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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
(Midland Plant, Units 1 and 2))	50-330

ADDITIONAL NRC STAFF'S ANSWERS TO
INTERROGATORIES OF INTERVENORS DATED JANUARY 3, 1977

By order of the Atomic Safety and Licensing Board (Board) on February 16, 1977, (Tr. 4350-A, 4351), the NRC Staff (Staff) was directed to supplement the "Additional NRC Staff's Answers to Interrogatories of Intervenors Dated January 3, 1977" filed on February 7, 1977.

The Staff's supplemental answers to these interrogatories are attached as Attachment A. The affidavits of F. S. Echols and Raymond R. Powell, which certify that the NRC responses are true and correct to the best of their knowledge, are attached as Attachments B and C, respectively.

Respectfully submitted,

Richard K. Hoefling

Richard K. Hoefling
Counsel for NRC Staff

Dated at Bethesda, Maryland
this 23rd day of February, 1977.

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ATTACHMENT A

Supplemental Response to Interrogatory No. 9

Because of the short time available to prepare the response to Interrogatory No. 9, it was decided that engineering judgement rather than documented estimates of costs and schedules would be used. In order to arrive at the engineering judgements as to cost, I reviewed each of the ACRS items listed in Table 1 and considered the manner of resolution to determine if additional components or analysis would be required. Based upon my experience, discussions with other knowledgeable staff personnel (Victor Benaroya, Lawrence P. Crocker and Ashok C. Thadani), the review of a October 1, 1976 letter from Babcock & Wilcox, and a Babcock & Wilcox seminar on loose-parts monitoring which I attended on April 2, 1975, I arrived at the cost estimates provided in Table 1.

The estimated dates in Table 1 for resolution of the ACRS items in Group II were arrived at by two independent estimates made by Mr. L. Crocker and myself using engineering judgement. After completing our estimates they were compared and found to agree well and for those dates that did not agree the latest estimated date was used for Table 1 input. Based upon my judgement and discussions with Larry Crocker I arrived at the construction time estimates.

For the ACRS items in Group I of Table 1 an acceptable method of resolution has been established and the Midland Plant will be required to provide in the Final Safety Analysis Report, which will be submitted in late 1977, these or equivalent methods of resolution. The construction time estimates for the ACRS Group I items were based upon my engineering judgement.

Because engineering judgement was used to arrive at the estimated costs and construction time, a range of values was employed to provide for possible uncertainties and lack of detail.

The following is typical of the process I have used in arriving at the cost and construction time estimated in Table 1 of Interrogatory No. 9.

ACRS Item I-3

This ACRS item concerns the control of hydrogen gas which is generated during and after a loss-of-coolant accident. In the Staff's Safety Evaluation Report (SER) issued on November 12, 1970, this matter is discussed in Section 7.4, Post-Accident Hydrogen Control.

The staff indicated in the SER that an additional means of controlling the hydrogen gas concentration below a flammability limit using some other method than purging of the reactor building would be required. The staff also indicated this additional system would be reviewed at the operating license review of the Midland Plant.

The requirements of the Standard Review Plan (NUREG-75/087), Section 6.2.5, Combustible Gas Control in Containment, will be used in evaluating the system proposed by Consumers Power Company at the operating license review stage. The staff has approved for use on other PWR's hydrogen recombiner designs which will meet the requirements set forth in the Standard Review Plan. The cost of a hydrogen recombiner is estimated to be in the range of 200,000 to 300,000 dollars. This estimate was arrived at through discussions with Mr. V. Benaroya, who is familiar with hydrogen recombiner designs. Because the need for controlling the hydrogen concentration following a loss-of-coolant accident does not occur until about 3 to 4 days after the accident a minimum of one hydrogen recombiner must be available within the 3 to 4 days following the accident. Based on this type of system the number of hydrogen recombiners required for the two Midland Units would be three with a total cost of \$600,000 to \$900,000. I also considered the possibility that a reduction of the hydrogen gas sources might reduce the capacity requirement of the hydrogen recombiner and thereby reduce the cost per recombiner. Based on the above process,

I arrived at the 100,000 to 1,000,000 estimate cost in Table 1. It was also my judgement that since the recombiners are purchased as units, their installation time (construction time) would be negligible.

The above is a typical example of the process used on all the ACRS items listed in Table 1 to arrive at the engineering judgement type estimates for costs and construction time.

ATTACHMENT A

SUPPLEMENTAL RESPONSE TO INTERROGATORY NO. 10

In preparing my response to Interrogatory No. 10, I relied on the following documents for reference:

1. Final Environmental Statement related to the construction of Midland Plant Units 1 and 2 - March 1972.
2. Draft Supplement to the Final Environmental Statement related to construction of Midland Plant Units 1 and 2 - January 1977.
3. Consumers Power Company, Midland Plant Units 1 and 2 Environmental Report Supplement - October 1976.
4. NRC Staff Testimony of F. S. Echols on the Environmental Impact of Continued Plant Construction During the Next Year and Environmental Review Schedule.*
5. NRC Staff Testimony of Sidney E. Feld on Cost of Replacement Power Resulting from Suspension.*
6. NRC Staff Testimony of Sidney E. Feld on Cost of Midland v. Coal Alternatives.*
7. NRC Staff Testimony of Sidney E. Feld on Need for Facility.*

*/ This testimony has been presented at the evidentiary hearings held in this proceeding.

8. Final Environmental Statement related to the construction of Black Fox Station Units 1 and 2 - February 1977.
9. Final Environmental Statement related to the construction of Phipps Bend Station.
10. Final Environmental Statement related to the construction of Koshkonong Station.
11. Midland Units 1 and 2 Project Cost and Schedule - Forecast #2 December 1976 - Prepared by Bechtel, Ann Arbor, Michigan.

The Statements made in the first paragraph of my Interrogatory response were based on References 2 and 6.

The Statements made in the second paragraph of my response were based on References 1 and 2.

The Statements made in the third paragraph of my response were based on References 8, 9, and 10.

I based my conclusions as to the direct benefits of the project (see page 2 of my response) on References 2, 3 and 7. In assessing the local tax benefit, I relied on Reference 1 which identified the tax benefit, discussions with B. J. Youngblood, Chief, Cost-Benefit Analysis Branch, and then exercised my judgement as to what that benefit would be today. In assessing the benefits

on the labor force, I determined the original work force estimates from Reference 1 and the present work force estimate from Reference 11. I obtained the unemployment rate from discussions with M. Kaltman of the Nuclear Regulatory Commission. I then exercised my judgment in reaching my final conclusion.

On page 3 of my response, I discussed costs which have changed or which were not considered in Reference 1. With respect to current Midland Plant costs, I relied on Reference 3. With regard to the environmental effects of the nuclear fuel cycle, I relied on Reference 2. With regard to costs to the local community, I considered the effects of the increased work force on the Community and concluded that the associated costs are likely to have changed. I have described above my references to support the increase in construction work force.

On page 4 of my response, I discuss costs that have not changed. With regard to fogging and icing, I relied on discussions with B. Youngblood of the Nuclear Regulatory Commission and my judgment. With regard to land commitments, the commitment of resources and relocation of residences, I relied on References 1 and 3. With regard to ecological impacts, I relied on References 1 and 4.

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

AFFIDAVIT OF F. S. ECHOLS

F. S. Echols deposes and says under oath as follows:

1. I am the Environmental Project Manager for Midland Plants, Units 1 and 2 in the Division of Site Safety and Environmental Analysis, U. S. Nuclear Regulatory Commission. As Project Manager for the Midland Plants, Units 1 and 2, I am responsible for coordinating and supervising the Office of Nuclear Reactor Regulation's evaluations of the continuation of the construction permits in light of the issues remanded for consideration by the court in Aeschliman v. USNRC (D. C. Cir., July 21, 1976).

2. The supplemental answer to interrogatory 10, was prepared by me or under my supervision. I hereby certify that the answer given is true and accurate to the best of my knowledge.

F. S. Echols

Subscribed and sworn to before
me this _____ day of _____, 1977.

Notary Public

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

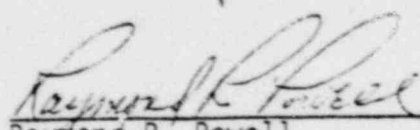
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AFFIDAVIT OF RAYMOND R. POWELL

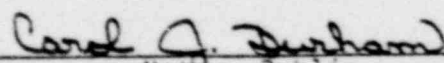
Raymond R. Powell deposes and says under oath as follows:

1. I am the Licensing Project Manager of the Midland Plant Units 1 and 2 in the Light Water Reactors Branch No. 4, Division of Project Manager, U. S. Nuclear Regulatory Commission. I am responsible for the safety aspects of the post construction permit reviews for the Midland Plant Units 1 and 2.
2. The supplemental answer to interrogatory 9 was prepared by me or under my supervision. I hereby certify that the answer given is true and accurate to the best of my knowledge.



 Raymond R. Powell

Subscribed and sworn to before
me this 23rd day of February, 1977.



 Notary Public

My Commission Expires July 1, 1978.

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CERTIFICATE OF SERVICE

I hereby certify that copies of "ADDITIONAL NRC STAFF'S ANSWERS TO INTERROGATORIES OF INTERVENORS DATED JANUARY 3, 1977" dated February 23, 1977 in the above-captioned proceeding, have been served on the following by deposit in the United States Mail, first class or air mail, this 23rd day of February, 1977:

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