

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSIONOFFICE OF NUCLEAR REACTOR REGULATION
HAROLD R. DENTON, DIRECTOR

In the Matter of)	
)	Docket Nos. 50-295
COMMONWEALTH EDISON COMPANY)	and 50-304
(Zion Station, Unit Nos. 1 and 2))	

DIRECTOR'S DECISION UNDER 10 C.F.R. 2.206

By letter dated April 17, 1980, Ms. Catherine Quigg, on behalf of Pollution and Environmental Problems, Inc. (PEP), transmitted a request pursuant to 10 C.F.R. 2.206 for the immediate suspension of the license to permit reracking and compaction of the Zion Unit Nos. 1 and 2 spent fuel pool because of issues raised in a spent fuel pool modification hearing for the Salem Nuclear Station which petitioners believed should be considered in the Zion case. Notice of receipt of PEP's request was published in the Federal Register on June 23, 1980 (45 F.R. 42095).

I. Background

On February 28, 1980, the Nuclear Regulatory Commission issued Amendment Nos. 52 and 49, to Facility Operating Licenses Nos. DPR-39 and DPR-43, respectively, to revise the Technical Specifications and licenses for Zion Station, Unit Nos. 1 and 2. 1/ These amendments would allow modifications of the spent fuel pool to increase the storage capacity from 868 to 2112 fuel assemblies.

1/ Amendment Nos. 52 and 49 are attached as Appendix A.

The issuance of the amendment was preceded by eight days of evidentiary hearings and supplemental affidavits filed by the parties in response to a request for additional information by the Atomic Safety and Licensing Board (ASLB). 2/ The Board's Initial Decision authorizing issuance of the license amendment was issued on February 14, 1980. 3/ The petitioner here, Ms. Quigg, did not petition to intervene in that proceeding, but did make a limited appearance statement.

By Memorandum and Order dated February 22, 1980, the Atomic Safety and Licensing Board designated to rule on a requested license amendment to permit modifications of the Salem Nuclear Generating Station, Unit 1 spent fuel pool, directed the parties in that proceeding to answer the following questions:

- a. To what extent did the accident at Three Mile Island (TMI) affect the spent fuel pool at that site?
- b. In the event of a gross loss of water from the storage pool, what would be the difference in consequences between those occasioned by the pool with the expanded storage and those occasioned by the present pool?

PEP has requested the suspension of the license authorizing modification of the Zion spent fuel pool pending examination of the evidence presented in the Salem case on the Board's questions, particularly as it applies to the Zion spent fuel pool. PEP contends that the Salem Board has given credibility to a loss of cooling accident in a spent fuel pool and, therefore, these issues

- 2/ The Board's request for further evidence was triggered by a Board Notification entitled "Pipe Cracks in Stagnant Borated Water Systems at PWRs" dated August 14, 1979.
- 3/ The Zion ASLB Initial Decision dated February 14, 1980 is attached as Appendix B. The ASLB's decision was affirmed by the Atomic Safety & Licensing Appeal Board (ASLAB). Commonwealth Edison Company (Zion Station, Units 1 & 2), ALAB-616, 12 NRC _____ (October 2, 1980), attached as Appendix C. The Appeal Board's decision became the final agency action on this matter on November 24, 1980, with the Commission declining to review the decision on its own motion under 10 CFR 2.736.

should be considered in the Zion case.

PEP has requested that the amendment be suspended for a second reason. PEP contends that the NRC may in the future "allow utilities to go to fuel burnups as high as 55-60,000 MWD/MTU". It believes that since "fuel burnup is one of the most important considerations in determining spent fuel thermal heat and radiation output, major factors in a loss of water accident in the pool", the Zion license should be suspended pending completion of an environmental impact statement (EIS) on high burnup nuclear fuel in the spent fuel storage pools.

We have reviewed the information submitted in PEP's request. In addition, we have reviewed the testimony presented in the Zion spent fuel pool modification proceeding, the decisions of the Atomic Safety and Licensing Boards in the Zion and the Salem proceedings,^{4/} and the decision of the ASLAB in the Zion case. For the reasons set forth below, PEP's request that Amendments Nos. 52 and 49 to Facility Operating Licenses Nos. DPR-39 and DPR-48, respectively, be suspended, is denied.

II. Consideration of Issues Raised in Salem Proceeding

The first portion of the PEP request addresses the Salem Board's questions concerning the accident at TMI and how that accident would affect the spent fuel pool. The Salem ASLB specifically examined the status of the TMI spent fuel pool and found (page 27, paragraph 43 of the October 27, 1980 Initial Decision) that even if there had been fuel in the TMI pool at the time of the acci-

^{4/} The Initial Decision in the Salem spent fuel pool modification proceeding was issued on October 27, 1980. It is attached as Appendix D. An appeal on portions of that decision is currently pending before the ASLAB.

dent, the accident would not have affected it. The pool remained accessible despite levels of radiation which were higher than normal, and the equipment for cooling the pool and purifying its water was accessible at TMI after the accident. The Salem ASLB further found (pages 30 and 31, paragraph 46 of the October 27, 1980 Initial Decision), upon close examination of the Salem spent fuel pool and its cooling, purification, alarm, and ventilation systems, that if an accident occurred at Salem similar to the one at TMI, little, if any, impact would occur on the Salem spent fuel pool.

We have compared the findings of the Salem ASLB and the Zion ASLB (the February 14, 1980 Initial Decision), and have further reexamined the hearing record of the Zion ASLB to determine if any issue considered in the Salem proceedings raises questions about the conclusions reached in the Zion proceeding. We have also reviewed the Zion ASLAB Decision (ALAB-616) dated October 2, 1980 for any bearing it may have on conclusions about the possible impact of a TMI type accident on the Zion spent fuel pool.

The Zion ASLB in its Initial Decision addressed contentions dealing primarily with pool boiling (pages 29-45) and pool drainage accidents (pages 84-85). In addressing these contentions, the Board reviewed testimony on the spent fuel pool in many of the areas discussed at the Salem hearing on the TMI type accident. This testimony included the following information:

The fuel building is separate from the auxiliary building where most radiation level increases from a TMI type accident would be expected to occur (outside containment). The containment isolation valves are automatic at Zion and will not reopen automatically. The auxiliary building radiation levels would be expected to increase as the recirculation phase began on the long term cooldown following a LOCA and some increase in the radiation

levels of the spent fuel pool building would be expected. The spent fuel pool has been analyzed for a number of accidents that could increase the radiation levels in that area. But in any of these events, a TMI type accident or fuel handling accident, the levels of radiation in the spent fuel pool building would not prevent operation and maintenance of vital systems in that area. The water cooling and purification system for the spent fuel pool is located in an adjacent room shielded from the spent fuel and accessible by the railroad doorway if direct access to the pool is prevented. There are ample sources of makeup water to the spent fuel pool including the demineralized flushing water systems, refueling water storage tank, fire protection systems in the spent fuel pool building, and fire hoses which can draw water from the primary water storage tank, secondary water storage tank, and the service water system.

The spent fuel pool area has three area radiation monitors. Two monitors have fixed setpoints and are read directly in the control room. All have alarms. There is an area particulate monitor which also has an Iodine-133 cartridge for detecting iodine. The ventilation system for the spent fuel pool area combines with ventilation streams from other areas and is monitored for particulates and iodine. An indication from this monitor would automatically divert the effluent from the HEPA filters to the charcoal filters. A fuel cooling accident with high humidity might damage the HEPA filters but they could be replaced even with high radioactivity within the fuel building. The charcoal filter booster fan is manually started from the control room.

From our examination of the Initial Decision by the Zion ASLB and the testimony presented in relation to pool boiling and pool draining, we have determined that the Zion spent fuel pool should be no more affected by a TMI type accident than would the Salem spent fuel pool. 5/ We believe the Zion spent fuel pool would receive only minimal impact from a TMI Type accident.

We have also concluded, as did the Salem ASLB, that there would be little, if any, effect on the pool with expanded storage capacity, because any effect on the pool from a TMI-type accident would not depend on whether the pool contained additional spent fuel assemblies. Rather, the concern is continued accessibility of the pool and its supporting equipment. As stated above, operation and maintenance of vital systems could continue following an accident.

The second issue considered in the Salem proceeding which PEP sought to have examined for the Zion facilities, dealt with the potential for gross loss of water from the spent fuel pool and the effect such a loss of water would have on a pool with expanded storage capacity. The Zion ASLB in its Initial Decision noted that it had posed the question to the applicant and staff to describe any design and/or engineering safety features incorporated in the Zion spent fuel storage pool to decrease the likelihood of a severe pool drainage accident (Initial Decision at 34). The testimony presented included discussions of the cause of such an event and the features available to mitigate the consequences of such accidents. The ASLB specifically found that there

5/ In its review of the Initial Decision, the ASLAB rejected the State of Illinois' appeal and affirmed the Licensing Board's findings that equipment and controls to assure adequate access to makeup water in the event of a severe accident were accessible under any circumstances. ALAB-616, Slip Op. at 11-12.

are adequate design and engineered safety features incorporated into the Zion Station spent fuel pool which would reduce the likelihood of a severe pool drainage accident, and that those features should preclude the possibility of a severe drainage accident in the Zion Station fuel pool (Initial Decision at 86).

The questions posed by the Licensing Board in the Salem proceeding focused on the differences in consequences between a gross loss of water accident at an unexpanded and an expanded pool. The Salem ASLB findings (pages 31-39 of its Initial Decision dated October 27, 1980) were based on testimony dealing with zirconium fire and propagation, dispersion of fission products, increased risk due to the expansion, clad oxidation and fuel melting, and the relative release potential from old versus new fuel in the spent fuel pool. In general, the Salem Board Initial Decision for this particular issue was that: (1) while further analysis might more precisely define oxidation propagation, it was not needed to convince the Board that there would not be significant releases from the older fuel in comparison to the releases from the newer fuel, (2) gross loss of water is in itself an event of very low probability, and (3) there would not be a great difference between the consequences occasioned by the proposed configuration and those occasioned by the present one.

We have reviewed a number of proposed spent fuel pool modifications, as well as those for the Zion/Salem fuel and design of modification. We find little difference between the Zion and Salem modifications that would make any difference in the results of a gross loss of water accident. The impacts on the expanded pool at Zion have been principally limited to those from of the older fuel which will remain in the pool and the releases from those elements are not significant when compared to releases from the recently discharged fuel.

Based on a consideration of the above facts and an extensive review of the record of the Zion proceeding, and the decisions of the Zion and Salem Licensing Boards, we find no factual justification to suspend the licenses or amendments at the Zion Station.

III. Request for an EIS

The last PEP request is to suspend the license amendments pending the completion of a full environmental impact statement on high burnup nuclear fuel in spent fuel storage pools. On April 27, 1979, PEP made a similar 10 C.F.R. 2.206 request. Following issuance of a license amendment permitting extended burnup of four fuel assemblies in the Zion Station Unit 2 to a burnup of approximately 55,000 MWD/MTU (the usual Zion fuel is irradiated to 33,000 MWD/MTU), PEP requested preparation of a full EIS on high burnup fuel, both in the reactor and as a spent fuel waste. After careful consideration of the concerns raised by PEP over use of the higher burnup fuel, the Director of the Office of Nuclear Reactor Regulation denied PEP's request on March 13, 1980. 6/ The bases of that denial were conclusions that the potential consequences of the accidents given in the Safety Evaluation Reports supporting the Facility Operating Licenses and the amendments for modification of the spent fuel pool, will not change due to four fuel assemblies in the core being irradiated to burnup to 55,000 MWD/MTU. 7/

In its current petition, PEP requests that the license amendments at issue here be suspended pending completion of a full EIS on high burnup fuel in spent fuel storage pools because: (1) fuel burnup is one of the most important considerations in determining spent fuel pool thermal heat and radiation

6/ Commonwealth Edison Company (Zion Station, Units 1 & 2, DD-80-11, 11 NRC 496 (1980). A copy of the Director's Decision is attached as Appendix E.

7/ By License Amendment Nos. 59 and 39 dated December 31, 1980, the NRC approved performance of the last cycle of irradiation of the four assemblies in Zion Unit No. 1 on the basis that the safety analysis for the last two cycles of irradiation is directly applicable to either unit. The change of unit would also not change the previous environmental impact determination.

output, major factors in a loss of water accident in the pool and (2) a contention that in the future, the NRC may allow utilities to go to fuel burnup as high as 55,000-60,000 MWD/MTU. We have no request from the licensee for the Zion Station to extend the fuel burnup of the four assemblies beyond the 55,000 MWD/MTU target. The need for further data to support such a request and the existing confidence to allow the lead test assemblies to operate for two cycles in nonlimiting core positions was pointed out in our March 13, 1980 denial. We also stated our requirement that a full reload of a new fuel design would need a detailed safety review and approval by the NRC and that review would depend upon the data from the Zion and other test programs. Until such time as the test program results are available to extend the data base for higher burnup fuels and Zion applies for approval of extended use of such fuels, no further use of high burnup fuels is contemplated or permitted. Thus, no action has been taken or is contemplated for the Zion plants for which an environmental impact statement or appraisal such as is sought by PEP should be prepared. Consequently, the lack of such a document cannot serve as the basis for suspension of the amendments to the Zion licenses.

PEP has also filed with the NRC a petition for rulemaking, pursuant to 10 C.F.R. 2.802, requesting preparation of a generic EIS for a potential future nationwide program of using high burnup fuel in nuclear reactors (Docket No. PRM-51-6). Any generic aspects of PEP's concerns over use of high burnup fuel will be dealt with in the Commission's response to that petition.

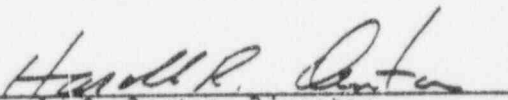
IV. Conclusion

For the reasons set forth above, I have determined that the information submitted by PEP does not alter my conclusion nor call into question the conclusions reached by the Zion Licensing Board that Amendment Nos. 52 and

49 will not significantly affect the health and safety of the public or the quality of the human environment. Suspension of the amendments is not warranted. Therefore, the request of PEP is denied.

A copy of this decision will be placed in the Commission's Public Document Room at 1717 H Street, N.W., Washington, D.C. 20555 and at the Local Public Document Room for the Zion Station located at the Zion-Benton Public Library, 2600 Emmaus Avenue, Zion, Illinois 60099. A copy of this document will also be filed with the Secretary of the Commission for its review in accordance with 10 C.F.R. 2.206(c) of the Commission's regulations.

In accordance with 10 C.F.R. 2.206(c) of the Commission's Rules of Practice, this decision will constitute the final action of the Commission 25 days after the date of issuance, unless the Commission on its own motion institutes the review of this decision within that time.


Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 18 day of February, 1981.

Attachments:

- Appendix A - Amendment Nos. 52 and 49
- Appendix B - Zion ASLB Initial Decision dated February 14, 1980
- Appendix C - Zion ALAB Decision (ALAP-616) October 2, 1980
- Appendix D - Salem ASLB Initial Decision dated October 27, 1980
- Appendix E - NRC Denial of PEP's April 27, 1979 request pursuant to 10 C.F.R. 2.206



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

FEBRUARY 28 1980

Docket Nos. 50-295
and 50-304

Mr. D. Louis Peoples
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Peoples:

Pursuant to the enclosed Initial Decision dated February 14, 1980 of the Commission's Atomic Safety and Licensing Board, we have issued the enclosed Amendment No. 52 and Amendment No. 49 to Facility Operating License Nos. DPR-39 and DPR-48, respectively, for the Zion Station Unit Nos. 1 and 2.

The amendments consist of changes to the license and appended Technical Specifications that permit modification of the spent fuel pool which will increase the storage capacity from 868 to 2112 fuel assemblies. The amendments are in response to your application dated April 13, 1978, as supplemented October 24, November 8 and 29, 1978, January 24 and 26, February 23, March 7, and March 19, 1979, and incorporate the conditions ordered by the Board in its Initial Decision of February 14, 1980.

A copy of the related Notice of Issuance and Negative Declaration which is being filed with the Office of the Federal Register for publication is also enclosed. Copies of our Safety Evaluation and Environmental Impact Appraisal related to this action were sent to you by our letter dated March 29, 1979.

Sincerely,

A handwritten signature in cursive script, appearing to read "A. Schwencer".

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosures:

1. Initial Decision
2. Amendment No. 52 to DPR-39
3. Amendment No. 49 to DPR-48
4. Notice of Issuance

cc: w/enclosures
See next page

DUPE: 8004020257

Mr. D. Louis Peoples
Commonwealth Edison Company

- 2 -

FEBRUARY 28 1980

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Region V Office
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Chicago, Illinois 60604



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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-295

ZION STATION UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 52
License No. DPR-39

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Commonwealth Edison Company (the licensee) dated April 13, 1978, as supplemented October 24, November 8 and 29, 1978, January 24 and 26, February 23, March 7, and March 19, 1979, 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.

DUPE: 8004020262

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and by revising paragraph 2.C.(2) and by adding a paragraph 2.C.(7). Facility Operating License No. DPR-39 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 52, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

(7) Spent Fuel Pool Modification

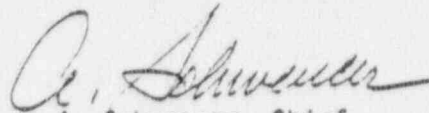
The licensee is authorized to modify the spent fuel pool as described in the application dated April 13, 1978, as supplemented October 24, November 8 and 29, 1978, January 24 and 26, February 23, March 7 and March 19, 1979.

- (a) Fuel stored in the spent fuel pool shall have a U-235 loading less than or equal to 40.6 grams per axial centimeter.
- (b) No loads heavier than the weight of a single spent fuel assembly plus the tool for moving that assembly shall be carried over fuel stored in the spent fuel pool. The spent fuel handling tool, the burnable poison tool, the rod cluster control changing fixture and the thimble plug shall not be carried at heights greater than two feet over fuel stored in the spent fuel pool.
- (c) The NRC shall be notified in advance should it become necessary to handle heavy loads in the vicinity of the spent fuel storage pool.
- (d) Upon completion of the modification a corrosion surveillance program for the racks shall be implemented and kept in force to insure that any loss of neutron absorber material and/or swelling of the storage tubes is detected.

- (e) In situ neutron attenuation tests shall be performed to verify that tubes and racks contain a sufficient number of Boral plates such that K-effective will not be greater than 0.95 when the spent fuel is in place. Results of these tests shall be reported to the NRC within 30 days after completion of the modification.

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

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: FEBRUARY 28 1980



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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-304

ZION STATION UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 49
License No. DPR-48

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Commonwealth Edison Company (the licensee) dated April 13, 1978, as supplemented October 24, November 8 and 29, 1978, January 24 and 26, February 23, March 7, and March 19, 1979, 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.

DUPE: 8004020266

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and by revising paragraph 2.C.(2) and by adding a paragraph 2.C.(7). Facility Operating License No. DPR-48 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 49, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

(7) Spent Fuel Pool Modification

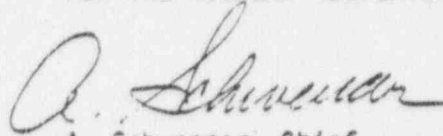
The licensee is authorized to modify the spent fuel pool as described in the application dated April 13, 1978, as supplemented October 24, November 8 and 29, 1978, January 24 and 26, February 23, March 7 and March 19, 1979.

- (a) Fuel stored in the spent fuel pool shall have a U-235 loading less than or equal to 40.6 grams per axial centimeter.
- (b) No loads heavier than the weight of a single spent fuel assembly plus the tool for moving that assembly shall be carried over fuel stored in the spent fuel pool. The spent fuel handling tool, the burnable poison tool, the rod cluster control changing fixture and the thimble plug shall not be carried at heights greater than two feet over fuel stored in the spent fuel pool.
- (c) The NRC shall be notified in advance should it become necessary to handle heavy loads in the vicinity of the spent fuel storage pool.
- (d) Upon completion of the modification a corrosion surveillance program for the racks shall be implemented and kept in force to insure that any loss of neutron absorber material and/or swelling of the storage tubes is detected.

- (e) In situ neutron attenuation tests shall be performed to verify that tubes and racks contain a sufficient number of Boral plates such that K-effective will not be greater than 0.95 when the spent fuel is in place. Results of these tests shall be reported to the NRC within 30 days after completion of the modification.

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

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: FEBRUARY 28 1980

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 52 TO FACILITY OPERATING LICENSE NO. DPR-39

AMENDMENT NO. 49 TO FACILITY OPERATING LICENSE NO. DPR-40

DOCKET NOS. 50-295 AND 50-304

Replace the following page of the Appendix "A" Technical Specifications with the enclosed page. The revised page is identified by Amendment number and contains vertical lines indicating the areas of change.

Remove Page

298
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Insert Page

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299

The reactor containment structure for Zion Unit 2 is essentially identical in design and construction to that of Unit 1 except that it is reoriented. Numerous mechanical and electrical systems penetrate the containment wall through welded steel penetrations. (2)

5.4.3 Containment Penetrations Sideways

All containment penetrations (both electrical and piping) are double barrier assemblies consisting of a closed sleeve, in most cases, or a double gasketed closure for special penetrations such as the fuel transfer tube. The space between the double barriers will be continuously pressurized, by the Penetration Pressurization System, to a pressure in excess of the containment design pressure. (3)

References

- (1) FSAR Section 5.1.1
- (2) FSAR Section 5.1.2
- (3) FSAR Section 5.1.4

5.5 Fuel Storage

5.5.1 New Fuel Storage

New fuel assemblies are stored in a separate storage vault which is designed to hold 132 new assemblies. The new fuel storage racks accommodate 2/3 of a core.

There are three sections of racks with each station made up of two rows. The two parallel rows in each section have a nominal center to center spacing of 21 inches and each section is separated by a distance of 44". The new fuel storage vault is protected from flooding by its free flood drain.

New fuel may also be temporarily stored in the spent fuel pool in preparation for refueling. The fuel assemblies are stored in racks in parallel rows, having a nominal center to center distance of 10.35 inches in both directions. This spacing is sufficient to maintain a K effective of less than .95 when flooded with unborated water, for fuel having a maximum loading of 40.6 gms. U-235 per axial centimeter of fuel assembly length (about 3.2 weight percent U-235).

5.5.2 Spent Fuel Storage

Irradiated fuel assemblies will be stored prior to offsite shipment in the stainless steel lined fuel pool which is located in the fuel handling building. Borated water is used to fill the spent fuel storage pit at a concentration to match that used in the reactor cavity and refueling canal during refueling operations. The fuel is stored in a vertical array with a nominal center to center spacing of 10.35" between assemblies to assure a K effective of less than 0.95 even if unborated water is used to fill the pit, for fuel having a maximum loading of 40.6 gms. U-235

5.5.2 Spent Fuel Storage (Continued)

per millimeter of fuel assembly length (about 3.2 weight percent U-235).

References

1. Fuel Pool Modification Report Revision 2, dated February 3, 1978.
2. Addendum to the Fuel Pool Modification Report dated October 20, 1978 and revised February 1979.

5.6 Seismic Design

The structures, mechanical components and Engineered Safeguards Systems vital to safe shutdown and containment isolation, or whose failure might cause or increase the severity of a loss of coolant accident, are designed per the seismic criteria of Design Basis Earthquake (DBE). Design Basis Earthquake is based on ordinary allowable stresses as set forth in applicable codes, plus the additional requirement that a safe shutdown be made during a horizontal ground acceleration of 0.17g and a vertical acceleration of 0.11g occurring simultaneously. These systems and equipment are defined as Seismic Class 1.

Other systems and mechanical components in a support or auxiliary function are designed per the seismic criteria of Operational Basis Earthquake (OBE), or per applicable codes. These systems and equipment are defined as either Classes 2 or 3 depending on their function.

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NOS. 50-295 AND 50-304COMMONWEALTH EDISON COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE AND NEGATIVE DECLARATION

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 52 to Facility Operating License No. DPR-39, and Amendment No. 49 to Facility Operating License No. DPR-48 issued to the Commonwealth Edison Company (the licensee), which revised Technical Specifications for operation of Zion Station, Units 1 and 2 (the facilities) located in Zion, Illinois. The amendments are effective as of the date of issuance.

The amendments permit modifications of the spent fuel storage pool which will increase the storage capacity from 868 fuel assemblies to a capacity of 2112 fuel assemblies.

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 1, which are set forth in the license amendments.

The Commission has prepared an Environmental Impact Appraisal

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- 2 -

dated March 29, 1979, and has concluded that an environmental impact statement for this particular action is not warranted because the actions authorized by this license amendment will not significantly affect the quality of the human environment.

Notice of Proposed Issuance of the Amendments 52 and 49 was published in the Federal Register on July 18, 1978, (43 FR 30938). A hearing was requested by the State of Illinois. The hearing was held June 11-15, 1979 and June 20-22, 1979, and subsequently the above-referenced Initial Decision was issued on February 14, 1980.

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.

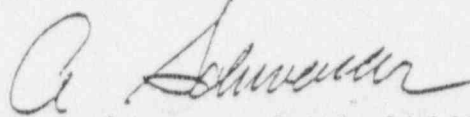
For further details with respect to this action, see (1) the application for amendments dated April 13, 1978, as supplemented October 24, November 8 and 29, 1978, January 24 and 26, February 23, March 7, and March 19, 1979, (2) Amendment Nos. 52 and 49 to License Nos. DPR-39 and DPR-48, and (3) the Commission's related Safety Evaluation and Environmental Impact Appraisal, both dated March 29, 1979.

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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 Zion-Benton Public Library District, 2600 Emmaus Avenue, Zion, Illinois 60099. A copy of items (2) and (3) 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 *28* day of *February* 1980.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors