

June 7, 1990

Docket No. 50-237

Mr. Thomas J. Kovach
Nuclear Licensing Manager
Commonwealth Edison Company-Suite 300
OPUS West III
1400 OPUS Place
Downers Grove, Illinois 60515

Dear Mr. Kovach:

SUBJECT: NOTICE OF ISSUANCE OF ENVIRONMENTAL ASSESSMENT - DRESDEN
UNIT 2 (TAC NO. 52141)

Enclosed for your information is a copy of a "Notice of Issuance of Environmental Assessment and Finding of No Significant Impact" related to your March 16, 1973 amendment request to Provisional Operating License DPR-19 for the Dresden Nuclear Power Station, Unit 2. The proposed amendment would convert the Provisional Operating License (POL) to a Full-Term Operating License that is effective from the date of issuance of the construction permit (January 10, 1966). Also, enclosed is a copy of the Environmental Assessment.

The Notice has been forwarded to the Office of the Federal Register for publication.

Sincerely,

/s/

Patricia L. Eng, Project Manager
Project Directorate III-2
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

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2. Environmental Assessment

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The notice has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Byron L. Siegel, Project Manager
Project Directorate III-2
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

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- 2. Environmental Assessment

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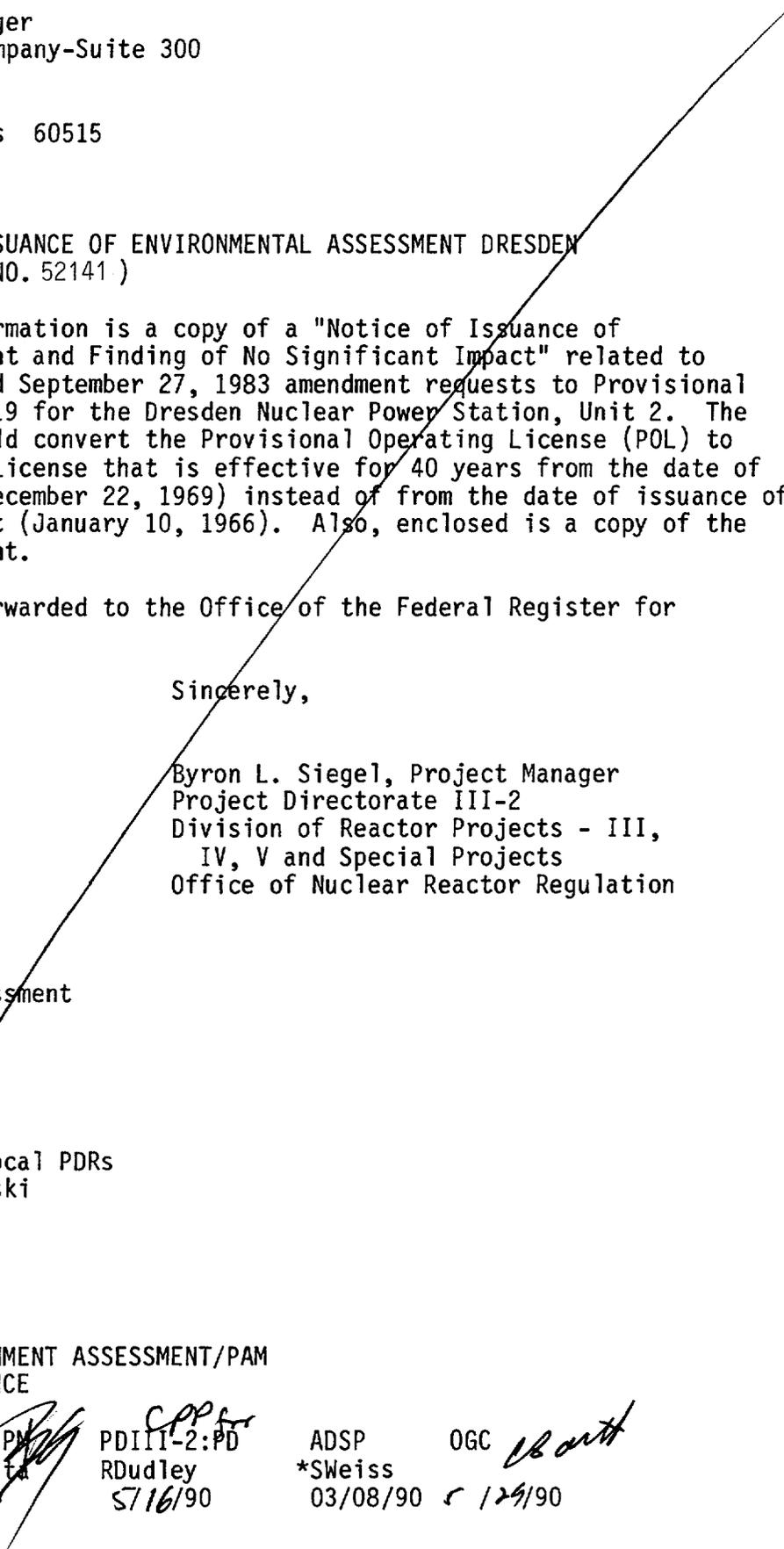
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5/16/90

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*SWeiss
03/08/90

OGC
03/29/90



Docket No. 50-237

Thomas J. Kovach
Nuclear Licensing Manager
Commonwealth Edison Company-Suite 300
OPUS West III
1400 OPUS Place
Downers Grove, Illinois 60515

Dear Mr. Kovach:

SUBJECT: NOTICE OF ISSUANCE OF ENVIRONMENTAL ASSESSMENT DRESDEN
UNIT 2 (TAC NO. 63004)

Enclosed for your information is a copy of a "Notice of Issuance of Environmental Assessment and Finding of No Significant Impact" related to your March 16, 1973 and September 27, 1983 amendment requests to Provisional Operating License DPR-19 for the Dresden Nuclear Power Station, Unit 2. The proposed amendment would convert the Provisional Operating License (POL) to a Full-Term Operating License that is effective for 40 years from the date of issuance of the POL (December 22, 1969) instead of from the date of issuance of the construction permit (January 10, 1966). Also, enclosed is a copy of the Environmental Assessment.

The notice has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Byron L. Siegel, Project Manager
Project Directorate III-2
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

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*S. Weiss
concerned
on the draft
copy*



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

June 7, 1990

Docket No. 50-237

Mr. Thomas J. Kovach
Nuclear Licensing Manager
Commonwealth Edison Company-Suite 300
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The Notice has been forwarded to the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in black ink that reads "Patricia L. Eng".

Patricia L. Eng, Project Manager
Project Directorate III-2
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

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2. Environmental Assessment

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See next page

Mr. Thomas J. Kovach
Commonwealth Edison Company

Dresden Nuclear Power Station
Units 2 and 3

cc:

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UNITED STATES NUCLEAR REGULATORY COMMISSIONCOMMONWEALTH EDISON COMPANYDRESDEN NUCLEAR POWER STATIONDOCKET NO. 50-237NOTICE OF ISSUANCE OF ENVIRONMENTAL ASSESSMENT
AND FINDING OF NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Provisional Operating License No. DPR-19 issued to Commonwealth Edison Company (the licensee or CECO), for operation of the Dresden Nuclear Power Station, Unit 2, located in Grundy County, Illinois.

IDENTIFICATION OF PROPOSED ACTION:

The amendment would consist of a conversion of the Provisional Operating License (POL) No. DPR-19 to a Full-Term Operating License (FTOL) with an expiration date for the FTOL to be 40 years from the date of issuance of the construction permit which would be January 10, 2006.

The amendment to the license is in response to the licensee's application dated March 16, 1973 for the conversion. The NRC staff has prepared an Environmental Assessment of the Proposed Action, "Environmental Assessment by the Office of Nuclear Reactor Regulation Relating to the Conversion of the Provisional Operating License to a Full-Term Operating License," Commonwealth Edison Company, Dresden Nuclear Power Station, Unit 2, Docket No. 50-237 dated June 7, 1990.

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SUMMARY OF ENVIRONMENTAL ASSESSMENT:

The NRC staff has reviewed the potential environmental impact of the proposed conversion of the POL to an FTOL for Dresden Nuclear Power Station, Unit 2. This evaluation considered the previous environmental studies, including the "Final Environmental Statement Relating to Operation of Dresden Nuclear Power Station, Units 2 and 3," dated November 1973, and more recent NRC policy.

Radiological Impacts:

The staff concludes that the exclusion area, the low population zone and the nearest population center distances will likely be unchanged from those described in the November 1973 Final Environmental Statement. Dresden Station is located in a relatively low populated area. The low population zone (LPZ) is approximately the area enclosed by an 8000 meter (5-mile) radius from the plant. The population in the area surrounding the site has grown at a somewhat faster rate than projected in the FES for the year 1980 (10,415 compared to 8,048 projected). Current projections of population within the 50-mile radius of the station are lower than the projection in the FES. The FES population projection within the 50-mile radius for 1980 was 8,070,978 which is 28 percent greater than the 1980 census figures for the area which total 6,301,641. The FES population projection within the 50-mile radius for the year 2000 was 12,900,000. The current population prediction (based on projections from the Northeast Illinois Planning Commission, State of Illinois Bureau of the Budget, and Northeast Indiana Planning Commission) to the year 2010 is 7,366,584 which is less than the FES 50-mile projections for both 1980 and 2000. This small increase in the number of people living within the 5-mile zone, the lower than

projected population increase within the 50-mile radius and the continuing rural nature of the area indicate that the number of people living around and within the vicinity of the plant should pose no problem to the issuance of a FTOL and the proposed extension of the operating license.

The issuance of the FTOL for 40 years from issuance of the construction permit would not significantly affect the probability or consequences of any reactor accident. Station radiological effluents to unrestricted areas during normal operation have been well within Commission regulations regarding as-low-as-is-reasonably-achievable (ALARA) limits, and are indicative of future releases. The proposed license would not increase the annual public risk from reactor operation.

With regard to normal plant operation, the occupational exposures for the Dresden Nuclear Station have closely followed the national average for boiling water reactors. The licensee is striving for dose reductions in accordance with ALARA principles and the staff expects further reductions to be achieved using advanced technologies and equipment that will likely be available.

Accordingly, annual radiological impacts on man, both offsite and onsite, are not more severe than previously estimated in the FES, and our previous cost-benefit conclusions remain valid.

With regard to normal plant operation, the license complies with the NRC guidance and requirements for keeping radiation exposures "as low as is reasonable achievable" (ALARA) for occupational exposures and for radioactivity in effluents. Technical Specifications are in place to ensure continued compliance with these requirements.

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The staff also assessed the radiological impacts from potential severe accidents, the radiological aspects related to site features and the effects of external hazards. The staff did not calculate the risks of severe accidents at Dresden Unit 2. However, the risk from severe accidents at a plant with some design features in common and from a plant nearby have been calculated and may be taken as indications of the general magnitude of risk that exists at Dresden and that these risks are within an acceptable level.

Non-Radiological Impacts:

The staff re-evaluated the non-radiological aspects of operation of the plant and transmission facilities. The effects of cooling system operation, fish impingement, ichthyoplankton entrainment, thermal discharge effects, chemical discharge effects, endangered and threatened species, land use, terrestrial ecology, transmission lines and floodplain management were evaluated. Effluent limitations and water quality monitoring at power plants are imposed by the EPA through the National Pollutant Discharge Elimination System (NPDES) Permit issued for each facility. An NPDES Permit for Dresden Units 2 and 3 was issued by the State of Illinois and the staff's discussions on the environmental assessment include the findings made by the State in its impact review.

Based upon the environmental assessment, the staff concluded that there are no significant radiological or non-radiological impacts associated with the proposed action and that the proposed license amendment will not have a significant effect on the quality of the human environment. Therefore, the Commission has determined, pursuant to 10 CFR 51.31, not to prepare an environmental impact statement for the proposed amendment.

For further details with respect to this action, see (1) the application for amendment dated March 16, 1973, (2) the Final Environmental Statement relating to operation of the Dresden Nuclear Power Station, issued November 1973, and (3) the Environmental Assessment dated June 7, 1990. These documents are available for public inspection at the Commission's Public Document Room, 2120 L Street, N.W., Washington, D.C., 20555 and at the Morris Public Library, 604 Liberty Street, Morris, Illinois 60450.

Dated at Rockville, Maryland, this 7th day of June, 1990.

FOR THE NUCLEAR REGULATORY COMMISSION



Leonard N. Olshan, Acting Director
Project Directorate III-2
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

ENVIRONMENTAL ASSESSMENT
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATING TO THE CONVERSION OF THE
PROVISIONAL OPERATING LICENSE TO A FULL-TERM OPERATING LICENSE
COMMONWEALTH EDISON COMPANY
DRESDEN NUCLEAR POWER STATION, UNIT 2
DOCKET NUMBER 50-237

DATE: June 7, 1990

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1.0 INTRODUCTION

The Dresden Nuclear Power Station, Unit 2 (Dresden 2) is located in Grundy County, Illinois, about 15 miles southwest of Joliet, Illinois, the nearest population center (1980 population - approximately 78,000), where the Des Plaines and Kankakee Rivers meet to form the Illinois River.

The Atomic Energy Commission's* (AEC or the Commission) Directorate of Licensing (the staff) issued a Provisional Operating License to the Commonwealth Edison Company (CECo), the licensee, for Dresden 2 on December 22, 1969. The license allowed operation at power levels up to 2527 MWt. Since that time, Dresden 2 has operated up to that power level.

Pursuant to Section A of revised Appendix D** of Title 10 of the Code of Federal Regulations (10 CFR 50), the licensee submitted to the Director of Regulation, on October 27, 1972, "Environmental Report for Dresden 2," a letter which broadened the scope of the Dresden 3 Environmental Report and its supplements to include Dresden 2. Revised Appendix D further required that the Director of Regulation, or his designee, analyze the report and prepare a detailed statement of environmental considerations. It is within this framework that a Final Environmental Statement (FES) (Ref. 1) related to the operation of Dresden 2 and Dresden 3 was issued by the staff in November 1973.

The proposed action is the conversion of the Provisional Operating License (POL) No. DPR-19, to a Full-Term Operating License (FTOL) effective for 40 years from the issuance of the Construction Permit (January 10, 1966).

The FES was issued in support of this proposed conversion. However, the license conversion process was delayed because of the inception of the Systematic Evaluation Program (SEP). The SEP is a program to review the designs of older operating nuclear plants to reconfirm and document their safety.

*Predecessor of the Nuclear Regulatory Commission (NRC).
**Currently known as 10 CFR Part 51.

In a letter dated November 5, 1982, (Ref. 2), the licensee was requested to review the FES for significant changes to the Dresden Station or the environs that would affect the original conclusions. The staff has reviewed the FES and the licensee's January 10, 1983 submittal (Ref. 3) to determine if an FES supplement is necessary. Some sections of the FES have not been specifically addressed in this Environmental Assessment because they have not been altered.

2.0 HISTORICAL SITES

Several historical and archeological sites in the general vicinity of Dresden were identified in the FES. Only one, the Illinois and Michigan Canal, which is on the other side of the Illinois River from the Dresden Station, was listed in the National Register of Historic Places. The staff found that station operation would not affect these resources.

Present Staff Evaluation

Since the FES was issued, there have been no new properties added to the National Register in the vicinity of the site. The staff has determined that there has been no effect from station operation on the historical and archeological sites discussed in the FES and concludes that the FES findings are still valid.

3.0 ENVIRONMENTAL ASPECTS OF OPERATION OF THE PLANT AND TRANSMISSION FACILITIES (NON-RADIOLOGICAL)

The 1973 FES for Dresden 2 and 3 examined the impact potential during indirect open-cycle cooling operation, while recognizing that closed-cycle cooling was to begin in late 1974. The impacts of closed-cycle cooling were

found to be acceptable. However, included in the FES were several recommendations for environmental studies. Since the publication of the FES and the onset of closed cycle cooling in October 1974, Dresden 2 and 3 have been permitted, by the State of Illinois, to operate using indirect open-cycle cooling during 3.5 months a year. The discussion that follows updates the FES review and compares the FES conclusions on closed-cycle impacts with those now expected during operation using indirect open-cycle cooling for a portion of the year. The impacts reported in the FES are restated and are followed by the present staff evaluation.

Subsequent to issuance of the FES, the U.S. Environmental Protection Agency (EPA) has developed regulations and procedures for implementation of Clean Water Act provisions applicable to aquatic and water quality aspects of nuclear steam electric generating stations. The Clean Water Act procedures apply to and constrain the major impacting features of the NRC-licensed projects. The NRC Atomic Safety and Licensing Appeal Board decided in the Yellow Creek case (ALAB-515; 8 NRC 702, 1978) that the NRC does not have the authority to include any non-radiological license conditions for the protection of aquatic environment, because the Clean Water Act places full responsibility for such matters with the EPA (or those states to which authority has been delegated). Effluent limitations and water quality monitoring at power plants are imposed by the EPA through the National Pollutant Discharge Elimination System (NPDES) Permit issued for each facility. An NPDES Permit for Dresden 2 and 3 was issued by the State of Illinois on December 30, 1976. The discussions that follow reference this Permit and the findings made by the State in its impact review.

3.1 Cooling System Operation

When Dresden 2 began operation in August 1970, it was operated in an open-cycle cooling mode assisted by spray canals. However, with both Units 2 and 3 eventually operating in this mode, standards set by the Illinois Sanitary Water Board could not be met so the licensee elected to construct a cooling lake (Ref. 1). After Dresden 3 began operation in October 1971 and continuing through October 1974, both Units 2 and 3 were operated in an indirect open-cycle cooling mode. In that mode, water withdrawn from the Kankakee and Des Plaines Rivers is circulated through the condensers and discharged into a 2-mile-long spray canal containing floating spray modules. From the spray canal, the water is pumped into a 1275-acre cooling pond. After circulating clockwise through the pond for about 2 1/2 days, the water is discharged via a spillway into another 2-mile-long spray canal and then is discharged into the Illinois River. This mode of cooling was used by both Units 2 and 3 at the time of publication of the FES (November 1973). Beginning in October 1974, both units were operated primarily in a closed-cycle mode, in which condenser cooling water is recirculated to the condensers after passage through the spray canals and cooling pond. The FES recognized that closed-cycle cooling was to be utilized and assessed the environmental impacts accordingly.

On July 9, 1981, the Illinois Pollution Control Board approved a proposal by the licensee to modify the operation of Units 2 and 3 to the indirect open-cycle cooling mode from June 15 through September 30, with operation in the closed-cycle cooling mode at all other times (Refs. 3 and 4). The State's approval was based on an examination of thermal effects on the Illinois River, with apparently no mention of the related intake effects on the Kankakee and Des Plaines Rivers.

3.2 Fish Impingement

The 1973 FES utilized a limited amount of data collected during indirect open-cycle operation in September 1972 and found that about 400 to 1000 fish may be killed by impingement every 24 hours, but that it was impossible to assign an acceptable number to any such loss (Section 5.5.1). In conclusion, the FES stated:

- ° Some fish are impinged on the intake screen. On the basis of the limited data available, significant adverse impact on the fish population of the river as a whole is not expected during closed-cycle operation (Summary and Conclusion 3.c.).

Because of the limited amount of information on which the assessment was based, the FES required that a monitoring program be conducted, as follows:

- ° The Applicant, therefore, shall be required to collect fish monitoring data...and to show that fish killed by impingement at the Dresden traveling screens does not result in an adverse depletion of fish species and numbers in the Illinois and Kankakee Rivers (Section 5.5.1)...[Fish kills were to be evaluated]...as either adverse or insignificant (Section 6.2.1).

Present Staff Evaluation

Fish impingement monitoring was conducted at Dresden during December 1975 to December 1976 (Refs. 5 and 6) as part of the requirements of the NPDES Permit. Briefly, results of the impingement study were:

- (1) A total of 517,535 fish weighing 21,057 lbs. were estimated to have been impinged by Units 1, 2, and 3.
- (2) A total of 94 percent by number and 91 percent by weight of the total were impinged at Units 2 and 3.

- (3) Fishes living in the cooling pond may have contributed to the impingement at Units 2 and 3.
- (4) Gizzard shad, carp, bluegill, fresh water drum, and channel catfish constituted the majority of the species impinged; most impinged fish were young-of-the-year individuals.
- (5) Impingement rates were lowest during spring/summer and highest in late fall/early winter.
- (6) The mean impingement rate during September 1976 for all three units was about 1039 fish per 24 hours; the monthly mean rate for the study period ranged between about 117-4538 fish.
- (7) During June through September of the study period, the river intake flow ranged up to about 2,500 cfs (approximately the once-through cooling flow of all three units), and averaged greater than 1,000 cfs on most days.

At present, Dresden 2 and 3 are operating on the indirect open-cycle cooling mode (maximum intake flow approximately 2230 cfs) from June 15 to September 30, a time of year when fish impingement rates are relatively low. During other times, impingement rates are relatively high, while intake flow is restricted to the recirculating closed-cycle mode (intake flow approximately 156 cfs). The licensee conducted a 6-month short-term study during 1980-81 to determine if fishes residing in the cooling pond contribute to impingement on the traveling screens. According to discussions between NRC staff and the Illinois EPA (IEPA) by telephone on October 13, 1983, the study results indicated most impinged fish were from the cooling pond, with proportionally few from the Kankakee River. The study was conducted during a period when

Dresden operated on the recirculating closed-cycle mode. During indirect open-cycle cooling, the proportion could change, with relatively more impinged fish coming from the river. Several species have become resident and spawn in the cooling pond system: gizzard shad, freshwater drum, buffalo, carp, channel catfish, and bluegill. The primary spawners in the pond are gizzard shad, many of which escape into the Illinois River (with the station effluents) as larvae and juveniles. The State believes that downstream recruitment may be aided by the production and output of fishes from the cooling pond. Losses of fishes at the intakes may be offset (at least partially), therefore, by additions to the river from the pond, according to information given to the staff by Gary Cima, IEPA, in a telephone conversation on October 13, 1983.

The licensee has been conducting biological studies of the river, and impingement and entrainment studies, to support an intake impact demonstration under Section 316(b) of the Clean Water Act. From the information available (Refs. 5 and 6), it appears that the impingement losses are higher than anticipated in the FES. Discussions between the NRC staff and the IEPA in a telephone conversation on October 3, 1983, indicated that the State has not yet finally approved the operation of the river intakes under Section 316(b) of the Clean Water Act. It was expected that the impacts would be re-examined around the end of 1983. The licensee re-petitioned IEPA in the spring of 1984 for extended use of indirect open-cycle cooling. The State examined the request, reissued the NPDES for a 30-day public comment on June 4, 1984, and subsequently denied the extended usage when the final permit was issued on August 14, 1984.

3.3 Ichthyoplankton Entrainment

The 1973 FES for Dresden stated:

- (1) For open cycle operation,...the loss of fish larvae and juveniles to the Illinois River [due to entrainment at the intakes] could contribute to a

diminished fish population (species and numbers) in the Dresden Pool, and perhaps further downstream (Section 5.5.1).

- (2) This major diversion of Kankakee River water could result in a significant loss of the biota of the Kankakee River at its mouth. However, this condition will be substantially reduced when closed-cycle operation begins (Section 5.5.1).

- (3) ...biota from the Kankakee River surviving entrainment in the condenser cooling water will be subjected to further chemical and thermal stress during residence in the lake before discharge to the [Illinois] river. Under the open-cycle mode of operation...a minority of fish larvae will probably survive this trip through the lake....The total number of organisms subjected to stress will be greater under the open-cycle than under the closed-cycle mode of operation (Section 5.5.3).

In summary, the FES found:

Some aquatic organisms entrained in the station's cooling water system will probably be killed due to thermal, chemical and mechanical shock. This loss is not expected to represent a significant fraction of the rivers' biomass or to affect the productivity of adjacent waters (Summary and Conclusion 3.d.).

Present Staff Evaluation

Entrainment monitoring was conducted at Dresden during the period April to August 1976 (Refs. 5 and 6) as part of the requirements of the NPDES permit. Briefly, results of the study were:

(1) Fish Eggs

- ° A total of 107×10^6 fish eggs were estimated to have been entrained by Units 1, 2, and 3; they were not speciated.

- This loss represents 47 percent of the total number of eggs estimated to have been in the Kankakee River drift, and 38 percent of the combined drift in the Kankakee and Des Plaines Rivers.
- A total of 91 percent of the total number of eggs were estimated to have been entrained during June, when cooling water withdrawal was greatest (1913-2656 cfs).
- Relatively lower numbers of eggs were entrained during the other months due to lower egg densities in the intake water and lower rates of water withdrawal (537-1591 cfs).

(2) Fish Larvae

- A total of 77×10^6 fish larvae were estimated to have been entrained by Units 1, 2, and 3.
- This loss represents 32 percent of the total number of larvae estimated to have been in the Kankakee River drift, and 19 percent of the combined drift of the Kankakee and Des Plaines Rivers.
- A total of 63 percent of the total number of larvae were estimated to have been entrained during June, when highest larval densities occurred in the intake water.
- During May, the rate of water withdrawal (1169-1913 cfs) was lower than in June (1913-2656 cfs), but larval entrainment was high because of the high densities of larvae. Of the total larvae present in the Kankakee River drift, an estimated 70 percent were withdrawn into the intakes; most of these were suckers and gizzard shad.
- Gizzard shad, suckers, carp, minnows, yellow perch, sunfishes, and logperch constituted the majority of entrained larval species.

The study conducted during 1976 (Ref. 7) indicated that fish spawning (in the vicinity of the intake canals on the Kankakee River) took place from April through August. Most of the spawning (indicated by the capture of eggs and larvae) occurred during May through July, with the peak activity during latter May through about mid-June. During that period, Dresden Station was operating with relatively high rates of water withdrawal from the river. This resulted in high entrainment estimates in terms of numbers of fish withdrawn (184×10^6 eggs and larvae) and percent of the standing crop of drift withdrawn (32 percent to 47 percent of the Kankakee River drift, and 19 percent to 38 percent of the drift of the combined rivers).

At the present time, Dresden 2 and 3 are operating on the indirect open-cycle cooling mode from June 15 through September 30. This reduces entrainment losses substantially, because the recirculating closed-cycle mode is used during the April through mid-June portions of the spawning season (based on Ref. 7). It appears that the entrainment losses are higher than would be expected if the closed-cycle mode were used throughout the year. If Dresden were to operate for more extended time using the indirect open-cycle cooling, entrainment losses could increase, especially if this mode is used during the April to mid-June portion of the spawning period. Sustained annual losses in the tens or hundreds of million fish eggs and larvae have the potential to impact the fish population of the lower Kankakee River and the Dresden pool of the Illinois River. The losses may be offset (at least partially) by production and output of fishes from the cooling pond, according to information obtained in an October 13, 1983, telephone conversation from Gary Cima, IEPA, to C. R. Hickey, NRC. The 1973 FES conclusions, therefore, appear to remain valid with respect to indirect open-cycle cooling. However, the FES finding of acceptable impacts based on the expectation that Dresden

would be operated in the closed-cycle mode now appear to be invalid. As stated in Section 3.2 above, the State of Illinois has reviewed the permissible period of indirect open-cycle cooling operation and determined that the current June 15 to September 30 period of usage should not be modified. The NRC will rely on the decisions made by the State of Illinois, under authority of the Clean Water Act, for any requirements for intake-related mitigation, should they be necessary.

3.4 Thermal Discharge Effects

The 1973 FES stated:

- ° The addition of heat to the Illinois River from the Dresden cooling lake blowdown is not expected to adversely affect aquatic life except in the immediate vicinity of the outfall. An adequate zone of passage for fish and planktonic organisms in the Illinois River will be required (Summary and Conclusion 3.f).
- ° Cold kill of fish is not expected due to shutdown of Units 2 and 3 during the winter because of the large heat sink in the cooling lake. Should Unit 1 shut down, the discharge temperature drop will be limited by the warm effluent from the cooling lake (Summary and Conclusion 3.e).

Present Staff Evaluation

Thermal discharge effects to the Illinois River have been monitored by the licensee since the issuance of the FES (Refs. 8, 9, and 10). The State of Illinois has examined the operation of Dresden Station, and on June 22, 1979, the Illinois Pollution Control Board found that "...Commonwealth Edison Company has not caused and cannot be reasonably expected to cause significant ecological damage to the Illinois River from the thermal discharge from the Dresden Generating Station" (Ref. 11). In its opinion, the Pollution Control

Board considered station shutdowns, actual plume studies conducted during different seasons and river flows, and biological studies of the river. The Board found that:

- ° Plume sizes ranged from 0 to 24.6 acres, all within the 26-acre limitation imposed by the State.
- ° The plumes covered less than 10 percent of the width of the Illinois River on average, and a maximum zone of passage existed as a result of the tendency of the plumes to occupy the upper layers of the river.
- ° Water quality was somewhat improved due to operation of Dresden.
- ° Impacts were not detected on benthos, plankton, and fishes.
- ° Effects to periphytic algae were localized to the immediate discharge area.

The Illinois Environmental Protection Agency issued NPDES Permit No. IL0002224 for Dresden Station on July 12, 1979. The Permit regulated thermal effluents from Units 1, 2, and 3. The permit expired on June 30, 1981, but remained in effect during the renewal process that was completed with the reissuance of a permit on August 14, 1984. By an Order of the Illinois Pollution Control Board on July 9, 1981, Dresden 2 and 3 were permitted to modify operation and discharge effluents to the river in the indirect open-cycle cooling mode during June 15 through September 30 (Ref. 4). In that Order, the Board found that "...the environmental impact of the proposed alternate standard on the Illinois River is at worst minimal and may, in fact, be beneficial." Discussions between the NRC staff and IEPA revealed that Dresden Station has not had any significant violations of the NPDES Permit thermal limitations and has not had any significant effect on the river

(telephone conversations on October 3, 1983, between C. R. Hickey, NRC, and Robert Schacht and Timothy Kluge, IEPA).

Therefore, the FES conclusions remain valid even though the mode of operation differs from that evaluated. The NRC will rely on the conditions of the NPDES Permit administered by the State of Illinois to ensure that thermal effluents will not create significant environmental impact. The permit issued in 1984 was modified on July 29, 1987. This permit expired on March 1, 1989. The licensee has applied for a renewal of the permit but the IEPA has not to date reissued the permit.

3.5 Chemical Discharge Effects

The 1973 FES stated:

- ° The chemical discharges to the river, including chlorine, will be in very low concentrations and pose no threat to aquatic life (Summary and Conclusion 3.h).
- ° At Dresden, no residual free chlorine is expected to be present in the effluent to the river from Units 2 and 3 because of reactions with compounds in the water during passage through the lake (Section 5.5.5).

Present Staff Evaluation

The State of Illinois NPDES Permit for Dresden Station regulates the discharge of chemicals from all three units. Units 2 and 3 have effluent limitations on pH, total dissolved solids, total suspended solids, and oil and grease. No limitations or monitoring requirements are placed on discharges of chlorine. Discussions between the NRC staff and IEPA by telephone on October 18, 1983, indicated that the cooling pond acts as a treatment system that reduces residual chlorine to low levels so that effluents discharged to the Illinois River are not harmful to aquatic life. The spawning and survival of several fish species now resident within the pond system suggests that chlorine and other chemicals in the station effluents are in concentrations that are not

harmful prior to discharge. Thus, the conclusions of the FES remain valid. The NRC will rely on the conditions of the NPDES Permit to ensure that chemical usage will not create significant environmental impact.

3.6 Endangered and Threatened Species

Aquatic

By letters dated August 31, 1983, and August 28, 1989, the NRC notified the U.S. Fish and Wildlife Service (FWS) Field Office in Rock Island, Illinois, of the proposed full-term operating license action (Refs. 12 and 25). The NRC asked to be notified of any Federally listed or proposed endangered or threatened species in the vicinity of Dresden Station. The FWS response of September 15, 1983, and September 26, 1989, did not identify any Federally listed or proposed endangered or threatened aquatic species in the project area (Refs. 13 and 26).

The Illinois Department of Conservation maintains a listing of State-recognized threatened and endangered species. One fish listed as threatened, the blacknose shiner, Notropis heterolepis, occurs in the Kankakee River system upstream of Dresden; it is not known in the lower Kankakee River in Grundy County in the vicinity of Dresden Station (Ref. 14). The NRC staff also contacted the IEPA by telephone on October 3, 1983, to check on threatened and endangered aquatic species, listed by the State, that might be in the Dresden area. IEPA informed the NRC that no State-recognized threatened or endangered aquatic species are found in the rivers near Dresden.

Terrestrial

As discussed above, the staff asked to be notified (Refs. 12 and 25) of any Federally listed or proposed endangered or threatened plant or animal species in the vicinity of Dresden Station. The FWS responded on September 15, 1983 and September 26, 1989 (Refs. 13 and 26) notifying the NRC that the bald eagle, Haliaeetus leucocephalus, is an occasional winter visitor to the

vicinity of the Dresden Station. The FWS also stated no other Federally listed or proposed threatened or endangered species under its jurisdiction is known to exist in the project impact area.

The Illinois Department of Conservation (IDOC) informed NRC staff (Ref. 15) that the following birds listed as endangered by the State of Illinois are reported as nesting near the Dresden Station: northern harrier, Circus cyaneus; upland sandpiper, Bartramia longicauda; short-eared owl, Asio flammeus, American bittern, Botaurus lentiginosus; and the black-crowned night heron, Nycticorax nycticorax. The only bird listed by the State as threatened that is known to nest in the area of the Dresden Station is Henslow's sparrow, Ammodramus henslowii. In general, the populations of these grassland birds have been decreasing, probably as the result of habitat loss of a statewide basis and the loss of grassland habitat to successional changes (Ref. 15).

The only plant on the State-endangered list within two miles of the Dresden Station is the globe mallow, Spaeralcea angusta. This represents the only known population within the State of Illinois; its current status is unknown (Ref. 15). The following plants are on the State's threatened list: the narrow-leaved sundew, Drosera intermedia, which is located approximately two miles southwest of the Dresden site and its status is unknown (Ref. 15); the lakeside daisy, Hymenoxys acaulis var. glabra is located in Will and Tazewell counties (Ref. 26) and the eastern prairie fringed orchid, Platanthera leucophaea is located in Kane and Grundy counties (Ref. 26).

Present Staff Evaluation

There is no evidence that the operation of the Dresden Station has any detrimental impacts on any Federal or State endangered or threatened terrestrial species. It appears that the loss of prairie habitat is the main cause of many bird species being endangered or threatened in Illinois.

3.7 Land Use

The land area occupied by the Dresden nuclear power plant has not changed since the FES was issued; it remains at 2526 acres. The transmission lines associated with Dresden 2 and 3 also have not changed since the FES was issued. They traverse approximately four miles, covering some 93 acres, but with only 0.6 acre occupied by tower bases.

FES Sections 5.1.2 and 5.5.3 stated that the frequency, intensity, and inland penetration of lake- canal-induced fogs are items of concern because of: (1) possible effects of increased humidity and dew on plant disease; (2) the formation of ice on plants, power lines, etc. in sub-freezing temperature; (3) reduced visibility on the bridge crossing the cooling pond which is part of County Line Road; and (4) operation of the spray system, which will result in deposition of salt on vegetation.

Present Staff Evaluation

There have been no observations or reports of any suspected increase in plant diseases from either tenants or neighboring property owners (Ref. 16, response to NRC staff question 3). The few woody plants growing in the area where rime ice forms have not been detrimentally impacted, nor have the power lines (Ref. 16, response to NRC staff question 1). A 1500-foot cover has been built over the County Line Road Bridge, which crosses the cooling pond. This cover allows safe use of the bridge by the local residents during heavy fog (Ref. 16, response to NRC staff question 5). There have been no monitoring programs at Dresden Station to detect any detrimental effects from drift spray on vegetation. There have been no reports of any problems on either Commonwealth Edison property or on any neighboring property (Ref. 16, response to NRC staff question 4).

3.8 Terrestrial Ecology

No terrestrial ecology surveys were performed at the Dresden site. FES Section 4.3 stated that the area most affected by construction was primarily used for agricultural activities. The FES also stated that the staff found no evidence to indicate that any of the required construction activities had either severe or long-term detrimental effects upon the area.

The staff was more concerned with the possible effect of the operation of Dresden 2 and 3 on the Goose Lake Prairie Nature Preserve. The closest boundary of the Goose Lake preserve (now officially a state park) is about a mile southwest of the station's turbine building (FES Section 2.7.5). The Goose Lake preserve was dedicated to preserve one of the largest remaining grassland-marsh complexes in the State of Illinois (Ref. 18).

Present Staff Evaluation

The staff has examined natural color aerial photographs of the Dresden site taken by an NRC contractor in 1972, 1978, and 1979. There are no indications of habitat changes or of severe soil erosion over the 7-year period.

Large areas of the site are maintained as grassland by mowing. Woody plants along the dikes are cut by hand. Some areas, especially along the river, have been allowed to remain in a natural state.

The Goose Lake preserve's flora and avian fauna have been studied since 1970 by Professor Dale E. Birkenholz (Refs. 17 and 18).

The 10 years of study of Birkenholz shows that 17 of the total nesting species have declined in number and six have increased, and the populations of the remaining species have remained the same. These changes in nesting species can be attributed to a combination of natural succession of the plant communities and management of habitats by the preserve's personnel. If any

changes in species population were the result of the operation of the Dresden Station, they were too small to be detected.

Birkenholz performed only qualitative studies of the flora of the Goose Lake preserve. However, a quantitative study of the flora was performed along a moisture gradient in 1977 by Nelson and Anderson (Ref. 19). Their study plots are permanently marked so that re-sampling over time can be readily accomplished.

The FES (page 11-7) expressed concern that "although no adverse effects of the Station on the Preserve are expected during normal operation, the possibility of an abnormal occurrence cannot be discounted." If such an event occurred, the permanently marked study plots of Nelson and Anderson could be resampled, the results compared to the original, and any observed changes evaluated, keeping in mind the management of the land in the interim (e.g., the number and time of year the area was burned).

3.9 Transmission Lines

FES Section 5.1.3 stated concerns regarding the effects of transmission line operation on the railroad's signal systems, communication systems, and rolling stock. Concern also was expressed that transmission line operation might induce voltages in inadequately grounded railroad cars, and one incident had occurred in which a trainman was knocked off a standing car by the induced voltage and resulting electrical shock. There was additional concern that the induced voltages might also cause an increase in axle journal bearing failure.

FES Section 5.5.4 stated that detrimental impacts to the environment could occur as a result of herbicide application. Eight guidelines were presented, with the eighth stating that as soon as the Administrator of the Federal EPA issued standards for herbicide applicators, all applications must be done by an individual meeting these standards or under his immediate supervision.

Present Staff Evaluation

The licensee reports (Ref. 16, response to NRC staff question 2) that no problems have been identified in the operation of the railroad's signal and communication systems since the lines were energized. The staff has no further concerns relative to this issue. The investigation of induced voltages on inadequately grounded railroad cars was terminated when an upgrounded railroad car could not be found and the incident could not be re-enacted (Ref. 16, response to NRC staff question 2). Investigations and research were never carried out on axle journal bearing failure by either the railroad industry or by the electric utility industry because such failure appeared to be unlikely. Because there have been no further incidents of either induced shock or journal bearing failure since the transmission lines were energized, the staff believes that there is no further concern relating to these issues (Ref. 16, response to NRC staff question 2).

All herbicides used in the vegetation control program along transmission line corridors will be transported, handled, and applied in accordance with restrictions stated in the registered container labels (Ref. 16, response to NRC staff question 7).

3.10 Floodplain Management

The Dresden Station is located on the left bank of the Illinois River, where the Des Plaines and Kankakee Rivers join to form the Illinois. The Dresden Island Lock and Dam is located about a mile downstream of the site. For flows up to about 350,000 cfs, river stages are affected by the operation of the gate at the dam.

This plant was constructed and in operation prior to the issuance of Executive Order 1988, Flood Plain Management (May 24, 1977). The language in this Order suggests that the intended application is for proposed floodplain

actions that post-date the Order; therefore, the Order would not be relevant to the Dresden FTOL unless there had been changes involving the floodplain.

Although there have not been modifications on the Illinois or Kankakee River floodplains, the relationship of the Dresden station to those floodplains has been determined. Because the project was completed before the issuance of the floodplain management order, the effect of flood stage elevation changes on the existing floodplain was not precisely determined.

The one percent chance per year (100-year return period) flood on the Illinois River is estimated to have a discharge of about 100,000 cfs. The river stage for this flow near the site is between elevations 507 and 513 feet msl, depending on gate openings at the Dresden Island Lock and Dam. The plant was constructed on the floodplain on fill, which raised the site elevation to about 517 feet msl. Thus the plant area does not obstruct a portion of the preconstruction 100-year floodplain. The influence of the site fill on the 100 year flood state is expected to be less than the effect of operation of the Dresden Island Lock and Dam. Additionally, the plant can safely shutdown, using emergency procedures, during floods much more severe than the one percent chance flood.

The Dresden Cooling Lake is located about a mile south of the plant along the left bank of the Kankakee River. The top of the cooling lake dike is at elevation 527 feet msl. The Kankakee River 100-year discharge is about 60,000 cfs and would have a flood stage in the vicinity of the cooling lake of about 528 feet msl. Thus, the cooling lake is in the 100-year floodplain.

3.11 Conclusion

The non-radiological impacts discussed in the FES were quite minor. The changes since the FES, which are discussed above, also have a minor impact.

We therefore conclude that the non-radiological impacts associated with the conversion of this license to a FTOL are acceptable.

4.0 ENVIRONMENTAL EFFECTS OF ACCIDENTS

The staff has considered potential radiological impacts for the general public in residence in the vicinity of the Dresden Nuclear Power Station. These impacts include potential accidents and normal radiological releases. In addition, the staff has considered the impacts of external hazards of Dresden. The above impacts are summarized in Sections 4.1.1 through 4.1.3 herein.

4.1 Radiological Impacts From Potential Severe Accidents

When the FES for Dresden 2 was published in November 1973, the risks from severe accidents (so-called Class 9 accidents) that involve both core damage or melt and containment failure were not considered in the environmental statements. However, a new policy for the NRC and the industry, issued as "Nuclear Power Plant Accident Considerations Under the National Environmental Policy Act of 1969," 48 FR 40101, on June 13, 1980, provided for the consideration of severe accidents in environmental statements. For each subsequent DES or FES for which no plant-specific Probabilistic Risk Assessment (PRA) had been completed, the staff calculated the risks from severe accidents using methodology developed in the Reactor Safety Study (Ref. 20). Measures of risk included early fatalities, latent cancer fatalities, total person-rem of exposure, and costs (including those of offsite mitigation measures). For the risk calculations, the staff used estimates of releases and their associated probabilities that were either type specific (for boiling water reactors or pressurized water reactors) or plant specific, combined with site-specific data on population distribution, meteorology, emergency response, and economic factors.

For this evaluation, the staff did not do a site-specific calculation of the risks from severe accidents as described above, because the Commission's policy does not require that this be done for plants for which the FES had been published before the policy statement was issued. However, in the following section, the matter of the site itself with respect to severe accidents is addressed. Further, the staff has evaluated the safety of the plant via the NRC Systematic Evaluation Program (SEP). One product of this program is the "Integrated Plant Safety Assessment," NUREG-0823 (Ref. 21), which includes the results of the assessment of design-basis accidents and the results of a PRA. The PRA was done to determine which of the changes suggested by the SEP would have the most impact on risk, with the emphasis being on the risk from core-damaging accidents. Not all of the precursors to severe accidents were studied, however, because assessment of severe accident risk was not the primary purpose of the SEP.

One can gain a perspective on the health impact from severe accidents at Dresden 2 from results of recent calculations, using the methodology described above, for other plants or sites that have characteristics in common with Dresden 2. For instance, the staff has estimated the risks from severe accidents at Clinton 1 (Ref. 22). Clinton 1, is in central Illinois, and, like Dresden 2, is a boiling water reactor; it has a 20 percent higher power level than Dresden 2 (the quantity of radionuclides in a reactor is roughly proportional to the power level). For Clinton 1, the staff calculated the average values of environmental risks due to accidents per reactor-year to be: 320 person-rems total population exposure, 0.000009 early fatality, and 0.019 total latent cancer fatality. Preliminary calculations for Braidwood, which is just 10 miles south of Dresden 2, but which is a pressurized water reactor, show similar risks, except for the risk of early fatality; that risk is 0.001 fatality. The risk of early fatality at Dresden 2 is not likely to greatly exceed that of Braidwood, and may be as low or lower than that of Clinton 1.

The risks discussed above are those calculated by postulating several accidents that have severe consequences but low probabilities. However, there is a great deal of uncertainty in the calculations. The staff estimates that the total uncertainty in the risk calculations could be larger than a factor of 10, but smaller than a factor of 100. An additional perspective on the risk from severe accidents can be gained from discussion of the only accident in a U.S. commercial nuclear power reactor that involved melting or severe degradation of reactor fuel, the accident at Three Mile Island 2 (TMI-2) on March 28, 1979. It has been estimated that in addition to the release of several million curies of xenon (mostly xenon-133), approximately 15 curies of radioiodine were also released to the environment near TMI-2. This amount is a minute fraction of the total radioiodine in the reactor when the accident occurred, and no other radioactive fission products were released in appreciable quantity. Two investigative groups estimated that the maximum cumulative offsite radiation dose to an individual was less than 0.1 rem (Refs. 23 and 24). Such a dose level is well below that generally considered required for the occurrence of an early fatality. Various investigators estimated that total population exposure to range from about 1000 to 5000 person-rem. This exposure could produce between none and one additional fatal cancer over the lifetime of the exposed population. The same population receives each year from natural background radiation about 240,000 person-rem, and approximately a half-million cancers are expected to develop in this group over its lifetime (Refs. 23 and 24), primarily from causes other than radiation. Trace quantities (barely above the limit of detectability) of radioiodine were found in a few samples of milk produced in the area. No other food or water supplies were affected.

Although the staff did not calculate the risks of severe accidents at Dresden 2, risks from severe accidents at a plant with some design features in

common (Clinton) and from a plant with a nearby site (Braidwood) have been calculated, and may be taken as indications of the general magnitude of risks that exist at Dresden 2.

4.2 Radiological Aspects Related to Site Features

The NRC reactor site criteria, 10 CFR 100, require that the site for every power reactor have certain characteristics that tend to reduce the risk and potential impact of accidents. The FES (Ref. 1) evaluated the Dresden site. The discussion that follows briefly describes the Dresden 2 site characteristics and how they meet these requirements. The site has an exclusion area, as required by 10 CFR 100, which is located within the site boundary and is a minimum of 2624 feet from the midpoint on the center line of Unit 2 and Unit 3. There are no residents within the exclusion area. The licensee owns all surface and mineral rights in the exclusion area, and has the authority, required by 10 CFR 100, to determine all activities in this area. No public roads or railroads traverse the exclusion area. The Des Plaines and the Kankakee Rivers, including the sections that are within the exclusion area, are used for commercial barge traffic as well as for recreational activities such as boating and fishing. In the event of an emergency, the licensee has made arrangements with the U.S. Coast Guard to control access to and activities on these rivers within the exclusion area.

Beyond and surrounding the exclusion area is a low population zone (LPZ), also required by 10 CFR 100. The LPZ for the Dresden 2 site is a circular area with a 4.97-mile radius. Within this zone, the licensee must ensure that there is a reasonable probability that appropriate protective measures could be taken on behalf of the residents in the event of a serious accident.

In case of a radiological emergency, the licensee has made arrangements to carry out protective actions, including evacuation of personnel in the vicinity of the nuclear plant. The licensee has indicated that approximately 11,000 persons lived within a 5-mile radius in 1980.

10 CFR 100 also requires that the distance from the reactor to the nearest boundary of a densely populated area containing more than about 25,000 residents be at least one and one-third times the difference from the reactor to the outer boundary of the LPZ. Joliet, Illinois, with a 1980 population of 77,956, located 15 miles northeast of the site, is the nearest population center. This population center is at least one and one-third times the LPZ distance from the site.

Current projections of population within the 50-mile radius of the station are lower than the projection in the FES. The FES population projection within the 50-mile radius for 1980 was 8,070,978 which is a 28 percent greater than the 1980 census figures in the area which total 6,301,641. The FES population projection within the 50-mile radius for the year 2000 was 12,900,000. A current population prediction (based on projections from the Northeast Illinois Planning Commission, State of Illinois Bureau of the Budget and the Northwest Indiana Planning Commission) to the year 2010 is 7,366,584 which is less than the FES 50-mile projection for both 1980 and 2000. The population growth within the 50-mile radius has largely been in the suburban areas of Cook, Lake, DuPage and Will counties. There are no expected changes in site boundary, LPZ, or population center distances.

The (LPZ) is approximately the area enclosed by an 800 meter (5-mile) radius from the plant. The population in the area surrounding the site has grown at a somewhat faster rate than projected by the FES for the year 1980 (10,415 compared to 8,048 projected). However, this small increase in the number of people living within the 5-mile LPZ around the plant and the continuing rural nature of the area indicate that the 10 CFR 100 limits will not be exceeded.

4.3 External Hazards

The safety review of the Dresden 2 site has also included a review of potential external hazards activities off the site that might adversely affect the operation of the nuclear plant and cause an accident. This review encompassed nearby industrial facilities, pipelines, and road, rail, and river transportation routes that might create explosive, fire, missile, or toxic gas hazards. The risk to the Dresden site from such hazards has been found to be negligible. A more detailed discussion of the compliance with the Commission's siting criteria and the consideration of external hazards is in the Dresden 2 SER.

5.0 IMPLICATIONS OF THE PROJECT

5.1 The Requirement for Power

When the FES was published in 1973, Dresden had been operating for more than three years. The staff concluded in the FES that the continued availability of generating capacity from Dresden 2 was needed to meet the public demand for power and to ensure adequate "system reliability with a sufficient reserve margin."

Present Staff Evaluation

Issues related to need for power have been eliminated from consideration in ongoing and future operating license reviews for nuclear power plants unless a showing of "special circumstances" is made under 10 CFR 2.758 or the Commission; otherwise, requires such issues to be considered (see Commission rulemaking in 47 FR 12940, March 26, 1982).

5.2 Social and Economic Implications

The effects of the station and its employees on the local public and economic infrastructure were discussed in the FES. The staff concluded that adverse effects would be minimal and would be more than offset by increased tax revenues and payroll.

Present Staff Evaluation

The conclusions presented in the FES remain valid. Property tax payments have generally kept pace with rising costs of public services. Although the present number of employees at the station is approximately 930, rather than the 150 reported in the FES, these employees and their families are already integrated into the regional infrastructure. The annual payroll has risen from the estimated \$1.5 million to approximately \$37 million dollars in 1989.

6.0 ALTERNATIVES TO THE PROJECT

The FES identified and discussed two alternatives to the then-operating Dresden 2: abandonment and conversion to fossil fuels. The staff also identified and discussed two alternative plant designs: use of cooling towers to dissipate waste heat and use of mechanical condenser cleaning techniques. The staff concluded that because the environmental impacts associated with construction, operation, and the transmission line right of way had already been incurred, abandonment was unreasonable in light of the additional environmental impacts that would result from the construction of replacement facilities. The additional impacts were projected to be at best equivalent to those that had already been incurred.

Similarly, the staff concluded that the alternative of converting Dresden 2 to the use of fossil fuel offered no appreciable improvement in environmental benefits and would increase costs over the alternative of continued operation of the Dresden 2 as a nuclear-fueled unit.

The staff further concluded that the alternatives of adding cooling towers to the proposed closed-cycle cooling system and using a mechanical cleaning method for the condenser were unwarranted.

Present Staff Evaluation

10 CFR 51.95 states that a supplement to a final environmental impact statement on the operation of a nuclear power plant need not include

discussions of need for power or alternative energy sources or alternative sites.

7.0 BENEFIT-COST ANALYSIS

7.1 Power Benefits

In the FES, the staff provided a benefit-cost analysis that concluded, among other things, that:

- (1) The continued operation of Dresden 2 will produce electrical power more economically than any other method of power generation currently available to the applicant.
- (2) The principal direct benefit of approximately 5.7 billion KWhr (80 percent capacity factor) of electric power per year to meet the power needs of the area far exceeds the expected environmental costs.

Present Staff Evaluation

Although the staff prefers a more conservative (low) estimate of average annual capacity factor (on the order of 55 percent), the staff continues to find considerable support for the conclusions drawn in 1973 FES, particularly those related to the economic advantage that operating nuclear facilities hold over conventional fossil plants.

7.2 Social Benefits

The FES indicated that Dresden 2 and 3 would contribute \$1.3 million annually in local property taxes and employ about 150 persons for operation of the station. This employment was projected to add about \$1.5 million per year to the local economy. The licensee has indicated that property taxes paid to local taxing bodies rose to \$5.7 million for 1988 taxes paid in 1989 and estimates that approximately \$6.0 million will be paid to local taxing bodies for 1989 taxes. The number of employees at the station has risen to 930, with an annual payroll of \$37 million (1989 dollars). The employees and their families are completely integrated into the regional infrastructure. The

contract security force also furnishes employment opportunities for local residents. Finally, a benefit not considered in the FES is the coordination and training of local governments, police, and firemen in emergency planning and evacuation procedures.

Present Staff Evaluation

The updated values for taxes and employment represent increased regional benefits, although such benefits do not enter into the staff's benefit-cost considerations. Benefits derived from increased environmental knowledge and from the training of emergency response personnel are societal benefits that would be included in the staff's overall benefit-cost analysis.

8.0 AGENCIES AND PERSONS CONSULTED

The Commission's staff has reviewed the licensee's request and consulted with the State of Illinois, Department of Nuclear Safety which has no objection regarding the proposed issuance of a FTOL for 40 years from issuance of the construction permit.

9.0 BASIS AND CONCLUSION FOR NOT PREPARING AN FES SUPPLEMENT

The staff has evaluated the environmental effects of the continued operation of the Dresden Station and the granting of a FTOL for 40 years from issuance of the construction permit and re-examined the impacts initially presented in the 1973 FES. This review has not led to the identification of any significant new environmental impacts or any significant changes in those identified previously in the FES with respect to the proposed FTOL for Dresden 2. Accordingly, the NRC has determined, based on this assessment, that there are no new impacts that differ significantly from those evaluated in the FES, there are no substantial changes in the proposed actions relevant to environmental concerns, and there are no significant new circumstances or information relevant to environmental concerns bearing on the proposed action or its impact. Therefore, the staff has determined that (1) the issuance of a

supplement to the FES is not required under the National Environmental Policy Act (NEPA), and (2) the conclusion on page iv, paragraph 7 of the FES, for conversion of the Dresden 2 POL to an FTOL is still valid, with the exception that the Technical Specifications called for are now included in Appendix I to 10 CFR 50 and the State Pollutant Discharge Elimination System program.

10.0 REFERENCES

1. U.S. Atomic Energy Commission, "Final Environmental Statement Related to the Operation of Dresden Nuclear Power Station Units 2 and 3," November 1973.
2. U.S. Nuclear Regulatory Commission (D. M. Crutchfield) letter to Commonwealth Edison Co. (L. Del George), Subject: Review of FES for Significant Changes, dated November 5, 1982.
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