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

AUG 16 1977

Docket Nos. 50-282/306

Northern States Power Company
ATTN: Mr. L. O. Mayer, Manager
Nuclear Support Services
414 Nicollet Mall - Eighth Floor
Minneapolis, Minnesota 55401

Gentlemen:

Pursuant to the enclosed Initial Decision dated August 12, 1977, of the Commission's Atomic Safety and Licensing Board, we have issued the enclosed Amendment Nos. 22 and 16 to Facility Operating License Nos. DPR-42 and DPR-60 for the Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2, respectively.

The amendments consist of changes in the Technical Specifications that permit modifications of the spent fuel storage pool which will increase the storage capacity from 198 fuel elements to a capacity of 687 elements. The amendments are in response to your application dated November 24, 1976, as supplemented by filings dated March 1, 11 and 21, and April 14, and 27, 1977. Note that two conditions relating to the storage pool modifications have been added to the licenses pursuant to the Board's Initial Decision dated August 12, 1977.

In accordance with our Safety Evaluation dated April 15, 1977, you are required to submit a cask tip analysis six to nine months prior to using a fuel transfer cask in the auxiliary building.

A copy of a related Notice and Negative Declaration which is being filed with the Office of the Federal Register for publication also is enclosed. Copies of our Safety Evaluation dated April 15, 1977, and Environmental Impact Appraisal dated April 18, 1977 (issued under title of "Discussion and Conclusion By the Office of Nuclear Reactor Regulation Relating to Environmental Considerations Associated with Modifications to the Spent Fuel Pool...") were sent to you by our letter dated April 20, 1977.

Sincerely,

Karl R. Goller

Karl R. Goller, Assistant Director
for Operating Reactors
Division of Operating Reactors

Enclosures:
1. Initial Decision
2. Amendment No. 22 to DPR-42
3. Amendment No. 16 to DPR-60
4. Notice/Negative Declaration

Cont. 1

cc w/o enclosure:
Gerald Charnoff, Esquire
Shaw, Pittman, Potts and Trowbridge
1800 M Street, N. W.
Washington, D. C. 20036

Sandra S. Gardebring
Executive Director
Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, Minnesota 55113

The Environmental Conservation Library
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Jocelyn F. Olson, Esquire
Special Assistant Attorney General
Minnesota Pollution Control Agency
1935 West County Road B-2
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Mr. Robert L. Nybo, Jr., Chairman
Minnesota-Wisconsin Boundary Area Commission
619 Second Street
Hudson, Wisconsin 54016

Chief, Energy Systems Analyses Branch (AW-459)
Office of Radiation Programs
U. S. Environmental Protection Agency
Rm. 645, East Tower
401 M Street, S. W.
Washington, D. C. 20460

U. S. Environmental Protection Agency
Federal Activities Branch
Region V Office
ATTN: EIS COORDINATOR
230 South Dearborn Street
Chicago, Illinois 60604

Bernard M. Cranum
Bureau of Indian Affairs, DOI
831 Second Ave. South
Minneapolis, Minnesota 55402

Mr. John C. Davidson, Chairman
Goodhue County Board of Commissioners
321 West Third Street
Red Wing, Minnesota 55066

cc w/enclosure and NSPCO filing
dated: 3/1, 3/11, 3/21 and 4/14
and 4/27, 1977.

State Department of Health
ATTN: Secretary & Executive Officer
University Campus
Minneapolis, Minnesota 55440

Chairman, Public Service Commission
of Wisconsin
Hill Farms State Office Building
Madison, Wisconsin 53702

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

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-282

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 22
License No. DPR-42

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Northern States Power Company (the licensee) dated November 24, 1976, as supplemented by filings dated March 1, 11 and 21, and April 14, and 27, 1977, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

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

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and by amending Section 2.C of Facility License No. DPR-42 to revise Paragraph (2) and to add Paragraph (3) to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 22, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Spent Fuel Pool Modification Conditions

a. The licensee is authorized to proceed with the fuel pool modification as requested, except for rack disposal. After the old racks have been removed and washed down, measurements shall be made of the radiation levels that would be experienced by workers cutting the racks and packing the pieces in drums and by workers preparing the racks for crates and crating them. The licensee will then assess, based on these measurements, the total occupational dose that would result from each method of disposal: cutting and packing the pieces in drums for shipment off-site; and preparing intact racks for placement into crates, placing them in crates, and loading the crates for shipment off-site. This assessment shall be submitted to the NRC Regulatory Staff for its evaluation. Following its evaluation, the Staff shall recommend to the NRC Atomic Safety and Licensing Board (ASLB) whether the licensee should be allowed to proceed with disposal as planned or shall be required to crate intact racks for shipment. Upon considering the Staff's recommendation, and any additional evidence presented to the ASLB at that time, the ASLB will issue its further decision on this matter.

b. Before work begins on the project, the licensee shall measure and record ambient radiation levels around the fuel pool. After the replacement of the storage racks and the fuel elements currently stored in them, the licensee shall again measure radiation levels around the pool, monitoring such levels and operating the cleanup system until the levels return to those typical of the period before the rack modification work was begun. No further activities which would increase the radioactive content of the pool (activities, for example, such as refueling) shall be carried out until the levels return to those typical of the period before the modification.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Victor Stello, Jr., Director
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: AUG 16 1977

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

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-306

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 16
License No. DPR-60

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Northern States Power Company (the licensee) dated November 24, 1976, as supplemented by filings dated March 1, 11 and 21, and April 14, and 27, 1977, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

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

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and by amending Section 2.C of Facility License No. DPR-60 to revise Paragraph (2) and to add Paragraph (3) to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 16, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Spent Fuel Pool Modification Conditions

a. The licensee is authorized to proceed with the fuel pool modification as requested, except for rack disposal. After the old racks have been removed and washed down, measurements shall be made of the radiation levels that would be experienced by workers cutting the racks and packing the pieces in drums and by workers preparing the racks for crates and crating them. The licensee will then assess, based on these measurements, the total occupational dose that would result from each method of disposal: cutting and packing the pieces in drums for shipment off-site; and preparing intact racks for placement into crates, placing them in crates, and loading the crates for shipment off-site. This assessment shall be submitted to the NRC Regulatory Staff for its evaluation. Following its evaluation, the Staff shall recommend to the NRC Atomic Safety and Licensing Board (ASLB) whether the licensee should be allowed to proceed with disposal as planned or shall be required to crate intact racks for shipment. Upon considering the Staff's recommendation, and any additional evidence presented to the ASLB at that time, the ASLB will issue its further decision on this matter.

b. Before work begins on the project, the licensee shall measure and record ambient radiation levels around the fuel pool. After the replacement of the storage racks and the fuel elements currently stored in them, the licensee shall again measure radiation levels around the pool, monitoring such levels and operating the cleanup system until the levels return to those typical of the period before the rack modification work was begun. No further activities which would increase the radioactive content of the pool (activities, for example, such as refueling) shall be carried out until the levels return to those typical of the period before the modification.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Victor Stello, Jr., Director
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: AUG 16 1977

ATTACHMENT TO LICENSE AMENDMENT NOS. 22 AND 16

FACILITY OPERATING LICENSE NOS. DPR-42 AND DPR-60

DOCKET NOS. 50-282 AND 50-306

Replace the following pages of the Technical Specifications contained in Appendix A of the above-indicated licenses with the attached pages bearing the same numbers. The changed areas on the revised pages are reflected by a marginal line.

Remove	Insert
3.8-2	3.8-2
5.6-1	5.6-1

6. Direct communication between the control room and the operating floor of the containment shall be available whenever changes in core geometry are taking place.

7. No movement of irradiated fuel in the reactor shall be made until the reactor has been subcritical for at least 100 hours.

8. The radiation monitors which initiate isolation of the Containment Purge System shall be tested and verified to be operable immediately prior to a refueling operation.

B. During fuel handling operations, the following conditions shall be satisfied:

1. No heavy loads will be transported over or placed in either part of the spent fuel pool when irradiated fuel is stored in that part.*

2. Prior to spent fuel handling in the auxiliary building, tests shall be made to determine the operability of the spent fuel pool special ventilation system including the radiation monitors in the normal ventilation system that actuate the special system and isolate the normal systems.

3. Prior to fuel handling operations, fuel-handling cranes shall be load-tested for operability of limit switches, interlocks, and alarms.

4. When the spent fuel cask contains one or more fuel assemblies, it will not be suspended more than 30 feet above any surface until the fuel has decayed more than 90 days.

C. If any of the specified conditions in 3.8.A or 3.8.B above are not met, refueling or fuel-handling operations shall cease. Work shall be initiated to correct the violated conditions so that the specifications are met, and no operations which may increase the reactivity of the core shall be performed.

*For the purpose of completing the fuel storage pool modification, the movement and placement of loads described in the installation procedures for this modification are permitted as described in the licensee's submittals of November 24, 1976, April 14, and 27, 1977, and hearing record of June 14 through 17, 1977.

5.6 FUEL HANDLING

A. Criticality Consideration

The new and spent fuel pit structures are designed to withstand the anticipated earthquake loadings as Class I (seismic) structures. The spent fuel pit has a stainless steel liner to ensure against loss of water. (1)

The new and spent fuel storage racks are designed so that it is impossible to insert assemblies in other than the prescribed locations. The fuel is stored vertically in an array with the center-to-center distance between assemblies sufficient to assure $k_{eff} \leq 0.95$ even if unborated water were used to fill the pit. In addition, fuel in the storage pool shall have a U-235 loading of $\leq$ 39.0 grams of U-235 per axial centimeter of fuel assembly (3.5 percent enrichment).

The spent fuel storage pit is filled with borated water at a concentration to match that used in the reactor cavity and refueling canal during refueling operations or whenever there is fuel in the pit, except for initial new fuel storage.

B. Spent Fuel Storage

The spent fuel storage facility is a two-compartment pool designed to accommodate 687 fuel assemblies. The pool is enclosed with a reinforced concrete building having 12- to 18-inch thick walls and roof. (1)

The pool and pool enclosure are Class I (seismic) structures that afford protection against loss of integrity from postulated tornado missiles. The storage compartments and the fuel transfer canal are connected by fuel transfer slots that can be closed off with pneumatically sealed gates. The bottoms of the slots are above the tops of the active fuel in the fuel assemblies which will be stored vertically in specially constructed racks.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-282 AND 50-306

NORTHERN STATES POWER COMPANY
NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSES

AND

NEGATIVE DECLARATION

The U. S. Nuclear Regulatory Commission (the Commission) has, pursuant to the Initial Decision of its Atomic Safety and Licensing Board dated August 12, 1977, issued Amendment Nos. 22 and 16 to Facility Operating License Nos. DPR-42 and DPR-60, issued to the Northern States Power Company (the licensee), which revised the licenses and Technical Specifications for operation of Unit Nos. 1 and 2 of the Prairie Island Nuclear Generating Plant (the facilities) located in Goodhue County, Minnesota. The amendments are effective as of their date of issuance.

The amendments revised the licenses and Technical Specifications for the facilities to permit replacement of the existing spent fuel storage racks having a capacity of 198 fuel assemblies with new storage racks having a capacity of 687 fuel assemblies.

The Initial Decision is subject to review by an Atomic Safety and Licensing Appeal Board prior to its becoming final. Any decision or action taken by an Atomic Safety and Licensing Appeal Board in connection with the Initial Decision may be reviewed by the Commission.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Notice of Proposed Issuance of the Amendments was published in the Federal Register on January 10, 1977 (42 F.R. 2140). A hearing was requested by the Minnesota Pollution Control Agency. The hearing was held from June 14 through 17, 1977, and subsequently the above-referenced Initial Decision issued August 12, 1977.

The Commission has prepared an environmental impact appraisal entitled "Discussion and Conclusions By the Office of Nuclear Reactor Regulation Relating to Environmental Considerations Associated with Modifications to the Spent Fuel Pool of the Prairie Island Nuclear Generating Station Units 1 and 2" dated April 18, 1977, and has concluded that an environmental impact statement for this particular action is not warranted because the actions authorized by these license amendments will not significantly affect the quality of the human environment.

For further details with respect to this action, see (1) the application for amendments dated November 24, 1976, as supplemented by filings dated March 1, 11 and 21, and April 14 and 27, 1977, (2) Amendment Nos. 22 and 16 to License Nos. DPR-42 and PDR-60, respectively, (3) the Commission's related Safety Evaluation dated April 15, 1977, (4) the Commission's Environmental Impact Appraisal dated April 18, 1977, and (5) The Initial Decision of the Atomic Safety and Licensing Board dated August 12, 1977. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., and at the Environmental Conservation Library of the Minneapolis Public Library, 300 Nicollet Mall, Minneapolis, Minnesota 55401. A single copy of items (2), (3), (4) and (5) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C., 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 16th day of August, 1977.

FOR THE NUCLEAR REGULATORY COMMISSION

Don K. Davis

Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors

SERVED AUG 15 1977

DOCKETED USNRC AUG 15 1977 Office of the Secretary Docketing & Service Branch

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Edward Luton, Chairman
Oscar H. Paris, Member
Frederick J. Shon, Member

In the Matter of	)	
	)	Docket Nos. 50-282
NORTHERN STATES POWER COMPANY	)	50-306
	)	
(Prairie Island Nuclear Generating	)	(Spent Fuel Pool Modification)
Plant, Units 1 and 2)	)	

August 12, 1977

INITIAL DECISION

Appearances

Gerald Charnoff, Esq.,
Bruce W. Churchill, Esq., and Jay E. Silberg, Esq.
On behalf of the Applicant, Shaw, Pittman, Potts and Trowbridge

Ellen B. Silberstein, Esq. and Edwin J. Reis, Esq.
On behalf of the Nuclear Regulatory Commission

Jocelyn Furtwangler Olson, Esq. and
John-Mark Stensvaag, Esq.
On behalf of the Intervenor, Minnesota Pollution Control Agency

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Edward Luton, Chairman
Oscar H. Paris, Member
Frederick J. Shon, Member

SERVED AUG 1 1977

In the Matter of	)	
	)	Docket Nos. 50-282
NORTHERN STATES POWER COMPANY	)	50-306
	)	
(Prairie Island Nuclear Generating Plant, Units 1 and 2)	)	(Spent Fuel Pool Modification)

INITIAL DECISION

Introduction

This proceeding is on the application of the Northern States Power Company ("Applicant") for amendments of the operating licenses for the Prairie Island Nuclear Generating Plant. The proposed amendments would permit the Applicant to install new storage racks in the spent fuel pool thereby increasing the storage capacity of the pool from 198 to 687 fuel assemblies. The Minnesota Pollution Control Agency ("Intervenor") has intervened in this proceeding pursuant to the Commission's "Notice of Consideration of Proposed Modification to Spent Fuel Storage Pool" dated December 16, 1976.[1/] In addition to the Applicant and the Intervenor, the Commission's Regulatory Staff ("Staff") is also a party to this proceeding.

1/ An organization known as Northern Thunder filed a petition to intervene on February 8, 1977. Northern Thunder ceased its intervention efforts on March 15, 1977, by giving written notice of its withdrawal from this proceeding.

By our Order Following Prehearing Conference issued on May 6, 1977, we admitted Intervenor's Contentions 12 through 31 as issues in controversy.[2/] We declined to admit certain other contentions of the Intervenor, and deferred ruling on still others. Contention 1.D, which we had originally declined to admit, was subsequently admitted as an issue in controversy by our order in response to Intervenor's motion of May 12, 1977.[3/] Ruling has been deferred on Intervenor's Revised Contentions 1.A, B, C, E and 2.A, B because those contentions state the Intervenor's views of what an environmental impact statement must contain. Since the question of whether an impact statement is required at all in this case is in dispute among the parties, our decision on that question should logically precede any concern about the proper content of an impact statement. We determine herein that an environmental impact statement is not required to be prepared in this case. We thereby necessarily determine that Intervenor's Revised Contentions 1.A, B, C, E and 2.A, B are not admissible herein.

2/ By motion dated June 24, 1977, the Intervenor requested that it be permitted to withdraw its Contentions 12, 15, 18, 19, 20, 21, 22, 23.A, 24, 25, 26, 29, 30 and 31. The reason for the request was Intervenor's belief that the issues raised by those contentions had been satisfactorily addressed during the course of discovery and at the evidentiary hearing. The motion was granted and the contentions dismissed by our order of July 6, 1977.

3/ Contention 1.D asserts that the National Environmental Policy Act ("NEPA") requires a consideration of certain alternative courses of action in this proceeding. The statutory language requires a description of alternatives in a proposal involving "unresolved conflicts concerning alternative uses of available resources ...." Although we are not wholly convinced that the quoted language applies to the situation that we have here, no party objected to our consideration of Contention 1.D. We therefore address in this decision the matter of the consideration given to those alternatives raised by Contention 1.D.

The evidentiary hearing in this matter was held on June 14-17, 1977. The Licensing Board ("Board") received evidence at the hearing on all the contentions admitted as issues in controversy. After the close of the hearing, proposed findings of fact and conclusions of law were submitted by all the parties. Briefs have been submitted by those parties on one contention (designated Contention 1) which the parties elected to have considered by the Board without any additional evidentiary presentation.

Contention 1

1. The first contention raised by the Intervenor Minnesota Pollution Control Agency (MPCA) in this proceeding states the following:

> Approval of the proposed license amendments would be a major action of the Commission significantly affecting the quality of the human environment. The National Environmental Policy Act of 1969 requires the preparation of an environmental impact statement before the licenses can be amended.

The Commission's Regulatory Staff has not prepared an environmental impact statement in this case. What the Staff has done is prepare an environmental impact appraisal,[4/] stating its determination that the proposed license amendments will not significantly affect the quality of the human environment. Staff's ultimate determination on the question is that the National Environmental Policy Act (NEPA) does not require an environmental impact statement in this case and that, in accordance with 10 CFR §51.5(c), a negative declaration to that effect is appropriate.

2. For its position that an environmental impact statement is required by NEPA, the Intervenor places almost total reliance upon a Commission notice of "Intent to Prepare Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel," 40 Fed. Reg. 42801 (1975), ("Notice"), and "Guidelines for Federal Agencies Under the National Environmental Policy Act," issued by the Council on Environmental Quality, 40 CFR 1500.6 ("CEQ Guidelines").

4/ "Discussion and Conclusions by the Office of Nuclear Reactor Regulation Relating to Environmental Considerations Associated With Modifications to the Spent Fuel Pool of the Prairie Island Nuclear Generating Station, Units 1 and 2, Docket Nos. 50-282 and 50-306" ("Staff Appraisal").

3. Section 102(2)(C) of the National Environmental Policy Act, 42 U.S.C. §4332(2)(C), provides that:

> . . . all agencies of the Federal Government shall -
>
> . . . (C) include in every recommendation or report on proposals for legislation and other major Federal action significantly affecting the quality of the human environment, a detailed statement by the responsible official on -
>
> . . . the environmental impact of the proposed action . . . .

NEPA does not require an environmental impact statement every time a Federal agency takes any action. Before such a statement is required, the proposed action must be "major" and its effect on the human environment must be "significant."[5/] In Davis v. Morton, 469 F.2d 593 (1972), a lease between private parties of certain lands on an Indian reservation was required by law to be approved by the Department of Interior before the lease could take effect. The court concluded that federal approval of the lease was enough to constitute "major federal action." In Greene County Planning Board v. Federal Power Commission, 455 F.2d 412 (1972), the only involvement necessary to constitute "major federal action" was the approval by the Federal Power Commission of a project under its jurisdiction. On the basis of these authorities, we conclude that the

5/ "There is no doubt that [NEPA] contemplates some agency action that does not require an impact statement because the action is minor and has so little effect on the environment as to be insignificant .... We agree with defendants that the two concepts are different and that the responsible federal agency has the authority to make its own determination as to each in deciding whether an impact statement is necessary." Hanly v. Mitchell, 460 F.2d 640 (1972), at 644.

action proposed here is "major". The federal involvement is as pervasive as it was in each of the cited cases.[6/] However, on the evidence before us, we do not believe the action proposed can reasonably be said to be one "significantly affecting the quality of the human environment." We therefore conclude that no environmental impact statement is required in this case and affirm the Staff in its determination to make a negative declaration to that effect.

Nature of the Proposed Action and Environmental Effects

4. The license amendments would permit the Applicant to install new storage racks in the spent fuel pool increasing the storage capacity of the pool from 198 to 687 fuel assemblies. The increased capacity would be achieved by reducing the rack spacing from 21 inches center-to-center to 13.3 inches center-to-center spacing of each spent fuel cavity (Staff Appraisal, p. 1). The external design of the spent fuel pool will not change, and there will be no change in the present use of the pool. Spent fuel is stored under water for a time to allow radioactive isotopes to decay and to reduce the thermal heat content. The longer the fuel assemblies remain in the pool, the less radioactivity they will contain. As now designed, the pool will accommodate spent fuel assemblies from five normal plant refuelings. The proposed capacity expansion would

6/ The Commission's notice of "Consideration of Proposed Modification to Facility Spent Fuel Storage Pool" (42 Fed. Reg. 2140, January 10, 1977), states that, "Prior to approval of the proposed modification and the license amendments, the Commission will have made the findings required by the Atomic Energy Act of 1954, as amended, .. and the Commission's rules and regulations."

enable the pool to receive fuel assemblies from seventeen normal plant refuelings (Appraisal, p. 5). Thus, in addition to an increase in the number of spent fuel assemblies stored in the pool, the capacity expansion will result in some of those assemblies being stored there for longer periods of time.

5. For its assessment of radiological impacts away from the plant site, the Staff assumed additional releases of Krypton 85 attributable to storing more fuel assemblies for a longer period of time. Its estimate is that 142 curies per year of this gas may be released from the spent fuel pool when the modified pool is completely filled (Appraisal, p. 7). If such releases should occur, it would result in an additional total body dose at the site boundary to an individual of less than 0.001 mrem/yr. The calculated total body dose to the estimated population within a 50 mile radius of the plant is less than 0.01 man-rem/yr. These exposures are less than a one percent increase in the exposure earlier evaluated by the Staff in its Final Environmental Statement for the individual and the population. We thus find no significant contribution to radiation levels or exposure to persons offsite resulting from the proposed modification.

6. The existing fuel racks are to be disposed of as solid waste (Wiot Testimony, Contention 16, p. 2, Tr. following 134). The Staff estimates the volume of such waste to be approximately 230 cubic feet--less than a 0.2% increase in the total volume of solid waste expected to

be shipped from the plant during its lifetime (Appraisal, p. 9).

7. The evidence indicates that the occupational radiation exposure of workers at the facility resulting from the additional fuel stored will be less than 1% of the total annual occupational exposure (Appraisal, p. 10); the modification will cause no change in the chemical or biocidal effluents from the plant (Appraisal, p. 11); and any increase in the heat discharged to the atmosphere or to the Mississippi River will be neglible.

8. All of this evidence is essentially without contradiction on the record before us. As indicated above, the Intervenor essentially relies for its position concerning the need for an environmental impact statement on a Commission Notice and the CEQ Guidelines. We turn to an examination of these materials and the arguments based upon them.

Arguments of the Intervenor

9. In a Notice entitled "Intent to Prepare Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel", dated September 16, 1975, the Commission recognized that "the spent fuel pools at a number of reactors may soon be filled, and still other reactors will have their pools filled before the end of 1978". The Notice states that in the event a particular on-site spent fuel pool should become filled, and no alternative form of spent fuel storage could be found, "the reactor would be eventually forced to shut down and 'store' the last spent reactor fuel in the reactor pressure vessel."

The Commission explained that it had not as yet found it necessary to develop any overall program "to deal with the problem". The Notice alludes to a number of possible alternatives for increasing spent fuel storage capacity, including increasing the storage capacity at present reactor sites, and construction of independent spent fuel storage facilities. The Commission explained its determination to prepare a generic environmental impact statement in the following terms:

> "The Commission [has] the discretion to deal with issues of this type on a generic basis through the exercise of its rulemaking authority and/or the issuance of a 'generic' environmental impact statement." (Emphasis supplied)

10. Having determined to prepare such a statement, the Commission expressly concluded that licensing actions intended to alleviate a possible shortage of spent fuel storage capacity, "including such actions as the issuance of operating license amendments to permit an increase in the storage capacity of reactor spent fuel pools," were to continue during the period required for preparation of the generic statement.

11. On the basis of this Notice the Intervenor, echoing the language of NEPA, argues broadly that:

> " . . . the Commission itself has recognized that the shortage of spent fuel storage capacity is a major national problem the resolution of which

> involves a major federal action significantly affecting the quality of the human environment ...." (Emphasis supplied)

First, even if the quoted statement were true (and we believe it to be demonstrably false), we fail to see that it would in any way tend to establish a NEPA requirement for an environmental impact statement in this particular license adjudication. It is not the "national problem" that we are concerned with here. Additionally, the quoted language, fairly construed, contains an implication that the generic statement is being prepared because of a Commission view that NEPA requires it. A careful reading of the Notice fails anywhere to reveal any Commission conclusion that it presently has underway a national program which constitutes a "major federal action significantly affecting the quality of the human environment." The Notice explicitly states that:

> "Indeed, the Commission has not, to date, found it necessary in the discharge of its licensing and related Regulatory functions to develop any overall program of action to deal with the problem."

12. At page 6 of its brief, Intervenor argues that the "Commission concluded in the Notice that environmental impacts could be addressed on a <u>case by case</u> basis as shortages of spent fuel storage capacity occur at individual reactors ...." But in the very next sentence, at the top of page 7 of its brief, the Intervenor attributes to the Commission a

"recognition that the spent fuel capacity shortage required [presumably, pursuant to NEPA] preparation of a generic environmental impact statement." It is manifest from the Notice that the Commission did not conclude both that (1) a case by case review was permissible, and (2) a generic statement was required by NEPA. As pointed out above, the Commission's determination to prepare the generic impact statement is an exercise of discretion, and that exercise of discretion is for the following reasons:

> "Rulemaking proceedings and/or the issuance of a generic environmental impact statement might, as appropriate, serve as the context for the promulgation of more definitive criteria regarding size and design of spent fuel pools and/or the licensing of independent spent fuel storage facilities, and for consideration of possible revision of the fuel cycle environmental impacts set forth in 10 CFR §51.20(e) in light of additional sepnt fuel storage and attendant transportation. Also, the possible implications of increased spent fuel storage on the options available for intermediate and long-term storage of nuclear waste materials could profitably be examined within this context."

It is clear that the Commission, in determining to prepare a generic environmental impact statement, has not taken the view that NEPA requires it to do so, since the Commission is well aware that compliance with NEPA is not "discretionary" on its part.[7/]

7/ Calvert Cliff's Coordinating Committee, Inc. v. AEC, 449 F.2d 1109

13. In its Notice, the Commission expressed the view that any environmental impacts associated with any individual licensing action could be adequately addressed within the context of the individual license application "without overlooking any cumulative impacts." The Intervenor argues that the environmental impacts to result from the proposed modification at Prairie Island are "significant" in themselves, and are particularly significant "in view of their cumulative effects in connection with spent fuel pool modifications all over the country." We have already reviewed in this decision those environmental impacts suggested by the evidence to result from the proposed modification at the Prairie Island facility. We have stated our view to be that those impacts are not so significant as to require that an environmental impact statement pursuant to NEPA be prepared. With respect to so-called "cumulative impacts," it appears that the Intervenor intends that the search for them be conducted on a national scale in connection with this individual application. That this is so can fairly be derived from the following portion of Intervenor's argument:

> ". . . the NRC Staff has chosen intead to focus on each license amendment as it comes in, to find the environmental impacts of each minimal in itself, and to declare that no EIS is needed. As Applicant points out in its brief at 3-4, the Commission has received 28 applications for spent fuel pool modifications. In 15 of those cases spent fuel pool modifications have received approval without a single EIS being prepared. Thirteen more applications are pending, and past performance suggests that the NRC Staff is

> likely to take the same narrow approach and issue negative declarations as to these modifications as well.
>
> . . . the cumulative environmental impacts of spent fuel pool expansions at reactors all over the country are being ignored. By determining that the impacts at each reactor are "minor," the NRC Staff avoids preparation of an impact statement in every case."

The Commission has not expressly said how wide the Staff must search for any impacts that may be cumulative. It is clear, however, that no "overall program of action" involving capacity expansion of spent fuel pools is underway. That being so, it makes no sense to say that the Commission intended the search for cumulative impacts be conducted on a national basis as though an overall program was in existence. The court in Hanly v. Kleindienst 471 F.2d 823 (1972), articulated the view that a proposed action should be evaluated for NEPA purposes in the light of at least two relevant factors, one of which is "... (2) the absolute quanitative adverse environmental effects of the action itself, including the cumulative harm that results from its contribution to existing adverse conditions or uses in the affected area" (Emphasis supplied), 471 F.2d 823, at 830. We think that what is intended by the Commission's Notice in this regard is nothing other than that the search for cumulative impacts be conducted in the area of each facility.

14. Our review of the evidence in this case convinces us that the environmental impacts of the proposed action have been adequately addressed without overlooking any cumulative impacts in the area of the

Prairie Island facility.

15. In deciding whether an environmental impact statement is required for certain proposed actions, the Commission is to be "guided by the Council on Environmental Quality Guidelines, 40 CFR 1500.6".[8/] Those Guidelines state, in part, the following:

> "In considering what constitutes a major action affecting the environment, agencies should bear in mind that the effect of many Federal decisions about a project or a complex of projects can be individually limited but cumulatively considerable. This can occur when one or more agencies over a period of years puts into a major project individually minor but collectively major resources, when one decision involving a limited amount of money is a precedent for action in much larger cases or represents a decision in principle about a future major course of action . . . "

Intervenor argues that the present license amendment requests are similar to spent fuel pool storage modifications already authorized without benefit of an environmental impact statement and "represent a decision in principle about a future major course of action;" thus, the Guidelines require an environmental impact statement in this case. This is mere argument, having for its basis no evidentiary foundation whatever. The fact that other spent fuel pool modifications have been authorized without an environmental impact statement having been prepared with respect to any of them is simply no basis for us to conclude that an environmental impact statement is required here.

8/ 10 CFR 51.5(b).

16. The CEQ Guidelines, at Section 1500.6(a), provide that "proposed major actions, the environmental impacts of which is likely to be highly controversial, should be covered [by an environmental impact statement] in all cases." Intervenor's argument on this point is that "this project was controversial from the beginning and remains controversial today;" and, had the existence of this controversy been "factored into" the Staff's determination of the need for an impact statement, Staff would necessarily have determined that such a statement was required in this case. To show that this project was and is controversial, the Intervenor points to its own intervention in this proceeding, the withdrawn intervention petition of an organization called Northern Thunder, a limited appearance evincing opposition to the project by an organization called Clean Air, Clean Water Unlimited, and a written limited appearance statement in opposition to the project submitted by the Minnesota-Wisconsin Boundary Area Commission.

17. The argument misconstrues the CEQ Guidelines. The Guidelines state that the "environmental impacts must be likely to be highly controversial", and not merely that a project itself must be controversial. In Rucker v. Willis, 484 F.2d 158 (1973), it was held that "controversial" in the context of the Guidelines does not mean merely opposition to the federal action:

> "We reject, however, the suggestion that "controversy" must necessarily be equated with opposition. The term should properly refer to cases where a substantial dispute exists as to the size, nature or effect of the major federal action rather than to the existence of opposition to a use. Otherwise, to require an impact statement whenever a threshold determination dispensing with one is likely to face a court challenge would surrender the determination to opponents of a federal action, no matter whether major or not, nor how insignificant its environmental effect might be." 484 F.2d 158 at 162

18. Upon consideration of all the evidence before us, we conclude that the action proposed is not one significantly affecting the quality of the human environment so as to require the preparation of an environmental impact statement in this proceeding.

Contention 1.D

> The National Environmental Policy Act requires consideration of all alternatives for managing the spent fuel in the short term, including, inter alia, the alternatives of: enforcing existing contractual obligations for removal of spent fuel from the pool; establishing new contractual arrangements with existing off-site storage facilities to secure removal of spent fuel from the pool; cooperatively financing an off-site storage pool to be shared with other nuclear power plants; and expanding the physical area of the existing storage pool.

19. The current capacity of the spent fuel pool at Prairie Island is 198 spent fuel assemblies. Forty assemblies were placed in the pool in March 1976 when Unit 1 was shut down for its first refueling. An additional 40 assemblies were placed in the pool in October 1976 when

Unit 2 was refueled. Now, Unit 1 has been refueled for the second time making a total of 120 spent fuel assemblies in the pool. The pool thus has room for the receipt of 78 more fuel assemblies--less capacity than that needed to off-load a full core consisting of 121 fuel assemblies should that become necessary. Additionally, after Unit 2 is refueled in the fall of 1977 and Unit 1 is refueled in March 1978, the spent fuel pool will be completely filled. Thus, Unit 2 would have to cease operation in the fall of 1978 and Unit 1 would have to shut down in the spring of 1979 if expanded spent fuel pool capacity was not then available.

20. The Applicant currently has a contract with Nuclear Fuel Services, Inc. ("NFS") for the reprocessing of spent fuel from Prairie Island. However, on September 20, 1976, NFS announced its withdrawal from the fuel reprocessing business. That company has refused to accept spent fuel from the Applicant for storage (Testimony of David H. Peterson, Tr. following 258, p. 3). Enforcing "existing contractual obligations for removal of spent fuel from the pool" does not appear to be a practical alternative to the proposed project.

21. The evidence indicates that there are no off-site storage facilities in the United States available for the storage of spent fuel from Prairie Island. Allied-General Nuclear Services' Barnwell facility is not presently licensed to store spent fuel, and the General Electric facility at Morris, Illinois has no capacity beyond that for which it is

already contractually committed (Peterson, p. 4; Testimony of Richard J. Clark, Tr. following 737, p. 3). Also, it appears that there are no other reactors whose spent fuel pools have space for the receipt of spent fuel from Prairie Island (Clark Testimony, pp. 3-4; Peterson Testimony, p. 4).

22. Cooperative financing of new storage facilities is not a reasonable alternative to the proposed project. The Regulatory Staff estimates that it would take about five years to construct and license such a facility (Staff Appraisal, pp. 14-15). Physical expansion of the existing spent fuel pool seems an impractical alternative because that would require major modifications of the plant and this could not be accomplished in the time that the added space is needed (Testimony of Dale M. Vincent, following Tr. 269, p. 2).

23. The evidence suggests that the return of spent fuel to the reactors for further burnup is physically possible, and that this would reduce to some extent the need for spent fuel storage at the reactor site. Neither the Applicant nor the Staff has analyzed in detail the possibility of further fuel burnup. The evidence is, however, that returning spent fuel to the reactors for further burnup or increasing the extent of burnup prior to refueling would necessarily result in a reduction of the power output of the plant and would reduce the need for additional storage capacity only "slightly" (Tr. 270; Tr. 413; Tr. 748).

24. The alternative of using racks constructed of materials containing boron (poison racks) in order to increase pool capacity was raised at the hearing. The evidence indicates that such a course of action would entail an approximate two-year delay in achieving the needed pool capacity expansion (Tr. 271-2; Tr. 411; Tr. 776), and is not a presently available alternative. Finally, the evidence is that a two-step procedure, involving first the installation of non-poison racks and then of poison racks, is also not a present alternative (Tr. 412-13).

25. We conclude that adequate consideration has been given to possible alternatives to the proposed action.

Contentions 13 and 14

Contention 13

> The request and supporting documentation fail to establish that the plant will adequately and safely handle the incremental burden of radioactivity resulting from the proposed expansion of capacity.

Contention 14

> The radioactive waste treatment system for the spent fuel pool has not been shown to be adequate for the proposed expansion of capacity, whether or not damaged fuel is stored in the expanded pool.

26. These two contentions appear to the Board to be inextricably interwoven with one another. All parties have treated them, in testimony as well as in proposed findings, as connected. The alleged "incremental

burden of radioactivity" of Contention 13 is apparently that extra radioactivity which will manifest itself as contamination of the pool water. (Intervenor's Proposed Findings at p. 14; Applicant's Proposed Findings at p. 15, et seq.; Staff's Proposed Findings at p. 17, et seq.).

27. Radioactivity in the spent fuel pool water results primarily from the release of corrosion products (crud) (Wiot Testimony on Contentions 13 and 14, p. 2; Id., Contention 15, pp. 2-3). Crud contributes over 90% of the dose rate from the spent fuel pool. Id., p. 2. Loose crud is dislodged from the fuel assemblies and enters the spent fuel pool water during movement of the assemblies. Id., Contentions 13 and 14, p. 2; Id., Contention 15, pp. 2-3; Tr. 151. This material is largely formed on the fuel assemblies during operation (Wiot Testimony, p. 2) and it then is transferred to the pool water either by being shaken loose in the reactor and carried over when reactor water mingles with pool water, or by being shaken loose when fuel assemblies are handled in the pool (Wiot Testimony, pp. 2-3; Tr. 151; Donohew Testimony, Contention 14, p. 2).

28. Since all technical witnesses seem agreed that the source of this radioactivity is active only during refueling, it seems reasonable that the mere presence of additional fuel in storage would not increase the total amount of radioactive material added to the water (Wiot Testimony, pp. 2-3; Donohew Testimony, Contention 14, p. 2). Indeed, it

appears that any increment resulting from fuel failure during storage would be minor (Tr. 671).

29. Thus the Board would expect no substantial increment in radioactivity in the pool were it not for the one-time activities associated with the rack installation itself. This latter aspect was not addressed by either Staff or Applicant in prepared testimony. It was, however, developed at some length during the hearing. (Tr. 153, et seq.; Tr. 716, et seq.).

30. There will be some crud released in moving 120 stored fuel elements out of the old racks and back into the new (Tr. 153; Tr. 716). In addition, some material will be added to the pool when the old racks are washed down in the process of removing them from the pool (Tr. 156; Tr. 716). Neither Staff's witness nor Applicant's witness was able to quantify the amount of material expected to be released from either the fuel handling or the rack washing operations (Tr. 181; Tr. 727), although the Staff's witness said he expected more crud to be dislodged in a normal refueling operation, in which about forty fuel elements would be removed, than in the movement of 120 elements, moving each element twice (Tr. 731).

31. The Staff witness noted that the cleanup system for this pool is presently used at reduced flow rate, and runs only part of the time (Donohew Testimony, Contention 14, pp. 2-3) and that the cleanup circu-

lation rate could be tripled and operation could be extended. Applicant's witness noted that even at the reduced circulation rate, the system removes "essentially all" the material introduced in a refueling before the next refueling. (Wiot Testimony, Contention 14, p. 3).

32. Under questioning by the Board, however, the Staff's witness was unable to state why he felt that the moving of 240 fuel elements, plus washing of the old racks, could be accommodated by an increase in flow rate of a factor of only 3 (Tr. 723, et seq.), when experience had only demonstrated an ability to handle 40 fuel moves, a factor of six less than the fuel rearrangement alone.

33. The Board recognizes that engineering judgment must often be relied upon when problems cannot be exactly quantified. Further, this operation is, indeed, planned to occur only once, which would preclude the continuous buildup of activity suggested by the Intervenor (Intervenor's Proposed Findings at paragraph 32) even should the cleanup system be undersized. We are concerned, however, that radiation and contamination levels should generally be kept within the limits contemplated when the plant was originally licensed, and within those experienced to date. We will therefore condition the license amendments authorized herein as follows: before work begins on the project the licensee shall measure and record ambient radiation levels around the fuel pool. After the replacement of the storage racks and the fuel elements currently stored in them, the licensee shall again measure

radiation levels around the pool, monitoring such levels and operating the cleanup system until the levels return to those typical of the period before the rack modification work was begun. No further activities which would increase the radioactive content of the pool (activities, for example, such as refueling) shall be carried out until the levels return to those typical of the period before the modification.

Contention 16

> The evaluation of additional radiological impacts off-site due to the proposed expansion of the spent fuel pool is inadequate.

34. Analyses by Applicant and Staff suggest that there will be very little additional radiological impact off-site as a result of the fuel pool modification. With operations conditioned as we have directed, supra, there should be no increase in radioactive corrosion products (crud), or at least, no increase of significant duration, above that level which would obtain with the present storage system. Clearly, if the pool crud does not increase there will be no increase in off-site radioactivity from that source.

35. There may be some slight increase in fission products released to the pool, but this material, too, will be removed by the pool cleanup system. (Wiot Testimony, Contentions 13 and 14, p. 4). The release of fission products occurs primarily immediately after removal of the fuel

elements from the core, i.e., while they are still generating decay heat, if, indeed, it occurs at all (Wiot Testimony, Contentions 13 and 14, p. 3; Staff Appraisal, p. 16). The only significant fission product which might escape from failed fuel and reach the atmosphere is Krypton-85. The Staff has calculated, using very conservative assumptions, that an additional 142 curies per year of this substance might be released when the modified pool is completely filled. Such a release would occasion an additional 0.001 mrem/yr to an individual at the site boundary, and an additional 0.01 man-rem/yr to the population within 50 miles (Staff Appraisal, pp. 7-8). These calculations are based on an assumed fuel failure and leakage rate greater than that which has been experienced. (Donohew Testimony, Contention 14, p. 2). The results show a negligible off-site impact.

36. As to the possible release of iodine isotopes, their short half-lives and the action of the pool cleanup system remove them adequately, preventing their escape (Staff Appraisal, p. 8). Any additional tritium release will be minor compared to that presently attributable to leakage of reactor coolant. Ibid. Incremental liquid releases will be negligible (Donohew Testimony, Contention 16, p. 2; Staff Appraisal, p. 10).

37. There may be some increase in radioactive waste shipped off-site. The licensee does not expect any change, but the Staff believes

an additional resin bed per year may be disposed of as a result of the change (Staff Appraisal, p. 9). The increase estimated by the Staff would represent less than 1% of the average volume of solid waste shipped per year from 1974 to 1976. Ibid. The Board views such an increase as negligible.

38. Disposal of the old racks themselves will increase the total waste volume shipped from the plant in its lifetime by only 0.2%. Ibid.

39. The Board believes that the incremental off-site radiological impact resulting from the amendments will be negligible and has been adequately analyzed.

Contention 17

> The licensee has failed to supply sufficient information to assess the occupational radiation dosage to workers who will be engaged in the activity of rearranging stored spent fuel and installing new spent fuel storage racks.

40. Applicant has estimated that the total occupational radiation exposure to be received by workers during the process of expanding the spent fuel pool capacity will be less than 28 man-rems. (Vincent Testimony, Contention 17, p. 2; Tr. 437-8, 448-53). The Staff considers this to be a reasonable estimate. (Safety Evaluation, p. 7; Staff Appraisal, p. 10; Block Testimony, p. 1). Applicant's estimate was arrived at by consulting with the management of the construction firm it has contracted with to

perform the installtion (which estimated the man-hours that would be required for each phase of the job), and by relying on the engineering judgment of Applicant's Project Engineer for the proposed capacity expansion (who estimated the radiation levels which would be experienced for each task). (Vincent Testimony, p. 3; Tr. 438-9, 442-3 and 488-91). Applicant Witness Vincent testified that because of conservative assumptions he made about dose rates associated with certain phases of the work, the actual total dosage should be less than the calculated dose. (Vincent Testimony, pp. 3-4; Tr. 448, 492).

41. Actual radiation exposures experienced at other nuclear facilities in performing similar modifications of spent fuel pools (involving replacement of racks) indicate that Applicant's calculated dose is, indeed, reasonable. (Block Testimony, pp. 1-2; Vincent Testimony, p. 4; Tr. 453-6, 784). Staff Witness Block testified that actual exposure for this type of activity at Zion was 0.56 man-rem (to diver only), at Connecticut Yankee 20 man-rem (18 man-rem actual + 2 man-rem estimated to completion), at Ft. Calhoun 2 man-rem, and at Ginna 18 man-rem. (Block Testimony, p. 1). Witness Vincent testified that the spent fuel storage pool modification at Point Beach resulted in an exposure of 2.62 man-rem. (Vincent Testimony, p. 4; Tr. 507-8). Not all of these numbers are directly comparable to the 27.9 man-rem estimate for Prairie Island, because some of them are exposures resulting from only components of fuel pool modifications rather than from entire jobs. (Tr. 455-6, 506-10). The exposures for

Connecticut Yankee, Ginna, and Point Beach apparently are for entire jobs. (Block Testimony, p. 1; Vincent Testimony, p. 4; Tr. 455). Witness Block testified that the exposure at Ginna, 18 man-rem, was "more germane" than others to the estimate of 28 man-rem for Prairie Island. He thought that there was more radiation exposure to personnel at Ginna than would be the case at Prairie Island, however, because at Ginna fuel elements had been stored in the pool longer than at Prairie Island, resulting in higher contamination levels. (Tr. 800-1). Witness Vincent testified that at Connecticut Yankee radiation levels experienced during washing of the racks were higher than would be expected at Prairie Island because at the former facility the racks were contaminated with rotten wood and resin spots, which had to be removed. (Tr. 509-10). Radiation exposure at Point Beach, on the other hand, was lower than would be expected at Prairie Island because at Point Beach the bottom of the pool was cleaned before rack removal and also at Point Beach the contaminated racks were disposed of intact, rather than cut up as is planned for Prairie Island. (Tr. 492-9, 500-3). We find it reasonable to expect that the total exposure to be experienced at Prairie Island will fall somewhere between the high dosages experienced at Connecticut Yankee and Ginna and the low dosage experienced at Point Beach.

42. The total annual occupational exposure for the Prairie Island plant was greater than 400 man-rem in 1976. (Vincent Testimony, p. 2).

Even if the estimated 28 man-rem exposure were experienced during the modification of the fuel pool, it would constitute less than 7 percent of the probable total occupational dose experienced at the plant during 1977. This dose is comparable in magnitude to doses experienced in routine maintenance operations at Prairie Island and in maintenance and repair operations at other nuclear power plants. (Vincent Testimony, p. 2; Block Testimony, p. 2). We do not find the projected total dose of 28 man-rem, per se, to be unacceptable.

43. Intervenor argues that Applicant's estimate of occupational dose does not take into account the crud which will be released in the pool water as a result of 240 fuel assembly movements and the washdown of old racks. (Intervenor's Proposed Findings, paragraphs 36-37). The argument is based on testimony of Applicant's witness Vincent, who acknowledged that he had not accounted for the effect of washing down the racks on the exposure to be experienced by the diver. Mr. Vincent said he did not consider it necessary because of the conservatism inherent in his estimate. (Tr. 459-60). Staff argues that radiation from increased crud in the pool, resulting from the movement of spent fuel assemblies and the washing down of racks, "is encompassed in the 28 man-rem estimate." (Staff's Proposed Findings, p. 21). The evidence it cites, however, contradicts the argument. (Tr. 789). Applicant points out that (1) removal of old racks from Pool and the installation of new racks

will occur before the first movement of 120 fuel assemblies, (2) disposing of the old racks will take place outside the pool, and (3) the return of the 120 fuel assemblies to Pool 2 will occur after the in-pool work has been completed. (Applicant's Reply to Proposed Findings of Intervenor, paragraph 28). We expect the increment of exposure resulting from crud released by the movement of fuel elements and washdown of racks to be small, and we believe it will be accounted for by conservatism in the 28 man-rem estimate.

44. Much ventilation has been given to the question of whether the occupational dose resulting from the pool modification would be a non-recurring dose, or whether another pool modification might be necessary in the 1980's, thus leading to another dose of this type. (Intervenor's Proposed Findings, paragraphs 22-24, 34; Applicant's Proposed Findings, paragraph 34; Staff's Safety Evaluation, p. 7; Staff's Appraisal, p. 10; Tr. 483-5, 791-2). We do not see the relevance of speculation about a future pool modification to our consideration of the instant application for a license amendment. Consequently, we do not view the question of whether the occupational dose would be non-recurring as properly before us.

45. Intervenor argues that Applicant's estimate of a 28 man-rem occupational exposure during the fuel pool modification is no more than an "educated guess," based on testimony by Staff Witness Block. (Intervenor's Proposed Findings, paragraph 34; Tr. 785, 805-7). When

asked to define "educated guess," Block responded as follows:

> " 'Educated guess' can be taken in many ways. One way it would be based on relevant experience. I think that is pretty clear. Other ways of educated guess would be to determine, based on the operation itself, the time that would be spent for a specific operation, and the dose rate that would be applicable during the operation, and integrating all of this."

The witness testified further that he doubted if there is a better way to estimate doses from an operation of this type. (Tr. 805-6). Mr. Vincent testified, as noted supra, that he estimated dose rates based on his engineering judgment, and that he confirmed the contractor's estimate of man-hours on the basis of his own knowledge of construction projects. (Vincent Testimony, p. 3; Tr. 438-9, 442-4 and 486-91). We recognize, as the Applicant has acknowledge (Applicant's Reply to Proposed Findings of Intervenor, paragraph 31), that the actual dose cannot be predicted with great precision. Nevertheless, the evidence indicates that Applicant has, indeed, used appropriate methods to assess the occupational dosage that will be incurred during the fuel pool modification.

46. Based on the evidence before us, the Board finds that the Applicant has supplied sufficient information to assess, as reasonably as possible, the occupational radiation dosage to workers who will be engaged in the activity of rearranging stored spent fuel and installing new spent fuel storage racks.

An Issue Examined By The Board In Its Discretion

47. During the taking of evidence on Intervenor's Contention 17, the question was raised as to whether the Applicant's plans for carrying out the fuel pool modification will enable the Licensee to meet the requirements of 10 CFR §20.1(c), which state, in part that:

> "persons engaged in activities under licenses issued by the Nuclear Regulatory Commission ... should ... make every reasonable effort to maintain radiation exposures...as low as is reasonably achievable taking into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to the utilization of atomic energy in the public interest."

Intervenor argues that the Licensing Board should not "find that the Applicant's proposed procedures for implementing the requested amendment will result in occupational exposure levels which are as low as reasonably achievable." (Intervenor's Proposed Findings, paragraph 50). The Applicant argues that this "is a new issue which was not raised by Contention 17 and has not been placed before this Board for determination." (Applicant's Reply to Proposed Findings of Intervenor, paragraph 21).

48. In considering an application for a license amendment, the Commission is "guided by the considerations which govern the issuance of initial licenses", 10 CFR §50.91. The issuance of operating licenses is governed by 10 CFR §50.57, which state, in part, that such a license

may be issued upon a finding, inter alia, that:

> "The facility will operate in conformity with...the rules and regulations of the Commission." 10 CFR §50.57(a)(2).

We believe that this Licensing Board is empowered to examine the question of whether there is reasonable assurance that the Applicant will perform the proposed modification in a manner that meets the requirements by 10 CFR §20.1, even though that question is not raised by a contention of one or more of the parties. Our discretionary authority to do so is found, we believe, in 10 CFR §2.760(a), which states the following:

> "Matters not put into controversy by the parties will be examined and decided by the presiding officer only in extraordinary circumstances where he determines that a serious safety, environmental, or common defense and security matter exists."

49. We view the question of whether there is reasonable assurance that the Applicant will carry out the proposed modification in compliance with 10 CFR §20.1 as constituting a serious safety matter. Further, the issue was extensively ventilated during the evidentiary hearing and is argued in the proposed findings of fact and conclusions of law submitted by the parties following the close of the hearing. (Intervenor's Proposed Findings, paragraphs 45-50; Applicant's Reply to Proposed Findings of Intervenor, paragraphs 21-27; Staff's Proposed Findings, pp. 21-4; Tr. 445-56, 461-83, 489-91, 494-512, 794-98, 809, 916-19. There is sufficient evidence before us, we believe, to support the decision which we reach on this issue.

50. The "as low as is reasonably achievable" (ALARA) issue was raised during the testimony of Applicant's Witness Vincent on Contention 17:

> COUNSEL FOR STAFF - "Did NSP give any consideration to the low as reasonably achievable standard that also appears in 10 CFR Part 20?"
>
> WITNESS - "Well, that's part of it certainly."
>
> COUNSEL - "Part of what?"
>
> WITNESS - "Part of Part 20 and part of the overall consideration."
>
> CHAIRMAN LUTON - "Does that mean that NSP did in fact give some consideration to reducing these exposures to as low as reasonably achievable or are you simply telling us that the concept is incorporated in Part 20?"
>
> WITNESS - "Well, you know, that's something that is in Part 20 and our people are familiar with Part 20 and particularly the plant personnel who were involved in this that are responsible for monitoring the radiation exposures and it's something that is much in discussion these days and so they have to give consideration to it at least on a general basis and a specific basis for each job."
>
> CHAIRMAN LUTON - "Do you know specifically whether they in fact gave consideration to it on this occasion?"
>
> WITNESS - "No, I do not." Tr. 447.

Subsequently, upon redirect examination by the Applicant, Mr. Vincent testified as follows:

> COUNSEL - "Mr. Vincent, are you familiar with how the so-called rule as low as is reasonably achievable is applied out at plant operations?"

> WITNESS - "During the break, I was able to check with plant personnel, and they do apply the ALARA."
>
> COUNSEL - "I am sorry; the what?"
>
> WITNESS - "ALARA, as low as reasonably achievable regulations in their plant procedures for radiation protection, and this is a consideration that they have to use at all times. And they are actually audited against this by the NRC, as I understand it."
>
> COUNSEL - "Are you saying all of the plant operations are conducted against the standard of as low as reasonably achievable?"
>
> WITNESS - "Yes."
>
> * * * * * * * * *
>
> COUNSEL - "Would it be fair to say then that the work to be performed would be tested and actually performed in compliance with the standard as low as reasonably achievable?"
>
> WITNESS - "Yes, as I said, the radiation protection superintendent will review the procedures...If he did not feel that these procedures in some way were consistent with plant philosophy, and the ALARA philosophy, he would be in a position to reject those procedures, make comments and force us to revise them." Tr. 489-91.

In prepared testimony, Mr. Vincent testified that the work will be performed in a manner which complies with 10 CFR Part 20. (Vincent Testimony, Contention 17, pp. 4-5). However, the oral testimony, supra, is less convincing, causing us to doubt that Applicant has, in fact, given full consideration to the requirements of 10 CFR §20.1(c) in planning the proposed modification.

51. The Applicant did not attempt to assess the total occupational dose that would result from the procedures to be used in modifying the spent fuel pool prior to deciding on what procedures to follow (Tr. 451-2). Nor was information regarding the radiation doses experienced during the spent fuel pool modification at the Point Beach or other facilities available to the Applicant at the time that decision was made (Vincent, p. 4; Tr. 451).[9/] The Applicant did, however, consider the quarterly dose limits set out in 10 CFR Part 20 and determined that the doses to individuals working on the job would not exceed those limits. (Vincent, pp. 2-3; Tr. 446). Thus, whether the method selected will expose workers to doses that are as low as is reasonably achievable is in need of some further examination.

52. Actual occupational radiation exposures during fuel pool modification at Point Beach and Ft. Calhoun were 2.62 man-rem and 2 man-rem, respectively. These low dosages contrast with those experienced at Ginna and Connecticut Yankee, 18 man-rem and 20 man-rem (18 actual + 2 estimated to completion), respectively. (Vincent Testimony, p. 4; Block Testimony, pp. 1-2). The estimated total exposure for the proposed fuel pool modification at Prairie Island is higher still, 28 man-rem. The evidence indicates that the low exposure at Point Beach resulted in part from the fact that the racks were not cut into pieces prior to shipment off-site, as is planned for Prairie Island; at Point Beach

9/ The Board notes that information on radiation exposure levels experienced during similar operations at other facilities also was not available to the NRC Staff at the time it prepared the Safety Evaluation and environmental appraisal for the proposed modification at Prairie Island.

the racks were crated and shipped intact. Mr. Vincent testified that consequently he expected the exposure associated with rack disposal to be greater at Prairie Island than at Point Beach. (Tr. 449-50). The higher exposure would result from the man-hours required to cut the racks, estimated by the Applicant to be approximately 100 man-hours. (Tr. 461). Witness Vincent estimated the exposure associated with cutting up the racks to be approximately 10 man-rem. (Tr. 498). Staff Witness Block testified that he was unable to evaluate the difference in exposure associated with the two methods in the absence of specific knowledge of the procedures used at Point Beach. (Tr. 798). The sum of this evidence indicates that there may be some reason for believing that cutting the racks and placing the pieces in drums for shipment off-site might result in greater occupational exposure than if the racks were left intact and placed in crates for shipment off-site.

53. Another factor which probably contributed to the relatively low total occupational exposure at Point Beach was the fact that there the bottom of the pool was cleaned prior to removal of the old racks. (Tr. 478, 492-3). At Zion, on the other hand, an attempt at vacuuming the pool bottom prior to removal of old racks was apparently ineffective. (Tr. 502-3). Staff Witness Block testified that he thought cleaning the pool bottom would not have a major effect on the total man-rem budget and suggested that the dose incurred in cleaning the pool might cancel any benefit gained from cleaning. In his view, the occupational dose

will be as low as reasonably achievable if the pool bottom is not cleaned. (Tr. 785-6). We believe the evidence shows that cleaning the pool bottom might reduce the total occupational exposure somewhat, but it would not contribute significantly to reducing the dose.

54. The record is silent on why total occupational dose was only 2 man-rem during the fuel pool modification at Ft. Calhoun.

55. Apparently the reason that Applicant decided to cut the racks into pieces and pack them in drums was that drums are easier to handle than are crates for intact racks. (Tr. 451). The reasons which might prevent the Applicant from employing the Point Beach method for rack disposal now are: (1) Applicant's contract with a construction firm that is to perform the work; and (2) an estimated additional cost of $30,000 to $50,000 if the Point Beach method should be used. (Tr. 452, 501).

56. Applicant points out that while cleaning the bottom of the pool might result in somewhat less radiation exposure to divers, some occupational exposure would be involved in the cleaning process. (Applicant's Reply to Proposed Findings of Intervenor, paragraph 27; Tr. 501-2, 795). Similarly, while shipping the racks intact would eliminate the exposure associated with cutting them up, it would require decontamination procedures prior to crating which would involve some radiation exposure. Id., Tr. 495-6. Shipping them intact would also be more expensive. Id.

Applicant argues further that the Director of Nuclear Reactor Regulation made the finding, based on the NRC Staff's review of the operating license application, that there was reasonable assurance that NSP would conduct its plant operating activities in compliance with NRC regulations (pursuant to 10 CFR §50.57(a)(3)). Id., paragraph 22. The Applicant claims that there is nothing in the record of this proceeding to suggest the contrary. Id., paragraph 26. Applicant also argues that the ALARA standard of 10 CFR §20.1(c) requires that a number of considerations be balanced--that the requirement is not a simple directive that the method resulting in the lowest dose must be employed. Id., paragraph 25.

57. Staff argues that the requirement in 10 CFR §20.1(c) that the Licensee make every effort to maintain radiation exposure "as low as is reasonably achievable" does not mean that it must maintain exposure "as low as is conceivably possible." It maintains that the record, "particularly those parts dealing with Applicant's radiation protection program," indicates that the Applicant has carefully considered the ALARA standard in 10 CFR §20.1(c) in planning the proposed modification. The evidence cited to support this statement is the testimony by Vincent (Tr. 490-91), quoted supra. (Staff's Proposed Findings, pp. 22-3).

58. We believe the evidence suggests a possibility that the total occupational dose associated with the proposed spent fuel pool modification could be reduced by as much as 10 man-rem if the Applicant crated the old racks for shipment off-site rather than cutting them and packing

the pieces in drums. The technology for crating the racks is available, as evidenced by the fact that the method has been used at other facilities. The additional financial burden that would be imposed by crating the racks, $30,000 to $50,000, is not, in our view, prohibitive and is a reasonable amount to expend for a possible radiation exposure reduction of as much as 10 man-rem. In any event, the alternate method of rack disposal is deserving of more analysis than this record indicates that method has received.

59. We have found, supra, that the estimated 28 man-rem occupational exposure is not, per se, an unacceptable total dose for the proposed project. We do not now decide that such an exposure is not in fact as low as is reasonably achievable. Consequently, we do not deny the requested license amendments on this account. It might be reasonable for the Applicant to modify its plans to reduce the radiation exposure associated with this job. We do decide that this issue needs further exploration. Accordingly, we condition the license amendments authorized herein as follows: the Licensee shall be authorized to proceed with the fuel pool modification as requested, except for rack disposal. After the old racks have been removed and washed down, measurements shall be made of the radiation levels that would be experienced by workers cutting the racks and packing the pieces in drums and by workers preparing the racks for crates and crating them. The Applicant will then assess, based on these measurements, the total occupational dose that would result from each

method of disposal: cutting and packing the pieces in drums, and loading the drums for shipment off-site; and preparing intact racks for placement into crates, placing them in crates, and loading the crates for shipment off-site. This assessment will be submitted to the Regulatory Staff for its evaluation. Following its evaluation, the Staff shall recommend to this Licensing Board whether the Licensee should be allowed to proceed with disposal as planned or shall be required to crate intact racks for shipment. Upon considering the Staff's recommendation, and any additional evidence presented to us at that time, the Board will issue its further decision on this matter.

Contention 23.B

> The Licensee's discussion of spent fuel pool boiling is inadequate in that: The assertion that the time to boiling could be increased to ten hours by distributing the spent fuel in the pool is unsupported.

60. The Prairie Island spent fuel pool is composed of two pool compartments of different sizes. Analyses were made by the Staff and the Applicant of the time it would take for the water in the pools to reach boiling, assuming the worst possible conditions of a complete failure of the spent fuel cooling system immediately following the placement of an entire off-loaded core in the small pool, with the large pool full of spent fuel assemblies. (Lantz Testimony, Contentions 18-23, following Tr. 823, p. 4; Contention 19, p. 13; Contention 23.B; Staff Safety Evaluation, p. 5; Tr. 840-1; Lampe Testimony, Contention 23.B, following Tr. 211, pp. 1-2; Tr. 242-245).

61. Under these circumstances, it would take between 3 and 4 hours for boiling to occur in the small pool, where the greatest heat load would occur, under the conservative assumption that coolant does not flow between the two pools. Lengthening the time to boiling could be accomplished by opening the gate between the two pools. No calculation has actually been made of the time which would elapse to boiling with the gate between the pools open, but it would certainly be longer. (Tr. 245). If the recently off-loaded core were placed in the large pool instead of the small pool, the time to boiling would be about 10 hours. (Lantz Testimony, Contention 23.B, p. 13). However, there is neither any plan, nor any apparent need to shuffle fuel in order to increase time to boiling. (Tr. 245, 843). The time available, were the cooling system to fail after a core had been off-loaded to the small pool, would be adequate to allow any of several auxiliary sources of water to be employed, any of which could serve to supply water faster than it would boil away. (Tr. 195-197; Lantz Testimony, Contention 19, p. 4; Tr. 831-2).

62. It appears to the Board that the contention has little or no relevance to either the safety or the environmental impact implications of the license amendments. While it is apparently true that time to boiling could be increased by proper distribution of fuel, such a move would not be needed. Protection against overheating or boiling away of the pool water is adequate from other sources and the Board finds nothing in the evidence concerning this matter which militates against approval of the license amendments.

Contention 27

> The license amendment request and supporting documentation do not discuss all possible consequences associated with criticality excursions due to errors in spent fuel spacing or to accidents during fuel handling operations.

63. This was the only contention concerned with criticality which the Intervenor did not withdraw by its motion of June 24, 1977. It appears from Intervenor's Proposed Findings (pp. 27-30) that Intervenor's chief concern is that a fuel cask may be dropped into a full storage pool, and that such an event could lead, perhaps indirectly, to a criticality incident. The Board notes prepared testimony of both Staff and Applicant (Staff Safety Evaluation, following Tr. 685, pp. 1-3; Fisher Testimony following Tr. 121, Contentions 25-27) to the effect that dropping fuel elements could not cause such an incident, nor could the erroneous positioning of such elements, nor could an overly tight lattice resulting from manufacturing tolerances.

64. The particular scenario which the Intervenor seems to suggest is as follows: a 100-ton fuel shipping cask falls onto the racks in a pool; the racks are compressed to a denser configuration; a leak is simultaneously induced in the pool; unborated water is added to the pool; criticality occurs when the pool's boron concentration drops. Intervenor suggests that the results of this sequence should be analyzed.

65. We note that criticality would not occur if a "heavy object" crushed the racks, provided that the refueling concentration of boron is maintained (Tr. 702) and we are led to wonder whether the fall of a "heavy object" could simultaneously cause a leak. Although the Intervenor says it could (Intervenor's Proposed Findings, p. 29, §61), the transcript citation there offered (Tr. 882) says:

> "The results of our analysis show the small fuel pool can withstand the consequences of a dropped cask with minimal, if any, leakage."
>
> That citation scarcely suggests that leakage would be substantial.
>
> As to the makeup water being unborated, Intervenor asserts that that would indeed be the case, citing the transcript at p. 857. We read the cited exchange as follows:
>
> Q. "... Mr. Lantz, do you know if, in the event of pool leakage from one of the pools, the source of makeup water would contain boron, the makeup water which could be used would contain boron?"
>
> A. "No."

66. The Board views this answer as simply stating that the witness did not know whether such water could be borated. Indeed, other testimony by witnesses more familiar with the plant's configuration states

(Testimony of Shimbayama, Contention 12, p. 1):

> "The Prairie Island configuration includes as a source for filling the spent fuel pool the Chemical Volume and Control System..."

67. It is, the Board believes, common knowledge that that system can supply borated water.

68. Even the triggering event for the Intervenor's scenario seems remote. No cask presently exists, and, indeed, no cask design has even been specified. (Tr. 881). There is no crane available to lift such a cask over pool #2 (Lantz Testimony, Contentions 28-31, p. 3), and a Technical Specification (3.8.B.1) forbids moving any heavy object over pool #1 when it contains fuel. (Vincent Testimony, Contentions 28-31, p. 5). (For a discussion of the Intervenor's challenge to the effectiveness of this Technical Specification see Contention 28, infra).

69. The Board views the sequence of events: violation of a Technical Specification (or, perhaps somewhat more probable, the tipping of a cask into pool #2 (Tr. 862); crushing of the storage racks; inducement of substantial leakage (despite the racks' cushioning effect); and replacement of leaked water with unborated water--as being too remote to be considered an undue hazard to health and safety. We are content to here address only the safety questions surrounding the modification of the fuel pool, and to leave any such speculative event chains for analysis by the Staff when approval is sought in the future for cask design and operating procedures.

Contention 28

> The amendment request and supporting documentation do not establish the method by which the Licensee will positively preclude the movement of heavy objects, such as shipping casks, over Pit #1 at all times when the pool holds stored spent fuel, thereby precluding:
>
> A. The possibility of an accidental leak from Pit #1, exposing the stored spent fuel; and
>
> B. The possibility of damage to spent fuel from the accidental dropping of such objects.

70. Intervenor contends that there is no method presently in force which "positively precludes the movement of heavy objects, such as shipping casks, over Pit #1" when that pool contains stored fuel. (Intervenor's Proposed Findings, paragraph 65). This contention apparently addresses the movement of objects over Pool #1 after the proposed modification has been completed. All parties recognize that heavy objects will be moved over Pool #1 while it contains spent fuel during the process of carrying out the proposed modification. Intervenor's Contentions 29-31 raised the possibility of accidental damage to stored spent fuel in this pool as a result of activities carried out during the modification procedure. These contentions were withdrawn by the Intervenor by its motion of June 24, 1977, on the grounds that the Intervenor believed these matters had been satisfactorily addressed in the course of discovery and at the evidentiary hearing.

71. The movement of heavy loads over Pool #1 when it contains irradiated fuel is prohibited by Technical Specification 3.8.B.1 for the Prairie Island facility, as implemented by Applicant's administrative procedures. (Safety Evaluation, p. 6; Lantz Testimony, Contentions 28-31, p. 3; Vincent Testimony, Contentions 28-31, p. 5; Applicant's Proposed Findings, paragraph 70; Applicant's Reply to Proposed Findings of Intervenor, paragraph 34). Intervenor argues that administrative controls do not make "a cask drop accident over a loaded Pool #1 so unlikely that the consequences of such an event can be ignored." (Intervenor's Proposed Findings, paragraph 65). The Intervenor is concerned about "the potential dangers which are inherent in controls based on human judgment about the meaning of technical specifications." Id., paragraph 66. As evidence to demonstrate the validity of its concern, Intervenor cites testimony by Applicant's Witness Vincent, and maintains that upon cross and redirect examination Vincent made "frequent changes in his interpretation" of Technical Specification 3.8.B.1. Id., paragraphs 67-68. Intervenor says additionally that the fact that the Staff did not recognize, until after the Safety Evaluation was issued, that the installation and removal of the protective cover on Pool #1 would require an exemption from Technical Specification 3.8.B.1 further undermines confidence in administrative controls. (Intervenor's Proposed Findings, paragraph 71). Intervenor would have us find Technical Specification 3.8.B.1, as implemented by Applicant's administrative controls, does not provide reasonable assurance

that the health and safety of the public will be protected. Id., paragraph 72.

72. The Applicant argues that "technical specifications are the controlling requirements which provide the basis for the day-to-day administrative procedures which govern a plant operation," and points out that a vast majority of an NRC license consists of technical specifications. Applicant maintains that Intervenor is in error when it assumes that technical specifications cannot be relied upon to provide reasonable assurance of public health and safety. (Applicant's Reply to Proposed Findings of Intervenor, paragraph 34). Applicant claims that the Intervenor "has mischaracterized the testimony of NSP witness Vincent on this point," and says that Vincent did not change his testimony. The Applicant points out that Vincent admitted, when confronted under cross-examination with a request for a literal interpretation of a particular phrase, that his prior understanding of Technical Specification 3.8.B.1 may have been too broad. But, says the Applicant, this does not change the fact that Vincent had always believed that the Technical Specification prohibited the movement of heavy objects over Pool #1 when it contained spent fuel and that he would continue to hold that interpretation in the future. Id., paragraph 35.

73. The Licensing Board has examined the record closely and as a result believes that the Applicant has fairly characterized witness

Vincent's testimony. It is true that the witness exhibited some confusion under intense interrogation about the meaning of certain phrases of Technical Specification 3.8.B.1. But upon looking at Vincent's testimony as a whole, we are convinced that he has an adequate understanding of the Technical Specification. (Tr. 337-41; Tr. 404-7; 418-19; 458-9; 528-33; 539-41). We do not agree with the Intervenor that Vincent's testimony is grounds for concern about the efficacy of administrative controls.

74. We have also examined Intervenor's assertion that the Staff did not recognize that an exemption from Technical Specification 3.8.B.1 would be required for Applicant to carry out the proposed modification. (Intervenor's Proposed Findings, paragraph 71). The evidence shows this assertion to be, in fact, true. Staff witness Grotenhuis testified that the relationship of the technical specification to the protective cover was overlooked when the safety evaluation was prepared. (Tr. 903). There is other evidence to suggest that the Staff failed to consider all relevant information before preparing the Safety Evaluation. Two of three documents cited by Staff Witness Lantz to provide the basis for the Staff conclusion "that there is reasonable assurance that the health and safety of the public will not be endangered by the installation and use of the new racks" were dated later than the Safety Evaluation.[10/] (Lantz

10/ A letter from Applicant to Staff dated April 14, 1977, was the document cited in testimony by Lantz which predated the Safety Evaluation. It was introduced into evidence as Applicant's Exhibit 1-E. Introduced with the letter was a drawing (designated NF-38303-29) which, according

Testimony, Contentions 28-31, p. 4; Tr. 885-890). Lantz did testify that the Staff had information in addition to the cited documents. Id. We do not doubt this, but we would have preferred to see Staff cite sources which were used in reaching a conclusion, rather than supportive documents which postdate the conclusion. Moreover, it appears that the Safety Evaluation was issued before Applicant had reached a firm decision about certain details of safety-related procedures. (Tr. 890-9). Fortunately, the procedures eventually chosen will, in our opinion, provide reasonable assurance that the health and safety of the public will be protected. Consequently, our decision in this case need not be affected by a lapsus on the part of the Staff. In any case, we do not see any relevance of the fact that Staff testimony cites documents which postdate the Safety

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Footnote (Con't)

10/ to Counsel for Applicant, was referenced in the letter. (Tr. 105). The reference to the drawing in the letter stated, "Full-sized drawings of the cover were provided to Mr. M. Grotenhuis earlier..." The drawing contains four paragraphs under the heading "Instructions for Manipulations of Racks and Cover," which provide a reasonably complete description of procedures for handling the cover. Counsel for Applicant, in questioning Staff Witness Grotenhuis, asked whether Staff had possession of the drawing prior to April 14, 1977, to which the witness replied, "I believe so." (Tr. 903-905). The Licensing Board observes, however, that the drawing designated NF-38303-29 was released April 20, 1977, and the designs depicted on it were not approved until April 19, 1977. Clearly, it is not the drawing referenced in the letter dated April 14, 1977. We are concerned not only that the Staff appears to have prepared the Safety Evaluation before it had available to it all of the information which, in our opinion, should have been considered in preparing the report, but also that Counsel for the Applicant appears to have misrepresented (perhaps unwittingly) the amount of information that the Staff had in hand when the Safety Evaluation was written.

Evaluation to the contention that the Applicant has not established the method by which the movement of heavy objects over the spent fuel pool will be precluded.

75. Finally, Intervenor argues that Applicant should be prohibited from storing more than 555 spent fuel elements in the pool to prevent the necessity of a possible future amendment of Technical Specification 3.8.B.1. (Intervenor's Proposed Findings, paragraph 70). We do not see the relevance of this issue, which is based on speculation, to the instant proceedings.

76. The position of the Staff on Contention 28 is that Technical Specification 3.8.B.1 and Applicant's administrative procedures provide reasonable assurance that movement of heavy loads over irradiated fuel in the spent fuel storage pool will not occur without Commission approval. (Staff's Proposed Findings, p. 30).

77. We conclude, based on the evidence before us, that the Applicant has established the method by which the movement of heavy objects over Pool #1 will be precluded when the pool contains spent fuel, and that this method provides reasonable assurance that the health and safety of the public will be protected.

Conclusion

78. In accordance with the Atomic Energy Act, as amended, and the Commission's regulations, and on the basis of the evidentiary record and the foregoing findings of fact and conclusions of law, the Atomic Safety and Licensing Board has herein determined all of the matters in controversy among the parties, and all such matters are resolved in such a manner as to support the issuance of the requested operating license amendments, upon the conditions set out below.

ORDER

It is ORDERED, in accordance with the Atomic Energy Act, as amended and the regulations of Nuclear Regulatory Commission, and based on the findings and conclusions set forth herein, that the Director of Nuclear Reactor Regulation is authorized to make appropriate findings in accordance with the Commission's regulations and to issue the appropriate license amendments authorizing the expansion of the spent fuel storage pool capacity at the Prairie Island Nuclear Generating Plant, Units 1 and 2, upon the following conditions:

1. The licensee shall be authorized to proceed with the fuel pool modification as requested, except for rack disposal. After the old racks have been removed and washed down measurements shall be made of the radiation levels that would be experienced by workers cutting the racks and

packing the pieces in drums and by workers preparing the racks for crates and crating them. The licensee will then assess, based on these measurements, the total occupational dose that would result from each method of disposal: cutting and packing the pieces in drums for shipment off-site; and preparing intact racks for placement into crates, placing them in crates, and loading the crates for shipment off-site. This assessment shall be submitted to the NRC Regulatory Staff for its evaluation. Following its evaluation, the Staff shall recommend to this Licensing Board whether the licensee should be allowed to proceed with disposal as planned or shall be required to crate intact racks for shipment. Upon considering the Staff's recommendation, and any additional evidence presented to us at that time, the Board will issue its further decision on this matter.

2. Before work begins on the project, the licensee shall measure and record ambient radiation levels around the fuel pool. After the replacement of the storage racks and the fuel elements currently stored in them, the licensee shall again measure radiation levels around the pool, monitoring such levels and operating the cleanup system until the levels return to those typical

of the period before the rack modification work was begun. No further activities which would increase the radioactive content of the pool (activities, for example, such as refueling) shall be carried out until the levels return to those typical of the period before the modification.

It is further ORDERED, in accordance with Sections 2.760, 2.762, 2.764, 2.785 and 2.786 of the Commission's Rules of Practice, that this Initial Decision shall be effective immediately and shall constitute the final action of the Commission forty-five (45) days after the date of issuance, subject to any review pursuant to the above cited Rules of Practice.

THE ATOMIC SAFETY AND
LICENSING BOARD

Oscar H. Paris

Oscar H. Paris, Member

Frederick J. Shon

Frederick J. Shon, Member

Edward Luton

Edward Luton, Chairman

at Bethesda, Maryland

2th day of August 1977.