UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety And Licensing Board

In the Matter of	)	
CONSUMERS POWER COMPANY	)	Docket Nos. 50-329
	)	50-330
(Midland Plant, Units 1 and 2)	)	

MEMORANDUM OF CONSUMERS POWER COMPANY
REGARDING THE ENVIRONMENTAL EFFECTS OF RADON

By a Memorandum and Order dated November 6, 1978, the Nuclear Regulatory Commission (the "NRC" or the "Commission") requested that the parties to the construction permit proceedings involving the Midland Plant file memoranda with this Atomic Safety and Licensing Board ("Licensing Board") addressing questions related to the environmental effects of radon. This memorandum of Consumers Power Company ("Consumers Power" or "Licensee") is submitted in accordance with that Order.

The intricate chain of events which led the Midland Plant construction permit proceedings to their current stage has been set forth at length in other pleadings and will not be repeated here. The sole fact which is relevant for purposes of this memorandum is that, in April 1978, the NRC deleted the term encompassing the environmental effects of radon from the interim fuel cycle rule,

Table S-3, 43 Fed. Reg. 15613 (1978). Thus, by the Commission's November 6 Order, this Licensing Board must consider the radon issue and determine whether the radon emissions in the uranium mining and milling process and resultant health effects are such as to tip the cost-benefit balance against continued construction of the Midland Plant. Consideration of the radon issue is necessary because there was a proceeding in this docket pending before the Commission when the radon term was deleted from Table S-3, notwithstanding the fact that the Supreme Court has upheld the grant of the construction permits for this nuclear facility in Vermont Yankee Nuclear Power Corporation v. NRDC, 98 S.Ct. 1197 (1978).

In assessing the radon question, the Commission directed this Licensing Board to structure its review in accordance with the lead case procedure adopted by the Atomic Safety and Licensing Appeal Board ("Appeal Board") in Philadelphia Electric Company (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-480, 7 NRC 796 (1978). Under the terms of the Commission's Order, the parties in this proceeding were to review the radon evidentiary record and decision in Duke Power Company (Perkins Nuclear Station, Units 1, 2 and 3), LBP-78-25, 8 NRC 87 (1978); parties could then make certain requests concerning supplementing or objecting to the Perkins record. Additionally, the parties were to brief two specific questions regarding the Perkins

decision and the effect of the radon question upon the cost-benefit balance for the Midland Plant. Consumers Power does not request that additional evidence be received on the radon question or that further hearings be held on the Perkins record; neither does Licensee have any objections to any aspect of the Perkins radon proceeding. Therefore, Consumers Power responds to the questions posed by the Commission.

I. THE PERKINS EVIDENTIARY RECORD SUPPORTS THE PERKINS DECISION REGARDING RADON

The first question to which the Commission solicited an answer was

> whether the Perkins evidentiary record supports the generic findings and conclusions of the Perkins Licensing Board respecting the amount of the radon emissions in the mining and milling process and resultant health effects. Order at 4.

Consumers Power believes that the Perkins decision regarding radon, described below, is more than adequately supported by the record adduced at that proceeding. To bear out this fact, the affidavit of an expert in this field, G. Hoyt Whipple, is attached. Dr. Whipple has reviewed the Perkins record and decision and concurs in the result reached by that Licensing Board.

What the Perkins Licensing Board did decide, after considering the amount of radon released from mining, the amount released from milling, and the health effects associated with radon, was that:

> 51. Based on the record available to this Board, we find that the best mechanism available to characterize the significance of the radon releases associated with the mining and milling of the nuclear fuel for the Perkins facility is to compare such releases with those associated with natural background. The increase in background associated with Perkins is so small compared with background and so small in comparison with the fluctuations in background, as to be completely undetectable. Under such a circumstance, the impact cannot be significant. 8 NRC at 100.

As a result, the Licensing Board concluded that radon releases and the resulting impacts were insignificant in striking the cost-benefit balance for the Perkins Nuclear Power Station. 8 NRC at 100, ¶52.

In his affidavit, Dr. Whipple reviews the evidentiary record related to each phase of the radon issue and expresses his agreement with the conclusions reached in the Perkins decision. Therefore, the specifics of that opinion will not be reiterated in this memorandum. Further support for the correctness of the Perkins decision, and of Dr. Whipple's review of that decision, can be found in the opinion of another Licensing Board which has similarly explored the radon issue, Public Service Company of Oklahoma (Black Fox Station, Units 1 and 2), LBP-78-26, 8 NRC 102 (1978). After holding hearings on the radon question, at which Dr. Whipple testified for the applicant, the Black Fox Licensing Board concluded that the environmental impact of radon emissions was "negligibly small" and had "no effect on the environmental cost-benefit balance." 8 NRC at 144, ¶125.

II. RADON EMISSIONS AND RESULTANT HEATH EFFECTS DO NOT TIP THE COST-BENEFIT BALANCE AGAINST THE MIDLAND PLANT

The second question posed by the Commission in its November 6 Order was

> whether radon emissions and resultant health effects are such as to tip the NEPA balance against continued construction of tne Midland plant. Order at 4.

In view of what the Perkins and Black Fox Licensing Boards concluded with respect to the insignificance of the impacts of radon emissions, Consumers Power believes that the cost-benefit balance for the Midland Plant is barely altered, and certainly not tipped against continued construction of the nuclear facility, by consideration of the radon matter. Again, the affidavit of Dr. Whipple supports this position, for he states that the radon emissions from mining and milling from 1 AFR, as calculated by NRC Staff Witness Dr. Gotchy at the Perkins proceeding, add only an insignificant and probably immeasurable increment in radiation exposure and health effects to what occurs naturally because of background radon radiation. (Whipple Affidavit at ¶13). Additionally, it should be remembered that the numbers used at the Perkins hearing have an added degree of conservatism when applied to the Midland Plant case, for the Perkins Station consists of three units, each one 1280 MWe, while the Midland Plant has a total output of approximately 1622 MWe. The smaller nuclear facility will require less uranium

fuel, and thus, there will be fewer radon emissions and resultant health effects attributable to the Midland Plant.

The cost-benefit balance for the Midland Plant was last examined by the Appeal Board in its February 1978 opinion reviewing the decision of the Licensing Board not to suspend construction. Consumers Power Company (Midland Plant, Units 1 and 2), ALAB-458, 7 NRC 155 (1978). The Appeal Board took into account the environmental effects of the fuel cycle as set forth in the interim rule, (which included the now deleted term for radon), and concluded that those effects must be taken as insubstantial. 7 NRC at 164. In addition, the Perkins and Black Fox Licensing Boards have already determined that the effects of radon are insignificant in striking the environmental cost-benefit balances for their respective nuclear plants; thus, a consideration of the effects of radon in the Midland Plant cost-benefit balance will not tip that balance against continued construction of the nuclear facility. In fact, the impacts associated with radon emissions are so de minimis that the cost-benefit balance is altered at most imperceptibly.

This is especially true in view of the extensive margin of benefit over cost which the Midland Plant has been held to have. As the Appeal Board found in considering the effect of the increase in the monetary cost of the Midland Plant, it would not be easy to tip the cost-benefit balance against the nuclear facility.

> In short, once it has been determined that a generating facility is needed to meet real demand, that no environmentally preferable type of facility or site exists, and that all cost-beneficial environmentally protective auxiliary equipment has been employed, the final cost-benefit balance will almost always favor the plant, simply because the benefit of meeting real demand is enormous--and the adverse consequences of not meeting that demand are serious. ALAB-458, 7 NRC at 169 (footnotes omitted).

Because the cost-benefit balance for the Midland Plant so clearly favors the nuclear facility, even with the inclusion of the environmental effects of radon, it is not necessary to discuss alternative types of generating facilities. However, it should be noted that the Perkins and Black Fox Licensing Boards each considered the environmental impacts associated with the coal fuel cycle, compared with the impacts of the nuclear fuel cycle, including radon emissions, and concluded that the nuclear facilities were still environmentally preferable to coal plants. Perkins, 8 NRC at 100, ¶50; Black Fox, 8 NRC at 144, ¶125.

CONCLUSION

For the reasons set forth in this memorandum and in the attached Affidavit of Dr. Whipple, the Perkins decision is supported by the record of that proceeding, and the impacts from radon emissions do not tip the cost-benefit balance against continued construction of the Midland Plant.

Respectfully submitted,

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