Docket file

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

October 24, 1990

Docket No. 50-255

Mr. Gerald B. Slade
Plant General Manager
Palisades Plant
27780 Blue Star Memorial Highway
Covert, Michigan 49043

Dear Mr. Slade:

SUBJECT: NOTICE OF ISSUANCE OF ENVIRONMENTAL ASSESSMENT - PALISADES LICENSE CONVERSION (TAC 11218)

In preparation for the Atomic Safety and Licensing Board (ASLB) hearing on the conversion of the Provisional Operating License (POL) No. DPR-20 for the Palisades Plant to a Full-Term Operating License (FTOL), the NRC staff performed an assessment of the existing Final Environmental Statement (FES) dated June 1972, and Final Addendum dated February 1978. In a letter dated November 5, 1982, Consumers Power Company was requested to review the FES and Final Addendum to determine if there had been any significant changes to the facility or the environs that would affect the conclusions reached in these documents. CPCo responded to this request by letter dated February 2, 1983.

The staff has evaluated the environmental effects of the continued operation of the Palisades Plant and re-examined the impacts presented in the FES and Addendum. This review, which is documented in the enclosed Environmental Assessment, has not led to the identification of any significant new environmental impacts or any significant changes from those identified previously with respect to the proposed FTOL for Palisades. It should be noted that the Technical Specifications called for on page iii of the Final Addendum are now included in Appendix I to 10 CFR Part 50 and the State Pollution Discharge Elimination System (NPDES) program.

The NRC staff has determined, based on this additional evaluation, that (1) there are no new impacts that differ significantly from those evaluated in the FES and Final Addendum, there are no substantial changes in the proposed actions relevant to environmental concerns and there are no significant new circumstances of information relevant to environmental concerns bearing on the proposed action or its impact and, thus, issuance of a supplement to the FES is not required under the National Environmental Policy Act (NEPA); and (2) the conclusions stated in the Final Addendum are still valid.

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A Notice of Issuance of Environmental Assessment and Finding of No Significant Impact, which is being forwarded to the Office of the Federal Register for publication, is also enclosed.

Sincerely,

/s/

Armando Masciantonio, Project Manager
Project Directorate III-1
Division of Reactor Projects - III,
IV, V & Special Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. Environmental Assessment
2. Federal Register Notice

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PALISADES ENVIR. EVAL. 11218

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Sincerely,

A.S. Masciantonio

Armando Masciantonio, Project Manager
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IV, V & Special Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. Environmental Assessment
2. Federal Register Notice

cc w/enclosures:
See next page

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Enclosure 1

ENVIRONMENTAL ASSESSMENT

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO THE CONVERSION OF THE

PROVISIONAL OPERATING LICENSE TO A FULL-TERM OPERATING LICENSE

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

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DATE: October 22, 1990

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1.0 INTRODUCTION

The Palisades Nuclear Generating Plant, (Palisades Plant) is located on a 487-acre site on the eastern shore of Lake Michigan in a semi-rural area in Covert Township, Van Buren County, Michigan. The site is approximately 4-1/2 miles south of the southern city limits of South Haven and about 16 miles north of Benton Harbor and St. Joseph.

The Atomic Energy Commission* (AEC or the Commission), Directorate of Licensing (the staff) issued Interim Provisional Operating License, DPR-20, to Consumers Power Company (CPCo), the licensee, on March 24, 1971.

The staff's basic evaluation is presented in the Final Environmental Statement (FES) Related to Operation of Palisades Nuclear Generating Plant issued in June 1972. A Final Addendum to the FES (NUREG-0343) was issued in February 1978.

The proposed action is the conversion of the Provisional Operating License (POL) Number DPR-20, to a Full-Term Operating License (FTOL). The final addendum to the FES was issued in support of this proposed action. However, the license conversion process was delayed because of the inception of the Systematic Evaluation Program (SEP). The purpose of the SEP was to review the design of selected older operating nuclear plants to reconfirm and document their safety.

The 1978 Final Addendum to the FES updated the staff evaluation on plant design and impact potential and concluded that the action called for under NEPA and 10 CFR Part 51 is the issuance of a full-term operating license

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*Predecessor to the Nuclear Regulatory Commission (NRC)

for the Palisades Plant subject to four license conditions for the protection of the environment. It considered the conversion from once-through cooling to closed-cycle cooling using mechanical draft cooling towers, and the associated impacts related to changes in intake and discharge flows and chemical effluents, as well as cooling tower effects on terrestrial resources, and transmission line maintenance. The bases for the staff's conclusions are detailed in the final addendum to the FES (NUREG-0343). The discussion that follows provides an update to the 1978 Final Addendum on plant design and operation, along with the present staff evaluation of impacts.

2.0 HISTORICAL SITES

The historic significance of the Palisades Plant Site has been addressed in the FES, dated June 1972. No landmark in the vicinity of the site was listed in the National Register of Historic Places. The Department of the Interior also commented that the existing plant should not directly affect any existing or proposed unit of the National Park System nor any site eligible for registration as a national historic, natural, or environmental education landmark.

Present Staff Evaluation

The staff has determined that there has been no effect from station operation and concluded that the FES findings are still valid.

3.0 ENVIRONMENTAL ASPECTS OF OPERATION OF THE PLANT AND TRANSMISSION FACILITIES

The U.S. Environmental Protection Agency (EPA) has developed regulations and procedures for implementation of the Clean Water Act provisions applicable to aquatic and water quality aspects of the 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 decision in the Yellow Creek Case (ALAB-515; 8 NRC 702, 1978) established that the Clean Water Act places full responsibility for protection of the aquatic environment with the EPA (or those states to which authority has been delegated). Effluent limitations and water quality monitoring at nuclear power plants, therefore, are no longer determined based on NRC's review but are imposed by EPA or the designated state via the National Pollutant Discharge Elimination System (NPDES) Permit issued for each facility.

The State of Michigan Department of Natural Resources issued NPDES Permit No. MI0001457 for Palisades Nuclear Generating Plant on August 13, 1979. The permit expired on September 30, 1980, but remained in effect during the State renewal process which began when the licensee submitted a permit renewal application to the State on March 31, 1980. [1/] A new permit (also No. MI0001457) was issued on May 31, 1985, for a term not to exceed five years. The permit will be reissued during 1990 for a further five-year period. The discussion below references this permit and the findings made by the State in its impact review. A copy of the permit detailing the parameters monitored and the reporting requirements was forwarded to the NRC by letter dated August 1, 1985.

3.1 Intake Effects

The 1978 Final Addendum to the FES assessed the effects of water withdrawal on the biota of Lake Michigan. It compared the effects of entrainment and impingement using closed-cycle cooling (that commenced in 1974) with the effects of the once-through cooling system utilized prior to 1974 (Addendum Section 5.3.1.2). In conclusion, the Addendum stated:

> "The modified cooling system, utilizing mechanical draft cooling towers, significantly reduces amount of lake water drawn into and discharged from the plant; thus, impingement, entrainment, and

> thermal effects on aquatic biota are reduced. No significant adverse effects are expected."
> (Summary and Conclusion 3.a)

At the time of Addendum publication, the staff concurred with the operational impingement monitoring plan for Palisades (Section G.2), while recognizing that the licensee had requested deletion of the monitoring requirements in the station's Technical Specifications (Section 10.1.6.2). The staff review of the proposed change was not completed in time for inclusion in the Addendum. Subsequently, the staff completed its Environmental Impact Appraisal of impingement impact [2/] and found that impingement was "...not predicted to create a significant adverse effect on species in the site vicinity."

Present Staff Evaluation

Studies of the combined intake losses at all power plants on Lake Michigan show that impingement and entrainment of Palisades constitute an extremely small proportion of the lake-wide total for the major fish species of concern. [3/] Impingement losses were estimated to be two to four orders of magnitude lower than other lake plants. Entrainment losses of fish eggs and larvae at Palisades were one to seven orders of magnitude lower than at other Lake Michigan power plants. The conversion from once-through cooling to closed-cycle cooling and the resultant reduction in intake volume and velocity largely are responsible for minimizing intake losses of lake biota. Previous discussion between NRC staff and the Michigan DNR revealed that the reduction in intake-related mortalities could have been as much as 95%. [4/] The licensee's requirements under Section 316(b) of the Clean Water Act have been met. [5/]

The NRC staff concludes that the findings of the 1978 Final Addendum remain valid. The NRC will rely on the State of Michigan and its authority under the Clean Water Act to ensure that cooling water withdrawal will not create significant environmental impact.

3.2 Discharge Effects

The 1978 Final Addendum to the FES assessed the effects of effluent discharge on the biota of Lake Michigan. It specifically considered the discharge of corrosion inhibiting chemicals and chlorine biocide. These are updated below. Subsequent to publication of the Final Addendum, the licensee modified the discharge of cooling tower blowdown effluent and thermal effluents to the lake. These are updated below. NPDES Permit-related noncompliances caused by oil and grease discharges and the licensee's corrective action are discussed.

3.2.1 Corrosion Inhibiting Chemicals

The 1978 Final Addendum stated that the licensee would not be using corrosion inhibiting chemicals in the recirculating cooling water system (Section 3.2), thus any impact potential from discharges to the lake were eliminated (Section 5.3.1.1). The Addendum recommended, however, that if operating experience indicated that such chemical treatment were necessary, the licensee should provide to the staff the details and the expected environmental impacts [Summary and Conclusions 6.a(4) and Section 3.2].

Present Staff Evaluation

The State of Michigan NPDES Permit regulates the discharge of chemicals from Palisades to the lake. Any proposed usage of such chemicals would require Permit modification. Section 3.2 of the NRC Environmental Protection Plan (EPP) for Palisades (issued on March 22, 1981) requires that NRC be notified by the licensee of any changes or additions to the NPDES Permit. NRC will rely on the conditions imposed by the NPDES Permit to ensure that chemical usage will not create significant environmental impact.

3.2.2 Oil and Grease Discharge

The EPP for Palisades requires violations of the NPDES Permit to be reported to NRC in the Annual Environmental Operating Report. The reports for 1981 [7/] and 1982 [8/] reported many instances of NPDES related noncompliances for oil and grease in the turbine sump oil separator waste water discharge. The 1978 Final Addendum did not address specifically the oil and grease problem, but did review, generally, water quality effects and the issuance of an NPDES Permit (Section 5.3.1.3). The NPDES Permit limit for oil and grease from that source is 15 mg/l (daily average) and 20 mg/l (daily maximum). During 1981, the maxima of the reported non-compliances ranges from 21.7 mg/l to 468.9 mg/l; and in 1982 they ranged from 23 mg/l to 188.1 mg/l. It was concluded in the 1981 report, that the oily waste water treatment system was undersized for the load placed on it. During 1982, a program of increased preventive maintenance reduced the frequency of equipment failure and the frequency of noncompliances. Discussions between NRC and the State of Michigan revealed that the State does not consider these noncompliances to be serious; however, a new separator has been installed to correct the problem. [9/]

Present Staff Evaluation

The licensee confirmed that installation was completed during early 1984. NRC will rely on conditions imposed by the NPDES Permit to ensure that oil and grease discharge will not create significant environmental impacts.

3.2.3 Thermal Effluents

The 1978 Final Addendum stated that the conversion from once-through cooling to closed-cycle cooling reduced the thermal effects on aquatic biota (see Section 3.1 above). Further, the Final Addendum stated that the conversion:

"...significantly reduced both volume and temperature of the thermal discharge. Since the environmental effects of once-through cooling have not been significantly detrimental, it can be predicted that full-term operation at stretch rating with cooling towers, which still results in discharges substantially less than those which occurred during open-cycle operation, will have no significant negative impact on aquatic organisms (Section 5.2)."

Present Staff Evaluation

The NPDES Permit for Palisades was issued by the State of Michigan subsequent to the 1978 Final Addendum. The permit regulates: the total volume of discharge effluent per day; the heat rejections rate; the mixing zone size in Lake Michigan; the temperature excess above ambient at the edge of the mixing zone; and the maximum permissible temperatures at the edge of the mixing zone. The permit expired in September 1980, but remained in effect during the renewal process conducted by the State of Michigan. The new permit was reissued on May 31, 1985. On March 3, 1981, the licensee implemented several design modifications that resulted in altered cooling tower blowdown and thermal effluents to the lake. These changes as reported in the 1981 Annual Report, 7/ are:

- the cooling tower blowdown was increased by 50,000 gpm (~112 cfs);
- lake water dilution of 60,000 gpm (~134 cfs) to the discharge mixing basin was eliminated, resulting in a net decrease of 10,000 gpm (~22 cfs) of effluent to the lake; and
- the number of discharge pipes to the lake was reduced from eight to four in order to increase the discharge velocity and promote better mixing of thermal effluents with lake water.

The licensee notified the State of Michigan of these changes on May 18, 1979. 11/ The State responded on March 4, 1981, and approved the commencement of operation of the modified cooling system, with the stipulation that all existing NPDES Permit requirements (including temperature and chlorine) were to be met. 12/

Special Condition A.2 of the original NPDES Permit required the licensee to "...confirm the a real extent of the thermal plume resulting from the increased cooling tower blowdown during each of the four seasons of the year. The results of the study shall be submitted within 15 months following the start of the increased cooling tower blowdown mode of operation."

The licensee submitted its thermal plume study proposal to the State on October 25, 1979, 13/ and subsequently modified the plan to conduct the spring and fall surveys only. 14/ The results of those two surveys then were to be examined prior to determining if a fall survey would be required. The State of Michigan approved the initial study plan on November 27, 1979. 15/ The licensee conducted the spring and summer plume surveys during 1981 and submitted the results to the State on January 25, 1982. 16/ In summary, the study found that the thermal plumes ranged in size from 0.9 acres to 81 acres at the lake surface and from 0.3 acres to 2.7 acres at a depth of one meter below the surface at the $3^{\circ}\Delta T$ isotherm above ambient, 16/ as specified in the NPDES Permit. [This compares with once-through plume sizes ranging from 17 to 870 acres at Palisades during 1972 and 1973.] 17/ Based on its review of the licensee's study, the State found that the requirement of the NPDES Permit (i.e., Special Condition A.2) was satisfied and that the discharge complies with temperature related requirements of the Michigan water quality standards. 18/ The requirement to conduct the fall survey, therefore, was deleted by the State. NPDES Permit-related non-compliances reports for 1981 7/ and 1982 8/ contained no instances of thermal limitation violations.

The conclusions of the 1978 Final Addendum remain valid. The NRC will rely on the conditions of the NPDES Permit to ensure that thermal effluents will not create significant environmental impact.

3.2.4 Chlorine Discharge

The 1978 Final Addendum stated:

> "Operation of the plant in accordance with the NPDES Permit Final Effluents Limitation could conceivably result in adverse aquatic impact from chlorine discharges [at concentrations between 0.04 mg/l and 0.20 mg/l], but in view of the likely magnitude of such impacts (if indeed they ever occur at all), the staff finds such impacts acceptable," (Summary and Conclusions 3.e). The Final Addendum further concluded that:
>
> "...the affected area [of chlorine discharges in the lake] would be less than two acres and that the potential for adverse effects is present only during the period of the year when the discharge concentration is at its highest, 0.2 mg/l (i.e., when discharge water temperature is greater that 70°F)." (Section 5.3.1.1).

The NPDES Permit for Palisades was issued by the State of Michigan subsequent to the 1978 Final Addendum. The Permit contains the following requirements related to chlorine discharges and usage:

- Total residual chlorine (TRC) in the station discharge to the lake is limited to 0.2 mg/l daily maximum concentration; dechlorination is permitted.
- Chlorine application time is limited to 120 minutes per day.
- The licensee was required to conduct a study to determine the magnitude of the free-chlorine component of the TRC which occurs during each of the four seasons of the year.
- The licensee was required to conduct a study to determine the minimum quantity of chlorine necessary to prevent biofouling of the cooling water system.

Present Staff Evaluation

Consumers Power Company submitted a proposed chlorine-minimization study plan to the State in December 1979. This plan was approved by the State in 1981 [19/] and was implemented from 1981 through mid-1983. The results were submitted to the Michigan Department of Natural Resources in August 1984. [20/] The study showed, in general, that biofouling control objectives could be met with free chlorine concentrations significantly below permit levels. NRC will

defer to the State for determining any further actions necessary to control potential impact of chlorine discharge. The new NPDES permit limits the average total residual chlorine concentration to 0.1 mg/l during the summer and 0.05 mg/l during the rest of the year. These limits, which became effective in June 1987, can be met by dechlorination as necessary. The permit includes a provision for further revisions if these limits are unworkable.

3.3 Threatened and Endangered Species - Aquatic

The State of Michigan Department of Natural Resources maintains a listing of State-recognized threatened and endangered species. One fish listed as threatened on the 1980 list, [21/] the bloater, *Corgonus hoyi*, was observed in impingement samples when Palisades operated with once-through cooling during 1972-1973 [17,22/] (see also 1978 Final Addendum Section 2.2.1). Impingement sampling during operation with closed-cycle cooling (1974-1975) collected no specimens of bloater. [23/] Subsequent to this 1980 listing, the State recommended that the bloater be removed from the list because "Recent work has shown this species to still be common in Lakes Superior, Michigan, and Huron." [24/] The absence of the bloater in recent impingement sampling and its recommended removal from the State threatened list indicated that the continued operation of Palisades will not impact the species.

Present Staff Evaluation

There is no evidence that the operation of Palisades has any detrimental impact on any Federal or State endangered aquatic or terrestrial species. The Environmental Protection Plan (EPP) for Palisades requires that NRC be notified by the licensee of any changes to the staff's evaluation pertaining to the Endangered Species Act of 1973.

3.4 Effects of Cooling Tower Moisture on Local Orchard Crop Production

The 1978 final addendum to the FES Section 6.3.2 states:

> "that orchard growers' concern of potential increase in local moisture regimes have been pursued by applicant representatives."

Because the programs that were tried or were still in process would not appear to settle the issue, staff recommended that:

> "...the applicant undertake a survey program to assess impacts of cooling tower moisture on yield, quality and disease control measures upon level orchard crop production."

The staff's recommendation specified that the:

> "...applicant survey cooperative growers operating inside and outside the expected drift field for possible effect."

Present Staff Evaluation

The applicant has not conducted a survey of growers. However, a six-year study of meteorological conditions in the vicinity of the Palisades plant was conducted by a team of professors from the Department of Atmospheric and Ocean Science of the University of Michigan. 26/

The principal plant disease of concern in the area of Palisades NPP is apple scab. The environmental conditions necessary for infection of apple trees by apple scab are temperature 63° to 75° and relative humidity 85% or greater for at least nine hours. 27/ The University of Michigan meteorologist analyzed the long term weather records from weather stations outside the influence of the Palisades cooling towers for the frequency of occurrences of these conditions. In addition, a network of meteorological stations was established in the vicinity of the Palisades plant to measure these same environmental parameters.

The conclusions drawn from comparing conditions near the station to the remote conditions is that there was no increase in occurrences of potential

apple scab infection conditions due to the operation of the Palisades cooling towers during the study period. In light of these results, the staff is satisfied that the cooling tower operations do not increase conditions for apple scab infection and will not require a survey of local apple growers.

3.5 Aerial Remote Sensing

In 1976-77, severe icing broke branches and entire trees near the cooling towers. These trees had been weakened by being defoliated as a result of a high sulfate disposition from the cooling towers.

The 1978 Final Addendum to the FES Section 6.3.2. states:

> "The staff recommends that a program of aerial remote sensing using color infrared and/or multispectral photography be initiated by the applicant on an annual basis as an aid in early detection of the spread of icing and drift damage areas and to verify the adequacy of the dune stabilization program. If the results of the program show that damage is spreading uncontrollably, the applicant will be required to submit a program to the staff for prevention or mitigation of offsite damage."

Present Staff Evaluation

On August 8, 1984, staff inspected the area around both cooling towers accompanied by the licensee's terrestrial ecologist. Many of the trees that were killed years ago were still standing and conspicuous because they stuck up some 20 feet above the living trees. The areas where plants were killed are completely vegetated with plants representing all three natural strata of the local plant community; i.e., overstory, shrub, and herbaceous, in excellent condition. The overstory species were about 10 feet tall.

There was no evidence that the area affected by the cooling towers was increasing in size. Because the plants in the impacted area were in excellent condition and there was no evidence of new blowouts (areas eroded by wind action) in the sand dunes, no aerial remote sensing will be required.

3.6 Dune Stabilization

The 1978 Final Addendum to FES Section 6.3.2 states:

> "The staff recommends that the applicant's dune stabilization efforts continue so as to ensure mitigation of any damage to dunes caused by plant operation. If monitoring of plant operation impacts indicates reduction of the effectiveness of the applicant's dune stabilization efforts, the staff recommends that the applicant undertake, upon staff approval, additional or alternative dune stabilization activities."

Present Staff Evaluation

On August 8, 1984, staff inspected the 20 acres that have been disturbed since 1978 and the exposed sand dunes resulting from this disturbance. The disturbed sand dunes have revegetated with dune grass, *Ammophilia breviligulata*, with no evidence of blowout observed. The sand dune areas that were sparsely vegetated in 1978 are still sparsely vegetated but no evidence was seen to indicate that these areas were increasing in size.

3.7 Use of Herbicides Along Transmission Corridors

The 1978 Final Addendum to the FES Section 6.3.3 states:

> "The staff recommends that the applicant report the date, type, mode, and rate of application, location, and restrictions or conditions of use of each herbicide applications along its transmission corridors. The staff also recommends that the applicant conduct inspections to confirm the restricted areas have not been sprayed, unauthorized releases have not taken place, and accidents such as spills have been documented (and cleaned up if possible). Field logs should be kept of these inspections."

Present Staff Evaluation

The above recommendations have been incorporated into Palisades Environmental Protection Plan Sections 2.2 and 4.2.2. This requires the licensee to maintain records of herbicide application for a period of five years and to be made available to the NRC upon request.

The records include the following information: commercial and chemical names of materials used; concentration of active material in formulations

diluted for field use; diluting substances other than water; rates of application; method and frequency of application; location; and the date of application.

The use of herbicides within the transmission corridor rights-of-way conforms to the approved use of selected herbicides as registered by the Environmental Protection Agency and approved by State authorities and applied as directed by said authorities.

3.8 New Concern Since Publication of the Final Addendum to the FES in 1978

3.8.1 State Threatened Species, Plant

The State of Michigan's January 22, 1980, supplement to the Administrative Code R299.1028 Plants Rule 8(1) list Pitcher's thistle, *Circium pitcheri*, as an endangered plant species. Terrestrial surveys of the Plant site dune community since the issuance of the FES Final Addendum identified the Pitcher's thistle occurred in the sand dune blowout areas.

Present Staff Evaluation

On August 8, 1984, the staff, accompanied by the licensee's terrestrial ecologist, inspected the dune blowout areas but found no evidence of Pitcher's thistle. There was no evidence to indicate that the operation of the Palisades NPP had in any way been responsible for the nonoccurrence of Pitcher's thistle.

3.8.2 State Threatened Species, Animal

The State of Michigan's January 22, 1980, supplement to the Administrative Code R299.1026 Birds, list Caspian tern, *Hydropogne caspia*, as endangered. This species has been identified on-site. [28/]

Present Staff Evaluation

Caspian tern are fish eaters. [29/] The Palisades nuclear plant does not have a detrimental effect on the fisheries of Lake Michigan (aquatic section

this report). Therefore, the operation of the Palisades plant should not detrimentally impact the Caspian tern.

4.0 OTHER ENVIRONMENTAL CONSIDERATIONS

Other issues related to environmental concerns; i.e., Environmental Effects of Accidents, Implications of the Projects, Alternatives to the Project, and Cost-Benefit Analysis have been previously addressed in the FES and Final Addendum. Those discussions are incorporated by reference.

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 June 1972 Final Environmental Statement and the February 1978 Final Addendum to the FES. The area adjacent to the site is primarily agricultural land and is sparsely populated. The low population zone (LPZ), as defined by 10 CFR 100, extends a distance of 4,820 meters, or 3 miles, from the plant site. The minimum exclusion area distance to an uncontrolled area is 677 meters (2200 feet). The minimum exclusion area and LPZ distances form the bases for the site evaluation in accordance with 10 CFR Part 100 (FSAR Section 2.0). There are approximately 432 acres within the site boundary, all currently owned by Consumers Power Company. Consumers Power Company has sole control of the area within the site boundary for the purpose of excluding personnel or property.

Section 2.1.2 of the Palisades FSAR discusses the population density in and around the Palisades Plant. Table 2.10 of the Palisades FSAR provides current and estimated population density for all counties within a 50-mile radius of the Palisades Plant through the year 2000. A comparison of the FSAR data and the most current census and population growth estimates indicate that

the data presented in Table 2.10 of the FSAR accurately estimated population changes to date. Although there are no reliable estimates for the population in the three counties (Berrien, Van Buren, and Allegan) immediately adjacent to the Palisades Plant site for the years between 2000 and 2007, recent population growth and economic trends for southwestern Michigan do not indicate any significant change in population growth trends or to the economic composition of the area.

The probable off-site radiation exposure received by a member of the general public from the operation of the Palisades Plant was assessed and is documented in the Palisades FSAR and the FES. This assessment was based on the assumed 40-year life for the plant. The FES concluded that the operation of the Palisades Plant will contribute only an extremely small increment to the radiation dose that area residents receive from natural background. The FES also noted: "Since fluctuations of the natural background dose may be expected to exceed the small dose increment contributed by the Plant, this increment will be unmeasurable in itself and will constitute no demonstrable meaningful risk...." To ensure that exposure of members of the general public to radioactive material released by the operation of the Pali des Plant is kept as low as is reasonably achievable, the Plant maintains adiological environmental monitoring program in compliance with the requi ents of Section IV of Appendix I to 10 CFR Part 50.

Based on the operating history of the Palisades Plant an he conclusions of the FES, the total radiation dose to any member of the gener ublic is not expected to be significantly affected by the conversion of the F to a FTOL.

All plant employees are exposed to radiation caused by plant operation. The total exposure received by individual employees depends to a great extent upon the work assignment of the employee. To ensure that employee exposure is minimized, the Palisades Plant has implemented an effective exposure ALARA (As Low As Reasonably Achievable) Program. In addition, the plant has instituted administrative limits that require that the exposure received by individual employees remain within the guidelines of 10 CFR Part 20. It is not expected that the issuance of the FTOL will materially affect employee exposure.

Accordingly, annual radiological impacts on man, both off-site and on-site, are not more severe than previously estimated in the FES and our previous cost-benefit conclusions remain valid. Based on its review of the analysis and evaluations in the FES and Final Addendum, the staff determined that the conclusions stated in those documents concerning the aforementioned issues are still applicable to license conversion and are still valid.

5.0 BASIS AND CONCLUSION FOR NOT PREPARING AN FES SUPPLEMENT

The staff has evaluated the environmental effects of the continued operation of the Palisades Plant and has re-examined the impacts initially presented in the 1972 FES and the 1978 Final Addendum to the FES. This review has not led to the identification of any significant new environmental impacts or any significant changes in those identified previously with respect to the proposed FTOL for the Palisades Plant. Accordingly, the NRC has determined, based on this assessment, that there are no new impacts that differ significantly from those evaluated in the FES and Final Addendum, 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 in not required under the National Environmental Policy Act (NEPA), and (2) the conclusion on page iii, paragraph 6 of the 1978 Final Addendum to the FES, for conversion of the Palisades POL to an FTOL is still valid.

6.0 REFERENCES

1. Letter dated March 31, 1980, from: R.L. Fobes, Consumers Power Company, Jackson, Michigan; to: K. Zollner, Michigan Department of Natural Resources, Lansing; Subject: NPDES Permit renewal application for Palisades NGP.

2. Cain, T., "Environmental Impact Appraisal for Palisades Environmental Technical Specification Changes," USNRC Division of Operating Reactors, February 8, 1978.

3. Jensen, A. C., S. A. Spigarelli, and M. M. Thommes, "Use of Conventional Fishery Models to Assess Entrainment and Impingement of Three Lake Michigan Fish Species," Transaction of the American Fisheries Society; 111(1): 21-34, 1982.

4. Telephone conversation on January 25, 1984, between C. R. Hickey, USNRC, and T. Doyle, Fisheries Division, Michigan Department of Natural Resources, Lansing.

5. Memorandum dated October 20, 1980, from: R. L. Ballard, USNRC; to: D. M. Crutchfield, USNRC: Subject: "Deletion of Water Quality Requirements in Palisades Technical Specification and Inclusion of Appendix B Environmental Protection Plan."

6. Deleted

7. Letter (with attachment) dated April 22, 1982, from: B. D. Johnson, Consumers Power Company; to: J. G. Keppler, USNRC; Subject: "Palisades Plant - 1982 Environmental Operating Report."

8. Letter (with attachment) dated April 27, 1983, from: B. D. Johnson, Consumers Power Company; to: J. G. Keppler, USNRC; Subject: "Palisades Plant - 1982 Environmental Operating Report."

9. Telephone conversation on January 17, 1984, between C. R. Hickey, USNRC, and J. Vollmer, District Office, Michigan Department of Natural Resources, Plainwell.

10. Deleted.

11. Letter dated May 18, 1979 from: R. L. Fobes, Consumers Power Company, Jackson, Michigan; to: K. Zollner, Michigan Department of Natural Resources, Lansing; Subject: Modification to cooling water system at Palisades NGP.

12. Letter dated March 4, 1981, from: R. J. Courchaine, Michigan Department of Natural Resources, Lansing; to: R. L. Fobes, Consumers Power Company, Jackson Michigan; to: Concurrence on the immediate commencement of operation of the modified cooling system at Palisades NGP.

13. Letter dated October 25, 1979, from: R. L. Fobes, Consumers Power Company, Jackson, Michigan; to: R. J. Courchaine, Michagan Department of Natural Resources, Lansing; Subject: "Palisades Plant-Thermal Plume Study Proposal" (with attachment).

14. Letter dated March 11, 1981, from: R. L. Fobes, Consumers Power Company, Jackson, Michigan; to: R. E. Basch, Michigan Department of Natural Resources, Lansing; Subject: Palisades NGP thermal plum study modification.

15. Letter dated November 27, 1979, from: F. J. Horvath, Michigan Department of Natural Resources, Lansing; to: P. C. Hittle, Consumers Power Company, Jackson, Michigan; Subject: State approval of thermal plume study proposal for Palisades NGP.

16. Letter dated January 25, 1982, from: J. A. Gulvas, Consumers Power Company, Jackson, Michigan; to: R. Courchaine, Michigan Department of Natural Resources Lansing; Subject: "Palisades Nuclear Plant-Thermal Plume Monitoring Results," with attachment, dated November 1981; entitled "A Study of the Palisades Nuclear Power Plant Thermal Discharge and Ambient Near-Shore Lake Currents"; authored by Camp Dresser & McKee Inc., Milwaukee, Wisconsin.

17. Consumers Power Company, "Summary of the Effects of Once-Through Cooling at the Palisades Nuclear Power Plant," May 1975.

18. Letter dated June 21, 1982, from: R. J. Courchaine, Michigan Department of Natural Resources, Lansing; to: P. Hittle, Consumers Power Company, Jackson, Michigan; Subject: State approval to delete fall thermal plume survey, and finding that Palisades NGP discharge complies with the Michigan water quality standards.

19. Letter dated August 19, 1981 from: R. J. Courchaine, Michigan Department of Natural Resources, Lansing; to: P. Hittle, Consumers Power Company; Subject: Chlorination studies and minimization program review.

20. Letter dated August 14, 1984 from: R. L. Fobes, Consumers Power Company; to: P. Zugger, Michigan Department of Natural Resources, Lansing; Subject: "Chlorine Minimization Final Report" (attached to letter).

21. Michigan Department of Natural Resources, "Endangered and Threatened Species," January 22, 1980.

22. Benda, R. S. and J. Gulvas, "Effects of the Palisades Nuclear Power Plant on Lake Michigan," Thermal Ecology Symposium, Series Conference 750425, pp 243-250.

23. Benda, R. S., M. John, and J. Gulvas, "Comparison of Fish Impingement of the Palisades Nuclear Power Pant for Once-through and Closed Cycle Cooling," Proceedings of the Indiana Academy of Science, 85:155-160, 1976.

24. Michigan Department of Natural Resources, "Rationale for Proposed Changes to Michigan's Endangered and Threatened Species List 1980-1981."

25. Memorandum dated January 27, 1984, by: G. Laroche, USNRC, Subject: record of telephone call on January 23, 1984 with J. Engel, USFWS, on federally endangered species at Palisades.

26. Ryznar, E. et al., 1980. An Investigation of the Meteorological Impact of Mechanical Draft Cooling Towers at the Palisades Nuclear Power Plant. Final Report, College of Engineering, Department of Atmospheric and Oceanic Science.

27. Jones, A. L., 1971. Diseases of tree fruits in Michigan, Michigan State University, Extension Bulletin E-714.

28. VandeWalle, 1983. David J. VandeWalle, Nuclear Licensing Administrator Consumers Power Company. Letter to Dennis M. Crutchfield, Chief, Operating Reactors Branch No. 5, USNR, February 2, 1983.

29. Michigan DNR, 1976-78. Michigan's endangered and Threatened Species Program.

UNITED STATES NUCLEAR REGULATORY COMMISSION

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

NOTICE 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-20 issued to Consumers Power Company (the licensee or CPCo), for operation of the Palisades Nuclear Generating Plant (Palisades) located in Van Buren County, Michigan.

IDENTIFICATION OF PROPOSED ACTION:

The amendment would consist of a conversion of the Provisional Operating License (POL) No. DPR-20 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. The construction permit for Palisades was issued on March 14, 1967; therefore, the expiration date for the FTOL is March 14, 2007.

The amendment to the license is in response to the licensee's application dated January 22, 1974 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," Consumers Power Company, Palisades Plant, Docket No. 50-255 dated October 22, 1990.

SUMMARY OF ENVIRONMENTAL ASSESSMENT:

The NRC staff has reviewed the potential environmental impact of the proposed conversion of the POL to an FTOL for Palisades. This evaluation

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considered the previous environmental studies, including the "Final Environmental Statement (FES) Related to Operation of Palisades Nuclear Generating Plant," issued in June 1972, a Final Addendum to the FES (NUREG-0343), issued in February 1978, 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 June 1972 Final Environmental Statement and the February 1978 Final Addendum to the FES. The area adjacent to the site is primarily agricultural land and is sparsely populated. The low population zone (LPZ), as defined by 10 CFR 100, extends a distance of 4,820 meters, or 3 miles, from the plant site. The minimum exclusion area distance to an uncontrolled area is 677 meters (2200 feet). The minimum exclusion area and LPZ distances form the bases for the site evaluation in accordance with 10 CFR Part 100 (FSAR Section 2.0). There are approximately 432 acres within the site boundary, all currently owned by Consumers Power Company. Consumers Power Company has sole control of the area within the site boundary for the purpose of excluding personnel or property.

Section 2.1.2 of the Palisades FSAR discusses the population density in and around the Palisades Plant. Table 2.10 of the Palisades FSAR provides current and estimated population density for all counties within a 50-mile radius of the Palisades Plant through the year 2000. A comparison of the FSAR data and the most current census and population growth estimates indicate that the data presented in Table 2.10 of the FSAR accurately estimated population changes to date. Although there are no reliable estimates for the population in the three counties (Berrien, Van Buren, and Allegan) immediately adjacent to the Palisades Plant site for the years between 2000 and 2007, recent

population growth and economic trends for southwestern Michigan do not indicate any significant change in population growth trends or to the economic composition of the area.

The probable off-site radiation exposure received by a member of the general public from the operation of the Palisades Plant was assessed and is documented in the Palisades FSAR and the FES. This assessment was based on the assumed 40-year life for the plant. The FES concluded that the operation of the Palisades Plant will contribute only an extremely small increment to the radiation dose that area residents receive from natural background. The FES also noted: "Since fluctuations of the natural background dose may be expected to exceed the small dose increment contributed by the Plant, this increment will be unmeasurable in itself and will constitute no demonstrable meaningful risk...." To ensure that exposure of members of the general public to radioactive material released by the operation of the Palisades Plant is kept as low as is reasonably achievable, the Plant maintains a radiological environmental monitoring program in compliance with the requirements of Section IV of Appendix I to 10 CFR Part 50.

Based on the operating history of the Palisades Plant and the conclusions of the FES, the total radiation dose to any member of the general public is not expected to be significantly affected by the conversion of the POL to a FTOL.

All plant employees are exposed to radiation caused by plant operation. The total exposure received by individual employees depends to a great extent upon the work assignment of the employee. To ensure that employee exposure is minimized, the Palisades Plant has implemented an effective exposure ALARA (As Low As Reasonably Achievable) Program. In addition, the plant has instituted administrative limits that require that the exposure received by individual

employees remain within the guidelines of 10 CFR Part 20. It is not expected that the issuance of the FTOL will materially affect employee exposure.

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

Non-Radiological Impacts:

The staff reevaluated the non-radiological aspects of operation of the plant and transmission facilities. The effects of cooling system operation, fish impingement, thermal discharge effects, chemical discharge effects, endangered and threatened species, land use, terrestrial ecology, and transmission lines were evaluated. Effluent limitation 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 Palisades was issued by the State of Michigan and the staff's discussions in the environmental assessment rely on the findings made by the State in its impact review.

The staff also verified that the original cost/benefit analysis provided in the Final Environmental Statement and Final Addendum to the FES, and discussions with respect to commitment of resources and alternatives, are still valid.

FINDING OF NO SIGNIFICANT IMPACT:

The staff has reviewed the proposed conversion of the POL to an FTOL for Palisades relative to the requirements set forth in 10 CFR Part 51. 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 January 22, 1974, (2) the Final Environmental Statement Related to Operations of Palisades Nuclear Generating Plant, issued June 1972, (3) the Final Addendum to the FES, issued February 1978, and (4) the Environmental Assessment Dated October 22, 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 Van Zoeren Public Library, Hope College, Holland, Michigan 49423.

Dated at Rockville, Maryland, this 22nd day of October 1990.

FOR THE NUCLEAR REGULATORY COMMISSION

Dominic C. DiIanni

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