UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

Cincinnati Gas and Electric Co.

Docket No. 50-358

(Zimmer Nuclear Power Station, Unit No. 1)

DIRECT TESTIMONY OF PHILLIP G. STODDART REGARDING

DR. FANKHAUSER CONTENTIONS 2(c) and 2(e)

State of Maryland)) ss. County of Montgomery)

Phillip G. Stoddart, having first been duly sworn, hearby states as follows: I am employed as a Senior Nuclear Engineer in the Effluent Treatment Systems Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation, of the U.S. Nuclear Regulatory Commission, Washington, D.C. My professional qualifications are set forth immediately below.

EXPERIENCE

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PDR

My present assignment with the NRC dates from August 1973, in the areas of radioactive effluent monitoring, radioactive effluent treatment and control, and radioactive waste management, with the Effluent Treatment Systems Branch, Division of Systems Integration. I came to the NRC in August 1973, on a temporary technical assistance assignment from the Idaho Facilities of the Argonne National Laboratory to the Effluent Treatment Systems Branch, and, subsequently joined the NRC staff as a nuclear engineer in Octuber 1974. In this position I am responsible for the review and evaluation of radioactive waste systems and for the calculation of releases of radioactivity from nuclear power reactors. I am also responsible for determining the adequacy of instrumentation provided for detecting and measuring the radioactive discharges from nuclear power plants and for providing technical bases for guides and standards. I have participated in generic studies of the relationship between reactor operation and radioactive waste generation and in the preparation of staff reports related to effluent control technology and effluent monitoring.

From 1953 to 1973 I was on the radiation safety staff of the Argonne National Laboratory, working from 1953 to 1957 at Argonne's Illinois site and from 1957 to 1973 at Argonne's test facilities at the National Reactor Testing Station, Idaho Falls, Idaho. My duties there included conduct of radiation safety programs, including effluent control and waste management, for several research and test reactors and a fuel recycle facility.

From 1949 to 1953 I was on active duty with the United States Air Force, assigned as a radiological instrumentation specialist with the Armed Forces Special Weapons Command and as a radiological safety instructor with a Strategic Air Command special weapons unit.

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I have published in journals of the American Nuclear Society and the Health Physics Society. In addition, I have published technical reports at the Argonne National Laboratory.

I am a member of the American Nuclear Society. I am a member of the joint American Nuclear Society/Health Physics Society standards subcommittee ANS/HPSSC 6.8, which is preparing a draft American National Standard "Selection and Design Criteria for Continuous Process and Effluent Radiation Monitors for Light Water Nuclear Reactors".

With regard to the monitoring of radioactive effluents from the Zimmer Nuclear Power Station, Unit No. 1, Dr. Fankhauser's Contentions 2(c) and (e) state as follows:

- 2.... "The Applicant's plans for monitoring radiological releases from the plant are inadequate because:...
 - (c) It is unclear from the Applicant's plans whether all radioactive emissions will be monitored or whether only certain isotopes will be monitored."
 - (e) The statement by Applicant's that the monitoring will be "as comprehensive as possible" is vague and monitoring methods are unclear."

Intervenor Contention 2(c)

This contention concerns the Licensee's provisions for the monitoring of radioactive plant releases and whether or not all radioactive emissions will be monitored.

The applicant's provisions for monitoring emissions of radioactive materials from the Zimmer plant are described in Sections 7, 11, and 12, and Appendix L of the Final Safety Analysis Report and are shown schematically in Figures 7.6-1, 7.6-2, 7.6-40 and 9.3-4 (Sheet 5 of 5) in the FSAR.

The range capabilities of monitoring equipment, sampling equipment, and measurement and analytical facilities and procedures, provided by the applicant for the monitoring of gaseous and liquid radioactive emissions from the plant, include the complete spectrum of radioactivity concentrations from the detection and measurement of radionuclides naturally occurring in the environment, through radioactive materials expected to be released as a consequence of normal operation of the plant, during relatively minor upset conditions, and releases from a wide range of postulated accidents.

For gaseous release points, such as the main plant vent at Zimmer, the NRC staff guidance in Regulatory Guides $1.21^{(1)}$ and $1.97^{(2)}$, and in Standard Review Plan $11.5^{(3)}$ specifies the continuous instrumented monitoring of radioactive noble gases, the continuous sampling of radioactive particulates and radioiodines (followed by regular laboratory analysis, by gamma spectrum analysis, for all detectable radionuclides), as well as regular periodic sampling and analyses of tritium and gross alpha activity. The Zimmer effluent monitoring program provides for all of the above and, in addition, provides continuous instrumented monitoring of the provides (such as Cs-137).

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or Co-60). With the variety of monitoring, sampling, and analysis programs provided at Zimmer, all environmentally significant radioactive gaseous emissions are monitored. Essentially the same monitoring programs are provided for all potentially radioactive gaseous emission points at Zimmer. Certain buildings at Zimmer are not considered to be actual or potential sources of radioactive gaseous emissions and, therefore, emissions such as ventilation exhausts from these buildings are not monitored; examples of such buildings are the office and service buildings, sewage treatment plant, gatehouse, warehouse, and other miscellaneous structures.

Radioactive liquid release points are continuously monitored for gross radioactivity in releases, with this monitoring supplemented by periodic sampling and laboratory analysis of effluents for identification of radionuclides in releases. Additionally, releases of potentially radioactive liquids from tanks on a batch basis require sampling and laboratory analysis of tank contents prior to release.

The staff's review of the referenced material concludes that the applicant has provided for the continuous instrumented monitoring, and for supplemental periodic sampling and radiological analysis, of all expected and potential radioactive releases from all of the potential plant release points by all of the monitoring equipment and sampling and analysis techniques that the staff considers to be practicable, necessary, and within the known state of the art.

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Intervenor Contention 2(e)

This contention concerns the adequacy of the Licensee's provisions for monitoring and monitoring methods.

This response is limited in scope to discussion of such portions of the contention as pertain to radioactive effluent monitoring.

The phrase "as comprehensive as possible" apparently refers to a statement made by the applicant on page 6.2-3 of the applicant's Environmental Report. The phrase, taken out of context, as was done in this contention, and standing - by itself could be construed as vague and unclear. The contention might be valid if this phrase constituted the applicant's entire discussion of monitoring of radioactive emissions; however, this is not the case.

The applicant's provisions for monitoring of radioactive emissions from the plant are discussed extensively and lucidly in Chapters 3 and 6 of the Environmental Report, in Sections 5, 7, 11, and 12 of the Final Safety Analysis Report, and in Appendix L to the Final Safety Analysis Report. The total substance of these references is not vague, in the staff's opinion, nor are the monitoring methods unclear. The applicant's proposed effluent monitoring systems meet the NRC staff's acceptance criteria as presented in appropriate regulatory guidance documents.

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CONCLUSION

As stated previously, the identity of the radioactive isotopes to be monitored in effluents from the Zimmer Nuclear Power Station is well established, and the Applicant's monitoring plans are clearly defined in the material referenced supra in my testimony.

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Subscribed and sworn to before me this 1 day of December 1981.

Notary Public

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My Commission expires:

REFERENCES

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- Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants." U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Revision 1, June 1974.
- (2) Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident". U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Revision 2, December 1980.
- (3) Standard Review Plan, Section 11.5, "Process and Effluent Radiological Monitoring Instrumentation and Sampling Systems." U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

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CINCINNATI GAS AND ELECTRIC COMPANY, et al. Docket No. 50-358

(Wm. H. Zimmer Nuclear Power Station, Unit No. 1

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF MOTION FOR SUMMARY DISPOSITION OF DR. DAVID B. FANKHAUSER'S CONTENTION 2(b),(c),(e),(f) AND (g)" and "MEMO-RANDUM IN SUPPORT OF DR. DAVID B. FANKHAUSER'S CONTENTIONS 2(b),(c),(e),(f) AND (g)" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, this 21st day of December, 1981:

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