07/27/81

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

NRC STAFF SUPPLEMENTAL TESTIMONY OF MEL B. FIELDS
REGARDING BOARD QUESTION 4A, COMBUSTIBLE GAS CONTROL

Q. Please state your name and position with the NRC.

A. My name is Mel B. Fields. I am a Systems Engineer in the Containment Systems Branch of the Office of Nuclear Reactor Regulation. A copy of my professional qualifications statement is attached.

Q. What is the purpose of this testimony?

A. The purpose of this testimony is to respond to Licensing Board Question 4A regarding whether the proposed ACNGS facility will meet the requirements of the Commission with respect to standards for combustible gas control (including hydrogen generation.)

Q. What are the NRC's current requirements for combustible gas control?

A. The allowable rate of hydrogen generation inside the containment following a design basis accident is contained in 10 CFR Part 50.44. The hydrogen control system, which consists of internal recombiners, must also meet the safety class requirements, capacity requirements, and

redundancy requirements for nuclear power plants that are set forth in 10 CFR 50.44 and Appendix A, Criteria 41, 42 and 43 of 10 CFR Part 50.

Q. Has the applicant met these standards for 10 CFR Part 50?

A. Yes. Section 6.2.5 of Supplement 2 to the SER (NUREG-0515, dated March 1979) for Allens Creek contains our latest evaluation of applicant's combustible gas control system. As reported in this section of the SER, the applicant has complied with the current Commission requirements of 10 CFR 50.44 for calculating the amount and rate of combustible gas release inside the reactor containment.

Q. Are there possible future additional Commission requirements for combustible gas control?

A. Yes. As a result of the TMI accident, the Commission is reconsidering the amount of fuel-clad metal water reaction that could take place following a LOCA. A proposed rule is currently before the Commission that would require near term CP's (of which Allens Creek is one) to provide a system for hydrogen control capable of handling hydrogen generated by the equivalent of a 100% fuel-clad metal water reaction. This is considerably greater than the amount of metal-water reaction currently required to show compliance with 10 CFR Part 50.44.

Q. What is the status of the Allens Creek review insofar as this proposed new rule is concerned?

A. The Staff recently completed its review of the applicant's preliminary information and commitments that were submitted in response to Item II.B.8(3) of NUREG-0718, "Licensing Requirements for Pending Applications for Construction Permits and Manufacturing License," dated March 1981, regarding hydrogen control. The applicant has preliminarily

selected a postaccident inerting system (PAIS) using carbon dioxide (CO_2) as the system for hydrogen control. The proposed CO_2 system is designed to inert the containment following an accident that releases hydrogen generated from metal-water reaction during a degraded core accident. A description of the preliminary design concepts is set forth in NUREG-0515, Supplement No. 3, "Safety Evaluation Report Related to the Construction of Allens Creek Nuclear Generating Station, Unit 1," dated July 1981, Sec. II.B.8(3). The Staff found the preliminary information and commitments acceptable including the applicant's commitment to provide, within 2 years of issuance of the construction permit, analyses and test data to verify compliance with Staff positions on the hydrogen control system. The Staff concluded that the PAIS has the potential to become a suitable long-term solution to hydrogen management, but requested the applicant to assess the value and costs of alternative hydrogen mitigation systems which may provide enhanced margins of safety relative to the PAIS. See NUREG-0515, Supp. No. 3, p. II-8.

Professional Qualifications
Mel B. Fields

I am a Systems Engineer in the Containment Systems Branch of the Office of Nuclear Reactor Regulation. In this position I am responsible for the review and technical evaluation of safety aspects of containment systems.

I graduated from the University of Arizona with a Bachelor of Science Degree in Nuclear Engineering in 1974 and received a MS in Mechanical Engineering from Catholic University of America in Washington, D.C. in 1981.

In 1975 I accepted a position as a Reactor Engineer in the Containment Systems Branch, Division of Systems Safety, Nuclear Regulatory Commission. My responsibilities included the review and technical evaluation of the safety aspects of containment systems. In this position, I have been responsible for the evauation of the health and safety aspects related to containment systems for the following nuclear power plants: Black Fox Station, Units Nos. 1 & 2, Grand Gulf Nuclear Station, Units Nos. 1 & 2, North Anna Power Station, Units Nos. 1 & 2, Jamesport Nuclear Station, Units Nos. 1 & 2 and Cherokee and Perkins Nuclear Station, Units Nos. 1, 2 & 3. For the Black Fox Station, I was responsible for reviewing the staff positions and writing the section of the Safety Evaluation Report on the Mark III containment system. In early 1977, I was transferred to another branch, the Power Systems Branch, in the same division where I remained for approximately 1-1/2 years before returning recently to the Containment Systems Branch. I am currently involved in the review of the Mark III Containment Test Program being conducted by General Electric.