2-2-73

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
WISCONSIN PUBLIC SERVICE CORPORATION	)	Docket No. 50-305
WISCONSIN POWER AND LIGHT COMPANY	)	
AND	)	
MADISON GAS AND ELECTRIC COMPANY	)	
	)	
(Kewaunee Nuclear Power Plant)	)	

AFFIDAVIT IN SUPPORT OF
MOTION FOR SUMMARY DISPOSITION

State of Maryland)
) ss
County of Montgomery)

The undersigned, W. C. Redman, being first duly sworn, hereby deposes and says as follows:

1.

A statement of my background and qualifications has been filed and is a part of the Docket in this matter.

2.

My responsibilities as Team Leader for the assessment of the environmental impact of the Kewaunee Plant have included consideration of the physical effects of construction and operation on the environment. I wish to

summarize and augment the information provided in the FES regarding shoreline erosion.

The possibility of a change in the present erosion rate in the area of the Kewaunee Nuclear Power Plant as a consequence of construction and operation of the Plant has been recognized by the Applicant and was discussed in the Final Environmental Statement (FES). Protective riprap installed by the Applicant along the shore near the Plant is discussed in the FES (p. IV-3, lines 6-7 and p. IV-6, lines 15-16) and shown in the figures on pages III-3, III-4 and E-57. Protection provided by a natural promontory just south of the Plant is described on p. IV-6, lines 12-15. The Applicant will monitor shoreline erosion by aerial photography (FES at p. IV-6, lines 17-19 and p. V-2, lines 16-18) and the Staff requires that additional shoreline protection be provided if the Plant contributes to an increase in the natural rate of erosion (FES at p. V-2, lines 18-23).

During the winter, ice forms along the shoreline of the lake and serves to protect the land from erosion by lake currents and waves. Floating block ice moved by the wind during the winter months and pack ice as high as 20 feet in the vicinity of the Plant were noted (FES at p. II-23, lines 16-19). Available evidence, based on aerial photography of the Lake Michigan shoreline during two recent winters, indicates that discharges

of waste heat from nuclear and fossil-fueled power plants do not cause extensive melting of shore ice (FES at p. V-2, lines 12-16 and reference 57 of Chapter V).

The investigation reported by J.C. Ayers, et al., in Reference 57 of Chapter V, has been described [1/] as "the main source of information on shore ice development and destruction, and on the potential effects of thermal discharges on this ice." The statement made in the FES (p. V-2, lines 12-16) about melting ice was based in part on a consideration of the evidence obtained by Ayers, et al in his aerial photographic ice-reconnaissance survey of the Lake Michigan and in part on its pertinence to the characteristics of the Kewaunee Plant outfall and thermal plume. For both nuclear and fossil-fueled plants having a shoreline discharge structure with a sheet-pile flume protruding into the shoreline waters, protective shoreline ice was observed to extend up to the edges of the flume. Even where there was no flume leading out into the water, no evidence of beach erosion was found in the area where shoreline ice had been melted by the thermal plume. This was the situation observed at the J.H. Campbell station, a 647 MWe fossil-fueled plant. This plant is located on the eastern shore

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1/ Argonne National Laboratory, "Summary of Recent Technical Information Concerning Thermal Discharges into Lake Michigan," Contract Report 72-1 for the U.S. Environmental Protection Agency, Region V Enforcement Division, August 1972, p. 40.

of Lake Michigan at West Olive, Michigan and has an onshore discharge of 2.9×10^9 Btu/hr for water with a 19.3°F temperature rise. It should be mentioned that the volume and velocity of water discharged at the lake shoreline provides a buffer for the lake water driven towards unprotected shoreline by wind and current.

On the basis of: 1) the information given above; 2) the limited area of the thermal plume from the Plant (FES, Section III.D.1, pp. III-8 to III-22); 3) the discharge of the heated water perpendicular to the shore, at a moderate velocity and in an outfall structure which guides the water away from the shore (FES at p. V-7, lines 34-37); and 4) the varying direction of the nearby lake currents (FES, Section II.D.1.b, pp. II-21 to II-24), I have concluded that any increase in the rate of shoreline erosion resulting from melting of protective ice along the shore will be slight.

W. C. Redman

Subscribed to and sworn before
me this 2nd day of February, 1973

My Commission expires 7/1/74