July 20, 1981

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	
HOUSTON LIGHTING & POWER COMPANY	Docket No. 50-466
(Allens Creek Nuclear Generating Station, Unit No. 1)	

TESTIMONY OF GUY MARTIN, JR., ON BEHALF OF HOUSTON LIGHTING & POWER CO., ON McCORKLE CONTENTION 9 RELATING TO CHLORINE MONITORING

Q. Please state your name and business address.

A. My name is Guy Martin, Jr., and my business address is Ebasco Services, Inc., 2 World Trade Center, New York, N.Y.

Q. What is your position with Ebasco?

A. I am presently Supervising Engineer of Envirosphere's Radiological Impact Assessment Department.

Q. Please describe your education and professional qualifications.

A. A statement of my education and professional qualifications is attached to this testimony as Attachment GM-1.

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Q. Mr. Martin, what is the purpose of your testimony?

A. My testimony will address Intervenor McCorkle's Contention 9 in which it has been alleged that:

> No plan has been developed to protect the plant operators from the danger of poisoning from gases such as chlorine which could come into the control room in sufficient quantities to force evacuation before the plant was brought down to low power status. Railroad accidents and on-site storage of gases such as chlorine could be sources for such gases.

Q. Is the Allens Creek control room designed to protect control room operators from accidents involving releases of toxic gases, including chlorine, which are stored on site?

A. Yes. In PSAR Appendix C the Applicant has committed to provide protection for control room operators from accidents involving the release of toxic gases. Our analysis shows that, of the materials stored on site, only chlorine presents any potential danger to control room personnel. Therefore, the design of the control room includes detectors located in the fresh air inlets which, upon detection of chlorine, will provide an audible alarm and automatically isolate the control room. These detectors will also detect chlorine releases which may originate from offsite sources, including the nearby Atchison, Topeka and Santa Fe (AT&SF) railroad.

In addition, adequate self-contained breathing apparatus will be provided for further protection of control room operators.

Q. Are there any offsite sources of potentially toxic gases other than chlorine that could pose a hazard to control room operators?

A. Currently there is insufficient data upon which to base such a determination.

Q. Please explain.

A. An accident involving a train traveling along the AT&SF railroad line, which is located approximately 4500 feet west of the control room, presents the only possible offsite source of toxic gases of sufficient quantity to pose a potential threat to control room operators.

The limited data on toxic materials shipments obtained thus far from AT&SF indicates that the probability of accidents on the AT&SF line which might involve materials which could adversely affect control room habitability approaches the NRC acceptance criterion of 10^{-6} per year. Neither the data concerning the frequency of toxic materials shipments provided by AT&SF nor the data I have reviewed concerning railroad accidents are

sufficient to support a full and complete evaluation of the risk to the control room operators from toxic gases released as a result of a railroad accident.

Q. What efforts are being made to compile the data necessary to make such a determination?

A. Efforts are currently underway to compile more complete data concerning shipments of toxic materials on the AT&SF line. For years after 1980, data concerning the frequency of hazardous materials shipments as well as accidents on the AT&SF line will be systematically collected. In addition, a more in-depth examination of the characteristics of accidents involving release of toxic material will be undertaken. With this additional information, a study to determine whether there is a potential hazard from offsite toxic gases to the control room operators will be completed and submitted in the Final Safety Analysis Report at the Operating License review stage.

Q. Does a study of this type need to be completed at this time?

A. No. The outcome of a study of this type will have no effect upon the suitability of the ACNGS site.

Moreover, the large data base which will be obtained during the Operating License review stage will allow a more accurate determination of both the need for additional toxic chemical protection and the identification of the specific hazardous materials for which protection may be required.

Q. What would have to be done at Allens Creek if this final study were to show that the probability of a toxic gas release hazardous to the control room operators did not meet the NRC acceptance criteria?

A. If the data accumulated at the Operating License stage indicate that the probability of accidents which may adversely affect control room habitability does not meet the applicable acceptance criteria, HL&P will provide appropriate means to assure that a higher level of protection is given to the control room operators. Appropriate technical means and engineering designs, including warning systems and toxic chemical detectors, are currently available to insure that toxic chemicals will pose no hazard to control room habitability regardless of the accident probability. If necessary, such systems can be installed at Allens Creek with only minor alterations to the control room.

Q. Will such toxic chemical detectors be able to detect the presence of any potentially toxic gases?

A. Yes. Detectors are commercially available which can detect all types of toxic gases including all those gases which are currently carried on the AT&SF railroad.

Q. What are your conclusions?

A. A final study concerning the effects of the postulated release of toxic gas from an accident on the AT&SF railroad will be performed during the Operating License review stage. If the results of this study indicate a toxic gas hazard does indeed exist to the control room operators, HL&P will provide a higher level of protection in the control room. This higher level of protection may take the form of appropriate engineering design changes, such as warning systems or toxic chemical detectors, which are currently available to the nuclear industry.

Attachment GM-1

Guy Martin, Jr.

I received a ME from the City College of the City of New York in 1974. I received a MS in Nuclear Engineering from Polytechnic Institute of New York in 1976. I have been employed by Ebasco since 1973. I have eight years' experience in preparation of Safety Analysis and Envirionmental Reports sections dealing with the impact analysis of toxic chemicals and radiological releases. Such analyses are performed for both routine plant operation and accident conditins. In this regard, I conduct reviews of radwaste handling systems, air handling and cleanup systems and estimate radionuclide releases from plant effluents and calculate and calculation of implant dose rates to equipment and personnel from air borne radionuclide exposure and I have performed ALARA of air cleanup systems. I have performed safety reviews of engineered safety systems, which included a review of the specifications and operation from the radiation protection viewpoint and have provided design recommendations based on assessed radiological doses and established nuclear safety criteria. I have performed analyses of the transport of toxic chemicals postulated to be released accidentally and calculated the concentration in critical locations of the power plant. I have provided technical feedback to the designers on required protection levels. In this regard I have assisted in making the determination of toxic chemical detector specifications based on worker and equipment protection criteria.

I have responsibility for the preparation of radiological envirionmental surveillance programs wherein I have prepared detailed surveillance program description based on site specific critical pathways of exposure. I have established the sampling requirements of the frequency and types of analyses to be performed.

I have also participated in preparation of a study regarding the establishment of a comprehensive data base regarding high level waste disposal and I have supervised the health physics activities related to decontamination work at the Kellex Laboratory.

Prior to my employment with basco, I was employed as a cost analyst by Equitable Life Assurance Socity of the US.

I am a member of the American Society of Mechanical Engineers, a member of the Health Physics Society, and a member of the American Nuclear Society, and Intern Engineer of New York State. I have written the following publications:

Martin, G. and J. Thomas 1978. Meeting the dose requirements of 10CFR100 for site suitability and general design criteria 19 for control room habitability: a parametric approach. Transactions of American Nuclear Society 24th Annual Meeting. Vol. 18.

Martin, G. D. Michlewicz and J. Thomas 1978. Fission 2120: a program for assessing the need for engineered safety feature grade air cleaning systems in post-accident environment. Proceedings of 15th DCE Nuclear Air Cleaning Conference.

Letizia, A. P., G. Martin and J. F. Silvey 1979. - Implications for nuclear facilities of changes being initiated in the NRC standard atmospheric diffusion model. Proceeding of the 41st Annual Meeting of the American Power Conference.

Bhatia, R. K., Mauro, J., Martin, G. - Effections of Containment Purge on the Consequences of a Loss-of-Coolant Accident. Transactions of the American Nuclear Society 1980 Annual Meeting.