UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
PENNSYLVANIA POWER AND LIGHT CO.	)	Docket Nos. 50-387
AND	)	50-388
ALLEGHENY ELECTRIC COOPERATIVE, INC.	)	
	)	
(Susquehanna Steam Electric Station, Units 1 and 2)	)	

SUPPLEMENT TO APPLICANTS' STATEMENT OF MATERIAL FACTS

1. The BWR-GALE (Boiling Water Reactor - Gaseous and Liquid Effluent (NUREG-0016, Revision 1)) computer code is used by the NRC Staff in its evaluation of the source terms and effluent waste streams which correspond to a particular design and size of boiling water reactor. This code is a mathematical model which identifies the effluent waste streams in boiling water reactors and calculates the estimate of the quantities of radioactive effluents that will be released. It is based on the best available data generated from operating reactors, field tests, laboratory tests, and plant-specific design features which are incorporated into plants to reduce the quantities of radioactivity materials released to the environment.

2. The source terms calculated in the BWR-GALE computer code are based on:

   (a) standardized coolant activities derived from the ANS 18.1 Working Group,

(b) release and transport mechanisms that result in radioactive materials appearing in liquid and gaseous effluent waste streams,

(c) plant-specific design features to reduce radioactive materials released, and

(d) information received from operating plants on waste stream characteristics and performance of radioactive waste equipment.

3. Although no radioactivity is expected in the service water system, a service water monitor is located in the downstream side of the fuel pool heat exchangers prior to discharge to the cooling tower as a protection device. The monitor is a scintillation detector with a range from 10^{-1} to 10^{6} counts per second. An alarm is sounded if the radiation level is above background. The objective of the monitor is to detect radioactive material leakage to the service water from any source. In addition, the cooling tower blowdown will be sampled periodically for radioactivity. In either situation, measures can be taken to prevent significant radioactive release.

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AFFIDAVIT OF CHARLES LEE MILLER

I, Charles Lee Miller, being duly sworn, dispose and state:

Q: By whom are you employed, and describe the work you perform?

A: I am employed by the Effluent Treatment Systems Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. A copy of my professional qualifications is attached to this affidavit.

Q: Have you read "Applicants' Motion for Summary Disposition of Contention 16 (Cooling Tower Discharge)", filed October 27, 1980, and the documents attached thereto, including the affidavit of Walter J. Rhoades?

A: Yes.

Q: Would you describe the scope of the subject matter addressed in your affidavit?

A: I have been asked to determine if the cooling towers at nuclear power plants normally constitute a radioactive release pathway to the environment. I have also been asked to denote any devices that may be used to determine the presence of radioactivity in the cooling tower water.

Q: Is the cooling tower evaporate considered a source of radioactive release in your determination of plant radioactive effluent source terms?

A: No, because cooling tower water at this facility under normal operation is not radioactive. (Affidavit of Howard B. Holz at 2.) Additionally, the NRC Staff has not found the cooling tower evaporate to be radioactive in operating plants under normal conditions and thus it has not been identified as an effluent waste stream in the BWR-GALE (Boiling Water Reactor - Gaseous and Liquid Effluent (NUREG-0016, Revision 1)) computer code. The NRC Staff uses the BWR-GALE computer code to review plant radioactive effluent source terms. "Source terms" are the radionuclide species and their quantities that comprise the liquid and gaseous effluents from the plant during normal operation including anticipated operational occurrences. The computer code identifies the effluent waste streams in boiling water reactors and calculates the estimate of the quantities of radioactive effluents that will be released. The

water systems that supply the cooling towers are not identified as effluent streams in the code.

Q: What is the basis of the BWR-GALE computer code?

A: The BWR-GALE computer code is used by the NRC Staff to help determine conformance to 10 C.F.R. Part 50, Appendix I. It is a mathematical model that calculates the release of radioactive materials in gaseous and liquid effluents and is based on the best available data. This data is generated from operating reactors, field tests, laboratory tests, and plant-specific design considerations incorporated to reduce quantities of radioactive materials released to the environment. The liquid effluent waste streams identified by the GALE code are consistent with those identified in ANSI N197-1976, "American National Standard BWR Liquid Radioactive Waste Processing System."

The source terms calculated in the GALE code are based on:

(a) standardized coolant activities derived from the ANS 18.1 Working Group,

(b) release and transport mechanisms that result in radioactive materials appearing in liquid and gaseous waste streams,

(c) plant-specific design features to reduce radioactive materials released, and

(d) information received from operating plants on waste stream characteristics and performance of radioactive waste equipment.

Q: Are there any ways to detect if radioactive material is in the cooling tower water?

A: Yes. Although no radioactivity is expected in the service water system, a service water monitor is located in the downstream side of the fuel pool heat exchangers prior to discharge to the cooling tower as a protection device. The monitor is a scintillation detector with a range from 10^{-1} to 10^{6} counts per second. An alarm is sounded if the radiation level is above background. The objective of the monitor is to detect radioactive material leakage to the service water from any source. In addition, the cooling tower blowdown will be sampled periodically for radioactivity. In either situation, measures can be taken to prevent significant radioactive release.

Based on the above-mentioned considerations, I conclude that the water evaporated in the cooling towers at Susquehanna will not provide a radioactive pathway to the environment.

I hereby certify that the above statements are true and correct to the best of my knowledge and belief.

Charles Lee Miller

Charles Lee Miller

Subscribed and sworn to before me
this 5th day of December, 1980.

Elizabeth Ann Upton

Notary Public

My Commission expires: July 1, 1980

CHARLES LEE MILLER
PROFESSIONAL QUALIFICATIONS
DIVISION OF SYSTEMS INTEGRATION
OFFICE OF NUCLEAR REACTOR REGULATION
U.S. NUCLEAR REGULATORY COMMISSION

My name is Charles Lee Miller. I am currently employed by the U.S. Nuclear Regulatory Commission as a Nuclear Engineer, Effluent Treatment Systems Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation. As such, my duties include participation in safety and environmental reviews associated with licensing actions involving the design and operation of radioactive waste treatment systems of nuclear reactor power plants.

I recieved a PhD in Chemical Engineering from the University of Maryland in August of 1974 and a Masters Degree in Chemical Engineering from the University of Maryland in August of 1971. In May of 1968, I received a B.S. in Engineering from Widener College. I am a registered Professional Engineer (District of Columbia).

In 1974, I joined Bechtel Power Corporation in the Gaithersburg, Maryland office as a Chemical Engineer in their nuclear staff. I was involved in the review, design, evaluation and selection of systems and components used for treatment of radioactive wastes. I also was responsible for performing thermal-hydraulic analysis for loss-of-coolant accidents.

In 1976, I joined Science Applications Inc. located in McLean, Va. as a Senior Engineer. My responsibilities included evaluation of Nuclear Waste Disposal Alternatives, Nuclear Facility Safeguards, and Alternative Reprocessing schemes for Nuclear Fuel.

I have held my position with the Commission since April, 1980.