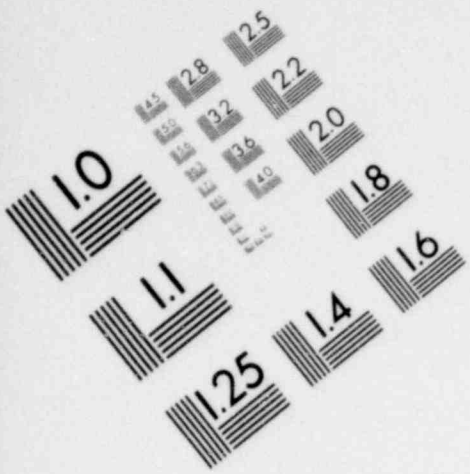
IMAGE EVALUATION
TEST TARGET (MT-3)



MICROCOPY RESOLUTION TEST CHART







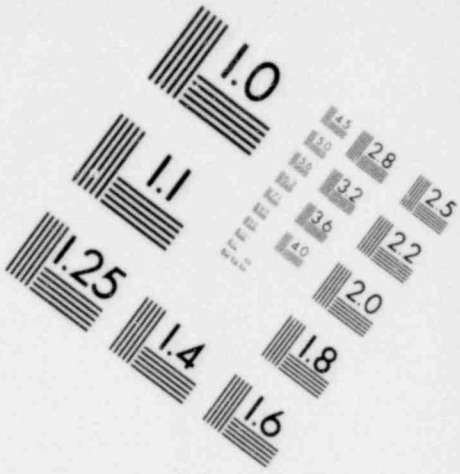
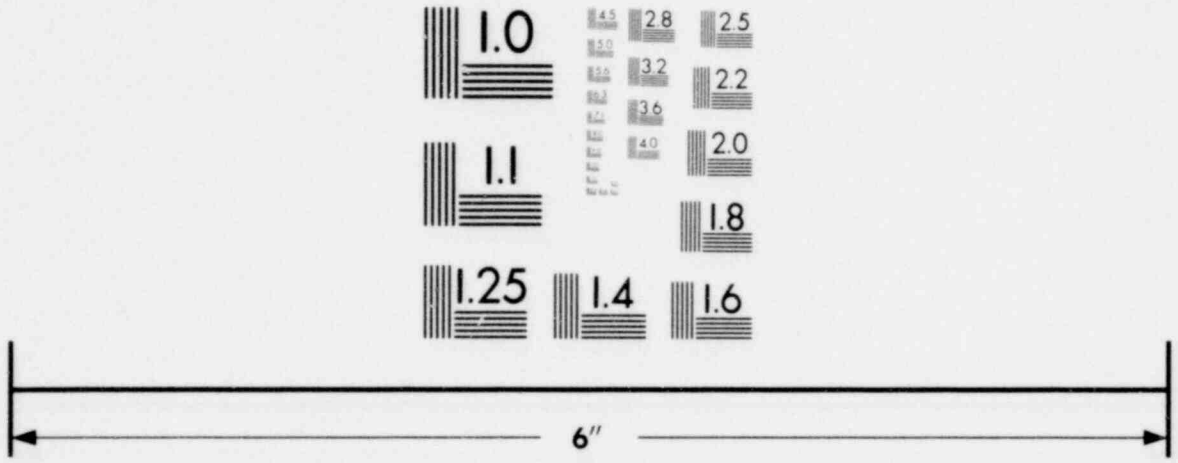
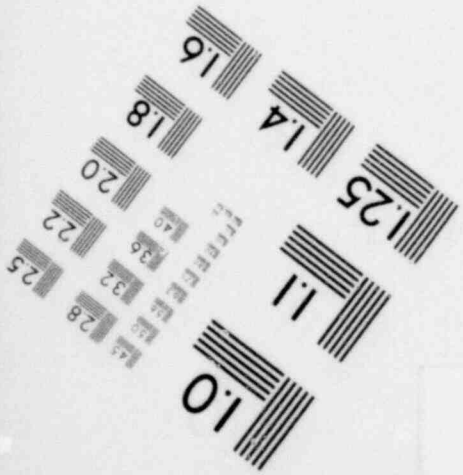
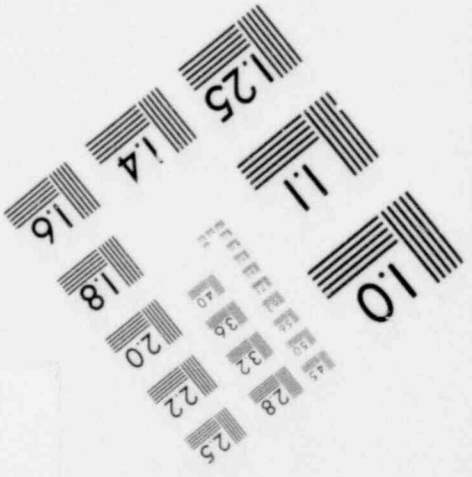


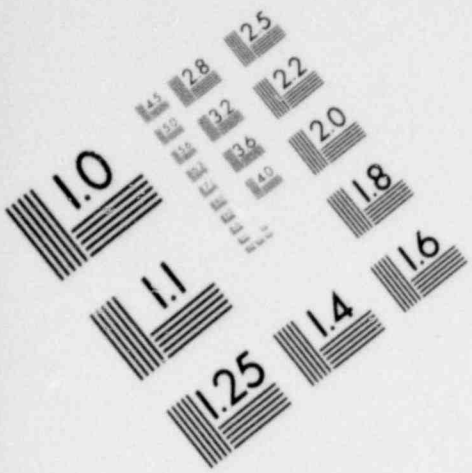
IMAGE EVALUATION
TEST TARGET (MT-3)



MICROCOPY RESOLUTION TEST CHART







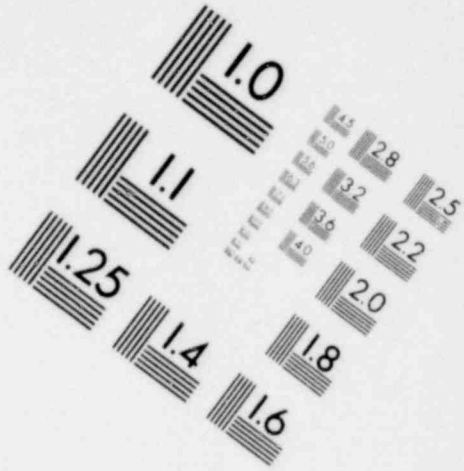
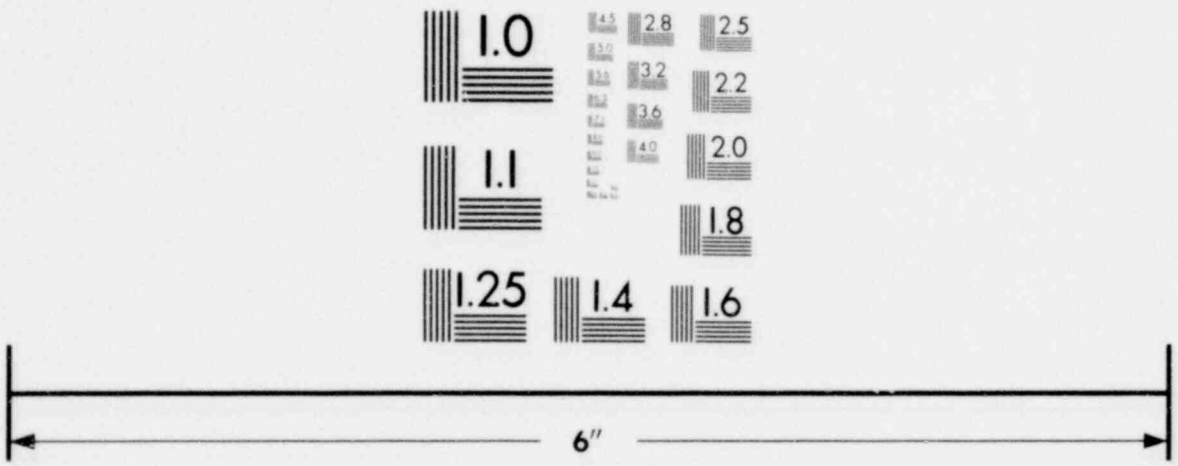
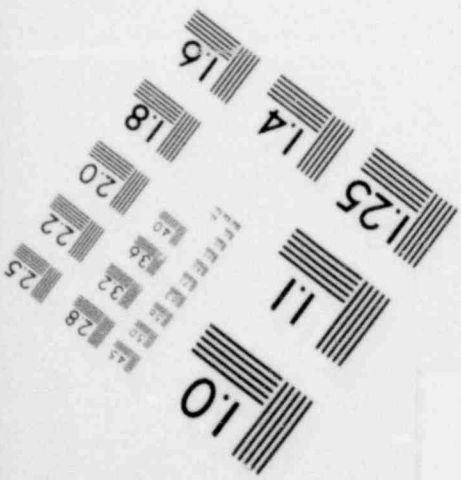
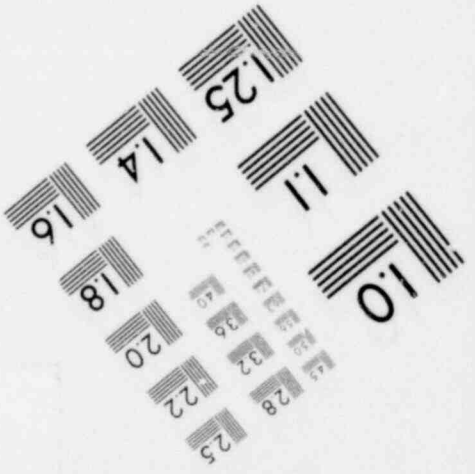


IMAGE EVALUATION
TEST TARGET (MT-3)



MICROCOPY RESOLUTION TEST CHART





if LACBWR is shut down. As we previously indicated, our authority to consider the relative financial impacts of operation or non-operation of LACBWR for the next three years derives from there being differences in environmental impact between the two courses of action. That such differences exist here is beyond dispute. The EIA and DES indicate that expansion of the SFP, and operation of LACBWR for three years, involves some environmental impacts. Whether or not one judges them to be significant, they nevertheless are expected to occur. On the other hand, taking LACBWR out of action could arguably result in the elimination of most of the local impacts; and, in any event, if power from other sources must be obtained, there will be differences in quantity and/or kind of impacts of producing power from the alternative sources. Given the differences in environmental impacts between operating and not operating LACBWR, financial costs become a relevant factor for us to consider in selecting between those two alternatives.

31. There are two facets of financial costs upon which the Applicant has relied in order to demonstrate the benefits of operating LACBWR for the next three years. First, it claims that the replacement power which it would have to acquire to make up for the LACBWR power would cost more than that produced by LACBWR. Second, it asserts that the cost of maintaining LACBWR in a cold shutdown condition would exceed the cost of operating it. CREC strongly disputes each of these claims.

Costs of Replacement Power

32. The Applicant asserts that if LACBWR had not been available during the period 1975-1978, the cost to DPC for replacement energy from other steam sources would have been approximately $4.5 million more than the cost of the fuel to supply the same energy from LACBWR (Panel Testimony, p. 4). This figure was calculated on the basis of average steam fuel costs at other DPC plants and actual fuel costs at LACBWR (Tr. 515). Further, it states that if LACBWR is not utilized during the period 1980-82, DPC will be required to generate and/or purchase 484,000 megawatt hours of replacement energy at an estimated increased cost of approximately $7,018,500 (Panel Testimony, p. 9). Its estimate is based on a plant factor of 40%, which it deems conservative in relationship to LACPWR's historical plant factor of approximately 48% (Tr. 778). Additionally, if LACBWR is not operating, the Applicant perceives a need to expend an estimated $726,000 for the purchase of firm capacity during the 1981 and 1982 winter seasons (Panel Testimony, p. 9). It concedes that at that time it will be able to purchase such capacity from other members of the MAPP pool (Tr. 509).

33. DPC's sales and purchases of energy with members of MAPP are made in accordance with the MAPP service schedule (Tr. 780-788). The MAPP service schedule classifies energy sales and purchases into different categories such as participation power, seasonal participation power, emergency power, economy energy,

spinning reserves, peaking, short term and system participation (Tr. 779-780). Replacement power (in the form of either participation power or peaking power) is purchased at a specified capacity or demand charge plus an energy charge (Tr. 784-785). Where a generating plant has been used by a utility to credit its capability to meet its load plus reserve requirements, it can take that generating plant out of operation if it has a contract to buy replacement power of an equivalent amount (Tr. 785-786, 832). Peaking power can be purchased only on a six-month basis and is considerably more expensive than economy energy, as is participation power (Tr. 785, 787). The purpose of economy energy is to reduce power costs where there is a differential cost between two synchronized generating stations (Tr. 780-783). Economy energy purchases are usually of short duration, on an hourly basis, and interruptable (Panel Testimony, p. 10; Tr. 519-20, 781). They cannot be used to replace energy from a generating station that is removed from service (Tr. 783). Thus, DPC, according to the MAPP service schedule, would be unable to purchase electricity at economy energy rates to replace the electrical generation provided by LACBWR (Tr. 784). It would have to make up any shortages either through participation or peaking power (Tr. 784-785, 786-789).

34. CREC attacks the Applicant's asserted replacement power costs for a number of reasons. It first claims that DPC will not have a deficiency in accredited capacity between the beginning of 1980 and the end of the 1982-83 winter season because

of the unavailability of LACBWR but that, even if DPC did have such a deficiency, it could readily purchase capacity in the MAPP pool, particularly in the winter peak periods, and it could make up any "highly unlikely summer period deficiency by simply foregoing its planned summer period sales" to NSP (Proposed Findings 31 and 32). It further asserts that, because there will be no capacity deficiency, DPC will be able to buy much of the energy it requires to replace LACBWR energy at economy energy rates against its synchronizable capacity (Proposed Finding 76).

35. We reject these claims. We have already found that DPC may well have a deficit in accredited capacity during the period under review if LACBWR were taken out of service (Finding 20, supra). Although replacement capacity would be available from the MAPP pool (CREC Exh. 1, pp. 3-2, 8-2; Tr. 509), that does not mean that DPC could purchase it and thereby fulfill its power requirements. For the La Crosse reliability problem would nevertheless remain (Findings 21-27, supra). Moreover, DPC's projected sales to NSP are the subject of a contractual commitment which clearly could not be abrogated unilaterally by DPC (CREC Exh. 2).

36. Finally, it is apparent that acquired power to replace LACBWR capacity (either from other DPC facilities or from other MAPP members) would cost significantly more than the entire cost of power from LACBWR. During August 1979, LACBWR power cost 26.382 mills/KwH (Panel Testimony, Exh. 3). Although the cost of LACBWR power from

January-August 1979 was considerably higher — 43.392 mills/KwH — that higher cost reflected an extended period of outage and reduced operation due to refueling, delays in shipping spent fuel and certain modifications (id., p. 11, and Exh. 3; Tr. 543-48, 840-44). It is true that DPC bought economy power in June 1979 for as little as 6.5 mills/KwH (Tr. 532-33). (DPC also paid as much as 15 to 34 mills/KwH for such power in November 1978 (Tr. 789).) But, as we have indicated, economy power is not available as a replacement for a facility which is taken off line. This is especially true where, as here, the facility in question is being used to satisfy the utility's accredited capacity requirements. And purchased power of the type needed for accreditation purposes (participation power or peaking power) would cost considerably more than economy energy (Tr. 783). Its price is based on the cost of power from a particular source at a given time (Tr. 784-789). In November 1978, DPC purchased participation energy at an average cost of 71 mills/KwH and emergency energy at from 35 to 50 mills/KwH (Tr. 790). And costs of power from MAPP are projected to increase in the period 1980-82 due to the increase in cost of new generating capacity (Tr. 509-511).

37. Furthermore, the total costs of generating electricity during August 1979 at certain of DPC's coal-fired facilities was considerably more than the 26.382 mills/KwH cost at LACBWR — i.e., 51.927 mills/KwH for Stoneman Units 1 and 2 (combined 52 MW) and 41.540 mills/KwH at Alma Units 1, 2, and 3 (combined 59 MW) (Panel Testimony, pp. 3, 11, Exh. 3). And, during

August 1979, LACBWR had the lowest fuel cost of any of DPC's facilities and, with the exception of one unit (Genoa No. 3), the lowest incremental cost of operation ("Total Operating Expense") of any of DPC's facilities (id., Exh. 3). Because DPC will normally use its lower-cost power first, it is reasonable to assume that any acquisition of replacement power to make up for loss of LACBWR would not be taken from the lower-cost DPC facilities. In sum, we find no sound record evidence to support CREC's claim (Proposed Finding 81) that the average cost of replacing energy which would have been generated by LACBWR in the 1980-82 period will be no more than 15 mills/KwH.

38. For these reasons, we agree with the Applicant that any power which must be acquired to replace that lost through LACBWR shutdown will likely cost more than power produced by LACBWR. We do not adopt the precise dollar differentials advanced by DPC since they are based on demand forecasts which we have not entirely accepted. But the fact that some cost savings will likely result from continuing to use LACBWR rather than acquiring additional power seems clear to us and constitutes an additional benefit from the continued operation of LACBWR.

Costs of Keeping LACBWR Shut Down

39. The second facet of our cost consideration involves those costs, financial or otherwise, involved in keeping the reactor

shut down for the next three years (and excluding costs of replacement power, which we have just discussed). We turn first to a description of some of the technical considerations involved in keeping LACBWR out of operation during the review period; an understanding of those considerations is necessary for an exploration of the reasons for the financial costs associated therewith.

40. We begin by outlining the Applicant's position that, as a practical matter, denial of its application to expand its SFP capacity will result in prolonged shut-down of LACBWR, there being no other viable alternative. LACBWR cannot be operated much longer before burn-up limits are reached and the reactor must be shut down for refueling. However, the present spent fuel pool storage racks are full so that the fuel elements presently in the reactor cannot be stored there (EIA, §2.0, p. 1). In fact, the last refueling was possible only because Dairyland was able to store a few elements temporarily in GE's Morris facility (ibid). However, GE has indicated that it will not accept additional spent fuel from LACBWR (id., §7.2, p. 10). Moreover, Dairyland's witnesses testified that, although all other possible storage sites had not been explored conclusively, they had serious doubts that off-site storage could be found. Nor do sufficient spent fuel shipping casks exist to permit on-site storage. Consequently, the fuel presently in LACBWR would have to remain there, so that refueling and continued operation would not be possible. Tr. 729-736.

41. The Applicant also finds no merit in the Intervenor's suggestion that DPC's present operating license might be converted to a "possession only" license and the LACBWR reactor vessel converted to a temporary storage pool (Tr. 737-748). The Staff agrees with the Applicant's position, for the primary reason that a "possession only" license would require removal of existing fuel from the core and storage of that fuel elsewhere (Tr. 957-58; 975). Consequently, the Applicant's position is that, for the purpose of these proceedings, the only alternative to increasing the storage capacity of its fuel pool is prolonged shut-down while still maintaining the capability of restart. The Staff agrees (cf. EIA, p. 13).

42. The Board finds that the alternatives suggested by CREC are entirely speculative and unsupported. We therefore agree with the position of the Applicant and Staff. For these reasons, as well as those we expressed earlier in this opinion, we confine ourselves to a comparison between continued operation and prolonged shut-down without precluding the option to restart at some future date as late as the end of 1982.

43. Although complying with our ruling that hearings would be held on the costs and benefits of continued operation vs. the alternative of prolonged shut-down, the Applicant vehemently maintains that this alternative is impractical and certainly inadvisable. Quite apart from differences in environmental impacts and dollar costs, the Applicant contends that maintaining both the

skills of operations personnel and the physical condition of the plant will be difficult and costly at best and, being unprecedented, will involve many unknowns. While all that may be so, it is a matter of evidentiary proof. Such claims per se are insufficient to cause us to dismiss out of hand the alternative of prolonged shutdown.

44. The Applicant asserts that its full operating staff would have to be retained even under conditions of prolonged cold shut-down (Panel Testimony, p. 9; Tr. 696, 715). CREC strongly contests Applicant's assertion, labeling it as "incredible" (CREC Proposed Finding 90). Testifying for the Staff, Mr. James J. Shea, the LACBWR project manager, stated that, even in a cold shut-down condition, technical specifications require that DPC maintain an operating staff to continue the activities normally associated with an operating plant (Shea Testimony, fol. Tr. 893, p. 2). Mr. Shea's main concern was that the plant not be understaffed from a safety standpoint (Tr. 953-54). While the Board cannot conclude from the record that no staff reductions whatsoever would be allowable, it is clear to us that the technical specifications for LACBWR, the Commission's regulations, and Dairyland's responsibilities would require the retention of the vast majority of the LACBWR engineering, operations, maintenance, and security staffs throughout a period of protracted shut-down. Similarly, with respect to CREC's analogous claim concerning administrative, general and other costs attributable to LACBWR (Proposed Finding 92), it seems obvious that the maintenance of a substantial operating staff during a

prolonged shutdown would call for the retention of many administrative and general personnel and would preclude the layoff of the vast majority of these personnel.

45. With respect to its operations staff, DPC is concerned first with its ability to retain its qualified and experienced personnel in the face of a protracted shut-down and to find replacements for those who choose to leave. In any case, simulator training would be required to enable operators to retain their licensed status. Under conditions of prolonged shut-down, Dairyland management's concerns that safety considerations receive proper attention would be increased (Panel Testimony, pp. 1-2). The Intervenor again belittles the problems of maintaining a full and competent operating staff as foreseen by Dairyland, describing them as "bald assertions" which are unsupported and unproven (CREC Proposed Findings 85 and 86). The Board agrees that the Applicant has neither proved its case conclusively nor illustrated its beliefs with decisive examples. We are nevertheless sympathetic with Dairyland's concerns about retaining its best people and maintaining a high degree of competence in its staff. We certainly agree that simulator training would be required to this end. Clearly the teachings of the recent Three Mile Island accident would tend to support this view.

46. The Applicant also states that if LACBWR is to be maintained in a condition which will permit safe restart after prolonged shut-down, many special precautionary measures will be required to prevent degradation of the reactor and associated

systems and equipment. Since restart after such a long period is unprecedented, a thorough study to identify possible problems and explore the effectiveness of possible solutions would be required. Such a study would certainly include possible corrosion of fuel elements and the primary coolant system boundary. The Applicant also suspected that special precautions would be required to prevent bowing of the turbine shaft and corrosion of turbine blades. Its witness Parkyn described certain problems which had previously arisen during a 10-month shut-down. Panel Testimony, pp. 11-12; Tr. 453, 817-23, 845-46. See also Tr. 919 (Staff witness).

47. Since there is no precedent, Staff witness Shea could not be positive that the Staff would require a special safety review prior to restart, but he offered his own opinion that such a review would be required (Tr. 956). CREC neither offered evidence nor advanced any arguments to refute the DPC and Staff testimony and again claimed only that the problems envisioned by the Applicant were speculative and unproven (Proposed Finding 89).

48. The Board recognizes that there are many unknowns associated with the hypothesized alternative of restart following a long period of cold shut-down We therefore strongly endorse the Applicant's belief that a thorough study must be made and we would not be at all surprised if rather extensive precautionary measures would prove necessary. In the absence of knowledge grounded in previous reactor experience, we can only add our opinion that many safety-related questions would need to be asked and answered before restart should be permitted. Moreover, we speculate that Applicant's

estimated costs to preclude degradation may well be too low and that such costs may well dominate all other cost considerations.

49. In asserting that the financial cost of LACBWR not operating exceeds the cost of operating it, the Applicant includes a significant dollar cost for replacement energy (Panel Testimony, Exh. 4). We have found that there may well be some increased costs resulting from the acquisition of power to substitute for LACBWR, although we have not accepted the precise dollar amounts advanced by DPC (Finding 38). But, when costs of replacement power are eliminated, the costs of not operating LACBWR (according to DPC) are lower than the costs of operating it, but in an amount less than the fuel costs of LACBWR. In other words, aside from replacement power and fuel costs, the Applicant projects a higher cost of keeping LACBWR shut down than running it (Panel Testimony, Exh. 4).

50. CREC strongly disagrees not only with the reasonableness of DPC's projections (Panel Testimony, Exh, 4) that certain expense items will attend a prolonged shutdown of LACBWR but, as well, with DPC's projection of unchanged or increased costs for those items. First, with respect to its claim that the necessity of additional costs for personnel retention, simulator training, layup, inspection, and restart are unproven or speculative (Proposed Findings 85, 86, 89), we have already suggested that these items are to some extent legitimate expense items, and CREC has not attempted to dispute the particular dollar costs advanced by DPC. We therefore do not disregard the costs proposed by DPC, although we acknowledge that their precise amount is uncertain. Further, we have already considered

CREC's claims (Proposed Findings 90 and 92) concerning the incredibility of not reducing staff levels (both operating and administrative) and have found that no major reduction can be anticipated in the event of prolonged plant shutdown (Finding 44). No major reduction in the operating cost levels of these items (which DPC has utilized) can therefore be expected. CREC asserts that DPC's claims of continuing charges for depreciation, interest, taxes and insurance should be disregarded because of the lack of qualification of the witnesses (Proposed Findings 91, 93-99). Although the witnesses involved were not experts in those fields, their estimates merely projected a continuation of existing costs which, in any event, and with the exception of depreciation, are not large enough to bear a significant impact on the costs we are evaluating. See Panel Testimony, Exh. 3. Moreover, to some extent, it is clear that some such costs will continue, although their precise amount has not been established to our satisfaction.

51. We note in particular, however, that one of the Applicant's witnesses expressed his understanding that the amount of insurance coverage is imposed by NRC regulations which do not draw a distinction as to whether or not a plant "authorized to operate" (as this one is and would be irrespective of our decision on the SFP expansion) is actually in operation (Tr. 826-27). See 10 CFR Part 140, Subpart B. Further, physical depreciation of an asset continues whether or not that asset is used. Whether

that asset is "used and useful," as asserted by CREC as the basis for considering depreciation expense (Proposed Finding 98), is a matter which may be relevant for rate-setting purposes but which has no bearing on our consideration of the cost of keeping LACBWR shut down for an extended period. For these reasons, it appears to us that the total costs for keeping LACBWR shut down (aside from replacement power costs) are likley to be in the same range as (if not greater than) the costs of operating the reactor (aside from fuel), and that the costs projected by DPC (Panel Testimony, Exh. 4) are not seriously in error.

52. For these reasons, it is clear that the only significant cost saving which may be attributable to keeping LACBWR shut down is that attributable to fuel savings. CREC asserts that the Applicant has greatly understated these fuel costs. First, it claims that LACBWR fuel is more costly than that for other reactors, for a number of reasons (Proposed Findings 106-110). The Applicant concedes that the fuel fabrication cost for LACBWR fuel may exceed that for other reactors (Tr. 828) but maintains that this is irrelevant to DPC's projection of 1980-82 fuel costs inasmuch as the projection was based on actual LACBWR costs, not industry-wide average fuel costs (Applicant's Reply to CREC's Proposed Findings of Fact, p. 24; Tr. 828-29). We agree.

53. Second, CREC contends that the Applicant's witnesses lacked the necessary expertise and knowledge to make informed

predictions as to future fuel costs (Proposed Findings 101-105). To some extent, that claim is accurate. The Applicant's witnesses were unable to explain how LACBWR fuel costs were computed or the assumptions underlying such computations (Tr. 677-78), other than to state that they were premised on actual past costs (Tr. 828-29). Moreover, they named another DPC employee whom they deemed to have greater knowledge of fuel costs than any one of them did and who actually was responsible for preparing the cost figures used by the Applicant in its prepared testimony (Tr. 680-81). For that reason, to the extent that the projected fuel costs may be regarded as reflecting the views of the Applicant's panel, they are entitled to little weight.

54. There is other evidence, however, which tends to give some credence to the DPC projected fuel costs. We have no reason to believe that the past fuel costs of LACBWR (Panel Testimony, Exh. 3) are erroneous. Those costs are the costs set out in the company's books (Tr. 676-77). As indicated earlier, they were less than the fuel costs of any of DPC's other facilities (Panel Testimony, Exh. 3). Nor have we been given any reason to believe that the relationship of LACBWR fuel costs to other fuel costs will change over the next three years. Indeed, some of the fuel to be burned during this period is already in the reactor. Moreover, the projected costs were claimed to have been prepared in accordance with requirements imposed by the Rural Electrification Administration (REA Bulletin 181-1), which prescribes a method of accounting for nuclear fuel expenses (Tr. 773). Although the witnesses cannot vouch for whether the requirements were appropriately followed, they can

at least be credited with knowledge (as management officials) that those requirements were expected to be followed. And there is nothing in the record which even suggests the contrary. Taking all these considerations into account, we have no hesitancy in finding that the projected fuel costs for LACBWR for the next three years — a relatively short period of time — are likely to remain low enough to make it beneficial, taking all financial costs into account, to operate LACBWR rather than keeping it in a cold shutdown condition and likely replacing at least some of its power from other sources.

55. In so finding, we wish to make it clear that all we are looking at are the potential financial consequences of keeping an operating reactor running for a short period of time, where substantial cost savings from shutdown (other than fuel and the remaining cost of the SFP modification) have not been demonstrated (and, indeed, where the expense of keeping it shut down is likely to be no less, and possibly more, than the expense of allowing it to operate). If LACBWR were the subject of a construction permit application, the answer might well be different.

Environmental Impacts

56. Having reviewed the benefits of the SFP modification, including continued reactor operation for the next three years, we turn to the environmental impacts which that modification will engender. In that regard, we repeat again that those

impacts were not the subject of a contention in the SFP proceeding nor were they questioned by us. The type and quantum of the impacts we are discussing appear in the EIA and DES and were accepted by us without permitting any cross-examination or contrary direct evidence. Some of those impacts are to be considered further in the operating license proceeding. For that reason, our findings with respect to those impacts are to be accorded no precedential effect, either through res judicata or collateral estoppel or otherwise. Commonwealth Edison Co. (La Salle County Nuclear Station, Units 1 and 2), ALAB-193, 7 AEC 423, 424-25 (1974).

Impacts of the Proposed Modification

57. The impacts of the proposed expansion of the storage capacity of the SFP at LACBWR were considered by the staff in its EIA (Staff Exh. 1A). It determined that the proposed license amendment will not significantly affect the quality of the human environment and, pursuant to 10 CFR §51.5(c), issued a negative declaration of environmental impact. The Board accepts this evaluation based upon the following determinations:

a. The proposed modification will not change the physical configuration of the SFP or the containment building within which it is enclosed. No additional commitment of land is required.

b. There will be no significant change in plant water usage and therefore no modification is required in the design flow rates of the system.

c. The potential offsite radiological environmental impacts associated with the SFP expansion were evaluated. The only significant gaseous release attributable to storing additional assemblies for a longer period of time is Krypton-85. Release of this gas may represent as much as 20 additional curies per year over the 10 curies per year presently released (EIA, p. 5; DES, p. 3-17). This would result in an additional body dose of less than 0.001 mrem/year at the site boundary.

d. While there may be no increase in solid radwaste in the pool due to the modification, it is conservatively estimated that as much as 12 cubic feet additional resin a year from the demineralizer may result (EIA, p. 6). This represents an increase of less than 0.6% of the expected average annual amount of solid radwaste which is in the range of 2300 to 2600 ft^3. The present spent fuel racks, representing 800 cubic feet, will be disposed of as low level waste (id., pp. 6, 7). Although this will increase the radwaste volume by about one-third in the year of the proposed modification, it amounts to an increase of less than 1% when averaged over the lifetime of the plant.

e. Liquid releases of radionuclides into the Mississippi River from SFP pool leakage may increase. This would

contribute an increase of approximately 1% over the present liquid release of about 90 Ci/year and is not considered to be significant (EIA, p. 7; DES, p. 3-13).

f. Occupational exposure from removal and disposal of the present spent fuel racks and installation of the new racks is estimated to be between 16 and 23 man-rem. The Applicant has expressed its commitment to carry out the modification in the manner in which the 16 man-rem exposure will be realized, rather than the manner in which 23 man-rem will be experienced, if it is possible to do so. Prince Affidavit, p. 21 (Response to Question F-1). This increase is less than 5% over the generic value of 500 man-rem per year (EIA, p. 7; DES, p. 5-11), although a larger fraction of the actual annual worker exposures at LACBWR which, according to the Staff, have ranged from about 110 to 240 man-rem (Shea Testimony, p. 4). The increment in onsite occupational dose resulting from the proposed increase in stored fuel assemblies from radionuclide concentrations in SFP water represents a negligible burden (less than 1% of the annual occupational radiation exposure from the facility) (EIA, p. 8).

1764 019

g. The installation and use of the proposed new SFP racks will not change the calculated radiological consequences of a postulated fuel handling accident in the SFP area from those values given in the DES. The DES analysis indicates that the environmental risks due to such accidents are exceedingly small; that the integrated exposure of the population within 50 miles from each postulated accident would be much less than that occurring from natural radioactivity; and, when considered with the probability of occurrence,

the annual potential radiation exposure of the population from all postulated accidents is well within naturally occurring variations in the natural background (EIA, p. 8; DES pp. 7-2, 7-3).

Impacts of Continued Plant Operation

58. The impacts of LACBWR operation, separate from the SFP proposed modification, are analyzed in the DES. Continued operation during the 1980-82 period will result in some unavoidable adverse environmental impacts but these are judged to be small based upon the following:

a. At 80% capacity factor, approximately 3.1×10^8 gallons per year of Mississippi River water are used for once through cooling of the main condensors. An additional 4.8×10^7 gallons per year of river water and 1.8×10^7 gallons per year of well water are used for various other plant operations (DES, pp. 5-1, 5-3).

b. LACBWR and the Genoa No. 3 unit have a common discharge into the Mississippi River. Normally LACBWR, which represents about 20% of the total thermal load of the two units, discharges 64,000 gallons per minute of cooling water with a ΔT of $13^{\circ}F$. In cold weather, the ΔT may more than double, especially when heated water is used for ice control in the intake. The thermal characteristics of the discharge plume and mixing zone are within requirements of the State of Wisconsin water quality standards (id., pp. 5-4 to 5-8).

c. Studies have revealed no widespread or long-term impact on either the terrestrial or aquatic biota. Although 100% mortality of entrained organisms may occur, an adverse impact is not expected since their contribution to the total river population is small (about 2.5%). Fish impingement studies did not indicate a substantial loss to fish populations (id., pp. 5-12 to 5-17).

d. The radiological impact on man and other biota will be insignificant. Radioactive effluents released to the atmosphere and to the hydrosphere from LACBWR represent small increases in the population dose from background radiation sources. The estimated dose to the offsite population within 50 miles of the plant is calculated to be no greater than 40 man-rem per year. Occupational radiation doses range from 110 to 240 man-rems per year and are consistent with the ALARA principle (id., pp. 5-8 to 5-11; Shea Testimony, p. 4).

e. The risk associated with accidental radiation exposure is very low (DES, pp. 7-1 to 7-3).

Environmental Conclusion

59. The Applicant has advanced a number of reasons why it regards the continued operation of LACBWR for the next three years as necessary. Although CREC has undercut some of those reasons, we have found a number of them to be valid. We have also reviewed the impacts resulting from modification of the SFP

and from continued operation through 1982. We conclude that the conglomeration of several benefits arising from such operation outweigh the impacts we have considered.33/

33/ In reaching this conclusion, we considered all of the proposed findings of fact and conclusions of law of each party. Any proposed findings or conclusions submitted by the parties which are not incorporated directly or inferentially in this Initial Decision are rejected as being unsupportable in law or in fact or as being unnecessary to the rendering of the decision.

V. CONCLUSIONS OF LAW

Based upon our evaluation of the Staff's Safety Evaluation and Environmental Impact Appraisal, the application for license amendment submitted by DPC, the affidavits submitted in connection with the summary disposition motions and responses to Board questions, the written testimony of all of the witnesses, as well as the answers elicited from these witnesses in response to questions of the Board and the parties, and the exhibits admitted into evidence, all as described earlier in this Decision, the Board makes the following conclusions of law:

1. There is no outstanding genuine issue as to any material fact with respect to any of CREC's contentions admitted as issues in controversy in this spent fuel pool proceeding; and, as a result, summary disposition of those contentions should be granted, subject to the conditions outlined earlier in this Decision.

2. Subject to those aforesaid conditions, there is reasonable assurance that the activities authorized by the requested operating license amendment relating to the expansion of the spent fuel storage pool capacity at the La Crosse Boiling Water Reactor can be conducted without endangering the health and safety of the public;

3. The activities authorized by the operating license amendment will be conducted in compliance with the Commission's regulations;

4. The issuance of the license amendment will not be inimical to the common defense and security or to the health and safety of the public;

5. The issuance of the license amendment, although it represents an important Commission action, does not significantly affect the quality of the human environment and does not require the preparation of an environmental impact statement under the National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321, et seq., and Part 51 of the Commission's regulations, 10 C.F.R. Part 51.

6. The proposed license amendment is a proposal which involves unresolved conflicts concerning alternative uses of available resources, within the meaning of Section 102(2)(E) of NEPA, 42 U.S.C. §4332(2)(E) and applicable Commission determinations, and therefore requires an evaluation of alternative courses of action, particularly the alternative of taking no action.

7. There are benefits in terms of both reliability and economic considerations to be achieved from operation of the LACBWR plant for the next three years or until completion of the environmental review of the full-term operating license application (by which time a more detailed environmental review will have been undertaken).

8. The environmental impact of the spent fuel pool modification will not significantly affect the quality of the human environment.

9. The benefit of the power produced by LACBWR in the next three years outweighs the environmental impact of the spent fuel pool modification, and three years of operation.

10. The appropriate course of action from an environmental standpoint is the issuance of the requested license amendment, subject to the conditions outlined earlier in this Decision.

VI. ORDER

Based upon the Board's findings and conclusions, and in accordance with the Atomic Energy Act, as amended, the National Environmental Policy Act, as amended, and the regulations of the Nuclear Regulatory Commission, summary disposition of each of CREC's contentions is granted. The Director of Nuclear Reactor Regulation is authorized to make appropriate findings in accordance with the Commission's regulations and to issue a license amendment authorizing expansion of the spent fuel storage pool capacity at the La Crosse Boiling Water Reactor, subject to technical specifications and conditions as outlined in this Decision. The legal ruling in Part III of this decision is referred to the Appeal Board pursuant to 10 CFR §2.730(f).

In accordance with 10 C.F.R. §§2.760, 2.762, 2.764, 2.785, and 2.786, this Initial Decision shall be effective immediately[34/] and shall constitute the final action of the Commission forty-five (45) days after the issuance thereof, subject to any review pursuant to the above-cited Rules of Practice. Exceptions to this Initial Decision may be filed by any party within ten (10) days after service of this Initial Decision. A brief in support of the exceptions shall be filed within thirty (30) days thereafter (forty (40) days in the case of the NRC Staff). Within thirty

---

34/ This proceeding is not covered by the Commission's recent suspension of the immediate effectiveness rule (10 CFR §2.764) for certain purposes. 44 Fed. Reg. 65049 (November 9, 1979).

(30) days of the filing and service of the brief of the appellant (forty (40) days in the case of the NRC Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

IT IS SO ORDERED.35/

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

George C. Anderson
Dr. George C. Anderson, Member

Ralph S. Decker
Ralph S. Decker, Member

Charles Bechhoefer
Charles Bechhoefer, Chairman

Dated at Bethesda, Maryland,
this 10th day of January, 1980.

35/ Attached hereto are a List of Exhibits (Appendix A) and Approved Transcript Corrections (Appendix B).

APPENDIX A

List of Exhibits

CREC

Exhibit 1 - MARCA, Regional Reliability Council Bulk Power Supply Program, dated April 1, 1979, cover page and pp. 3-2, 8-2, and 8-6, admitted into evidence at Tr. 531.

Exhibit 2 - Capacity Exchange Agreement between Dairyland Power Cooperative and Northern States Power Company, received in evidence at Tr. 658.

NRC Staff

Exhibit 1 - Safety Evaluation by the Office of Nuclear Reactor Regulation Supporting Facility Modifications to Increase the Capacity of the Spent Fuel Storage Pool, dated July 13, 1979 (revised);

Exhibit 1A - Environmental Impact Appraisal by the Office of Nuclear Reactor Regulation, dated July 13, 1979 (revised);

Exhibit 1B - Technical Specifications (revised), pp. 22, 29a, and 37; all received in evidence at Tr. 887-888.

Licensing Board

Exhibit 1 - Draft Environmental Statement, related to operation of LACBWR, published June, 1976 (NUREG-0087), (except Sections 8, 9, and 10.4), received in evidence at Tr. 970.

APPENDIX 5

APPROVED TRANSCRIPT CORRECTIONS

The following changes should be made to the transcript of the evidentiary hearing:

Page	Line	Correction
October 3, 1979:		
257	9	Change "not" to "no."
258	13	Change "Except for" to "We accepted."
259	8	Change "2.760(a)" to "2.760a."
262	3	Change "2.760(a)" to "2.760a."
269	12	Change "offer" to "order."
278	19	Insert "in" before "which."
279	4	Change "of conclusion" to "and conclusions."
	8	Change "intervenors have" to "intervenor has."
280	5	Change "advanced" to "advance."
	8	Delete comma after "reviews."
	12	Change "advanced" to "advance."
281	6	Change "and" to "enough to."
430	22	Change "Au" to Eau."
October 6, 1979:		
Tr. 774	20	Between lines 20 and 21, insert "A. Yes."
Tr. 778	21	Change "million" to "mills."
Tr. 780	1	Insert "seasonal" before "participation power."
Tr. 804	16	Change "1,793,000" to "1,793,000,000."
Tr. 867	18	Change "170" to "175."
Tr. 956	22	Change "precent" to "precedent."
Tr. 975	9	Change "an operating" to "a possession only."