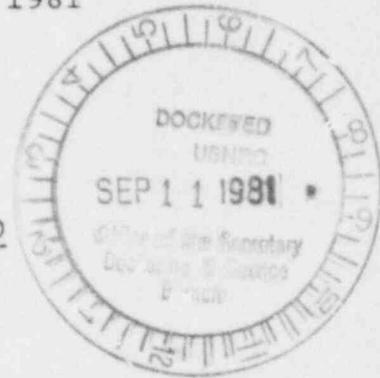


September 9, 1981

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD



In the Matter of)
)
PENNSYLVANIA POWER & LIGHT COMPANY)
)
and)
)
ALLEGHENY ELECTRIC COOPERATIVE, INC.)
)
(Susquehanna Steam Electric Station,)
Units 1 and 2))

Docket Nos. 50-387
50-388



APPLICANTS' STATEMENT OF MATERIAL FACTS
AS TO WHICH THERE IS NO GENUINE ISSUE TO BE HEARD
(MODIFIED CONTENTION 2 (CHLORINE))

Pursuant to 10 C.F.R. § 2.749(a) Applicants state, in support of their Motion for Partial Summary Disposition of the modified chlorine contention in this proceeding, that there is no genuine issue to be heard with respect to the following material facts:

Use of Chlorine at Susquehanna

1. The purpose of chlorinating the various water systems in the Susquehanna facility is to arrest the cumulative growth of slime-forming biolife on equipment surfaces and to disinfect the potable water supply and the sewage effluent from the facility. Specifically, chlorine is used to keep stainless steel condenser tubes free from slime films. Supplemental Affidavit of James Rios in Support of Summary Disposition of Contention 2 (Chlorine)

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("Rios Supp. Aff."), para. 3.

2. To assure a high degree of cleanliness of the condenser tubes and provide a means of minimizing the need to use chlorine for the prevention of biological slimes, the design of Susquehanna includes an "Amertap system" for mechanically removing deposited matter from the tubes in a continuous manner while the condenser is in operation. Rios Supp. Aff., para. 4.

3. Use of the Amertap system will reduce the use of chlorine at Susquehanna; however, chlorine and chlorine-containing compounds will still be used to arrest the growth of biolife on equipment surfaces and, to a much lesser extent, for other uses such as disinfecting the potable water supply and the sewage effluent. Id., para. 5.

4. Susquehanna will use a typical fresh water utility chlorination program in which a timer is set to provide 20 minutes of chlorination every 8 hours for each unit. Liquid chlorine will be injected at a point about two minutes water travel time upstream from the outlet of the condenser. Liquid chlorine will be evaporated and the gas mixed with circulating water and injected upstream of the condenser. The actual dosage added under varying conditions of circulating water composition and temperature will be automatically maintained at the minimum by a free chlorine residual analyzer sampling the condenser outlet. Id., para 6.

5. The United States Environmental Protection Agency ("EPA") has set an average concentration limit for free chlorine residuals contained in cooling tower blowdown discharges to surface

waters at 0.2 mg/l, with a maximum limit of 0.5 mg/l at any time. 40 C.F.R. Part 423. In addition, total chlorine residuals shall not be present in cooling tower blowdown discharges for more than two hours per day for any one cooling tower. These limits are contained in the NPDES permit issued by EPA for Susquehanna. Id., para. 7.

6. Susquehanna will utilize a dechlorination system to meet EPA standards. The dechlorination system will have an adjustable timer. To assure that the chlorine residuals being discharged to the Susquehanna River are minimized, the adjustable timer shall be set so that dechlorination commences soon after the chlorination commences. Under this arrangement there should be no detectable residual chlorine in the cooling water blowdown at any time. Id., para. 7.

Results of a Pilot Plant Study on Formation of Trihalomethanes and Other Chloro-organic Compounds When Chlorinating Concentrated Susquehanna River Water

7. Most rivers contain organic humic compounds, which upon reacting with chlorine can form trihalomethanes and halomethanes. The trihalomethanes consist of chloroform, bromoform, dibromochloromethane and bromodichloromethane. In addition to the trihalomethanes, other halomethanes can be formed from the reaction between chlorine and waterborne organics. Id., at para. 9.

8. To determine the extent to which trihalomethanes and other halomethanes would be formed at Susquehanna during

chlorination of the circulating cooling water, a pilot plant study has been carried out. Samples of Susquehanna River water were collected and analyzed. The river water samples were taken in front of the Susquehanna intake structure, to assure that the samples would be representative of actual operating conditions. Id., para. 10. The existing concentrations of trihalomethanes and other halomethanes in the Susquehanna River are near the estimated limit of detection for these analyses. Only chloroform and bromodichloromethane are slightly above the limit of detection, showing up at average river water concentrations of 0.13 and 0.25 µg/l. Id., para. 11.

9. In the pilot plant study, the river water was concentrated 3.8 times (average), which is the concentration expected to take place in the cooling towers at Susquehanna. Sufficient chlorine was added to produce a free chlorine residual of 0.2-0.3 mg/l at the end of two minutes, thus simulating the conditions that will exist during actual chlorination of the circulating cooling water. Id., para. 12. The concentrated-chlorinated water was then aerated for 30 minutes and dechlorinated. This process resulted in chloroform and bromodichloromethane concentrations of 3.9 and 0.45 µg/l respectively, while the concentrations of other trihalomethanes were below the limits of detection. Of the other halomethanes, only methylene chloride was detected, at a concentration of 0.2 µg/l (average). Id., para. 13.

10. The total average concentration of trihalomethanes in

the plant discharge (2.34 µg/l) is far below the maximum limit of 100 µg/l set by EPA in the National Interim Drinking Water Regulations for public water systems. Id., para. 14. The trihalomethanes contained in the cooling tower blowdown of one of the towers at Susquehanna will be further diluted by the second cooling tower's blowdown, and by the plant discharge mixing with the river flow. Id., para. 14. Even assuming a 7-day 10-year low-flow condition the increase in the concentration of trihalomethanes in the river water downstream from Susquehanna is at or below the estimated limits of detection. Id. The average river water flow is approximately 15 times higher than the 7-day 10-year low-flow condition used for calculating resultant river water concentrations of trihalomethanes and halomethanes. Id.

11. The chloroform and bromodichloromethane concentrations of 0.19 and 0.26 µg/l, which represent the calculated results of mixing the plant discharge with the river water, are an order of magnitude less than EPA's ambient water quality criterion of 1.9 µg/l presented in EPA's "Water Quality Criteria". This criterion applies to the ambient concentration in the river itself, not the facility discharges. Id., para. 15.

12. The only other halomethane (methylene chloride) whose formation was detected during the pilot plant tests would be undetectable in the mixture of plant discharge and river water. Even the concentration of methylene chloride in undiluted cooling tower blowdown would be an order of magnitude less than the EPA's ambient water quality criterion of 1.9 µg/l. Id., para. 16.

13. The results of this pilot plant study are confirmed by experiments carried out on three cooling towers at the Oak Ridge Flux Isotope Reactor. With water makeup to the cooling towers containing 100 µg/l of chloroform and after passing through the cooling tower, the concentration at Oak Ridge was found to be 1 µg/l most of the time. Id., para. 17.

Comparison of Chlorine Dosages at the Danville Water Treatment Plant With Those Attributable to Susquehanna

14. The Danville Water Treatment Plant takes water from the Susquehanna River about 30 miles downstream from the Susquehanna site, and after treatment supplies water to about 9,000 persons in the Danville area. After clarification and filtration the water treatment plant injects approximately 3.3 mg/l of chlorine to maintain an average of 0.6 mg/l and a peak of 1.1 mg/l of total chlorine residual. Loss of chlorine residual in the total distribution system is reported to be minimal. Chlorination is on a continuous 24-hour basis. Id., para. 18.

15. The chlorine dosages that will be required for treating the condenser cooling water at Susquehanna were determined by recent tests to be 2.16 mg/l (average). This dosage produced a free chlorine residual of 0.3 mg/l on concentrated Susquehanna River Water and simulates actual operating conditions. Id., para. 19.

16. The chlorine dosage requirement at Susquehanna will be approximately two-thirds of that required for chlorinating

drinking water at the Danville Water Treatment Plant. The length of chlorination at Susquehanna is 1/12th that at the Danville Water Treatment Plant, because at Susquehanna the chlorine will be injected intermittently for approximately one hour per unit per day, while at the Danville Water Treatment Plant the chlorine is injected continuously, 24 hours per day. Id., para. 20.

17. Further, the concentration of any trihalomethanes or other halomethanes discharged from Susquehanna into the river is so low that any increase in concentration over the ambient river concentration at the intake of the Danville Water Treatment Plant would be at or below the limit of detection. Therefore, the increase would be negligible. Id., para 21.

Results of Review of Synfuel Energy Corporation's
Environmental Study for an Ethanol Production Plant

18. The Synfuel Energy Corporation ("Synfuel") has prepared an environmental study for a proposed ethanol production plant approximately 15 miles upstream from Susquehanna. A review of that study has provided the following information:

- a. Synfuel will not be discharging to the Susquehanna River or its tributaries any waste waters that can be contaminated with organic chemicals produced at the proposed plant or brought on site.
- b. The only wastewater which Synfuel plans to discharge to a surface water (Newport Creek)

is cooling tower blowdown, which would meet discharge requirements to the Susquehanna River.

- c. The annual volume of Synfuel's cooling water blowdown is 36,500,000 gallons.
- d. All other plant wastewaters, some of which are high in organics, will be routed to the Industrial Park Sanitary Wastewater Treatment system. There, the biological treatment system will break down the complex organic chemicals in the wastewaters into harmless constituents.
- e. Pennsylvania Distillery Waste standards, to which the ethanol plant would be subject, require that distillery wastewaters be completely evaporated or be treated to remove not less than 95% of the 5-day BOD (biological oxygen demand).

Id., para. 22.

19. Since Synfuel would not be discharging from its proposed facility wastewater containing organics which might act as nutrients for condenser-fouling organisms, or which could require additional chlorine, there would not be a necessity for increasing

chlorination of the water systems at Susquehanna, should the proposed Synfuel facility be constructed and operated. Id., para. 23.

Dated: September 9, 1981.

Respectfully submitted,

SHAW, PITTMAN, POTTS & TROWBRIDGE

By Matias F. Travieso-Díaz
Jay E. Silberg
Matias F. Travieso-Díaz

Counsel for Applicants

1800 M Street, N.W.
Washington, D.C. 20002
Telephone: (202) 822-1000