UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
DUKE POWER COMPANY	)	Docket Nos. 50-369
	)	50-370
(William B. McGuire Nuclear Station, Units 1 and 2)	)	

TESTIMONY OF WILLIAM H. RASIN
REGARDING THE HYDROGEN MITIGATION SYSTEM

1. Q. What is the scope of this testimony?

   A. This testimony will describe the purpose, components, and operation of the distributed ignition hydrogen mitigation system installed at McGuire.

2. Q. What is the purpose of the distributed ignition hydrogen mitigation system?

   A. The system's purpose is to provide additional sources of ignition within the containment, and thus to provide additional assurance that hydrogen released into containment will ignite at concentrations of appoximately 8%. I would note that during the accident at Unit 2 of the Three Mile Island nuclear facility ("TMI"), hydrogen released into containment was ignited by existing sources within the containment. It is reasonable to assume that in the event of a similar situation inside the McGuire containment, hydrogen would be ignited by existing sources, other than those associated with the hydrogen mitigation system.

3. Q. Describe the components and operation of the system?

   A. The hydrogen mitigation system consists of 62 igniter assemblies (46 in lower containment, 8 in the ice condenser upper plenum, and 8 in upper containment) located in 31 distinct areas of the containment building. Each igniter assembly consists of a glow plug and a control power transformer. In the extremely remote and incredible event that an accident occurs at McGuire resulting in a loss of coolant coupled with a sustained

failure to provide cooling water to the reactor core, excessive quantities of hydrogen may result. In such an event, the glow plugs will be energized prior to release of this hydrogen and will provide a high temperature surface which will ignite the hydrogen when the hydrogen reaches flammable limits. A complete description of the system and the location of the components is contained in "Duke Power Company, An Analysis of Hydrogen Control Measures at McGuire Nuclear Station" (November 17, 1980).

4. Q. Have any tests been conducted to determine whether such a system is effective?

A. Yes. Duke Power Company, with other utilities, sponsored an experimental program to determine the effectiveness of the hydrogen igniters which have been installed at the McGuire Unit 1 nuclear power plant as well as at a presently operating nuclear power facility. This experimental program was conducted by Fenwal, Incorporated in conjunction with Westinghouse and Combustion and Explosives Research Company. The test conditions were selected to present significant environmental challenges to the effectiveness of the igniter system so that it could be evaluated. This experimental program demonstrated that the hydrogen igniters which have been installed at McGuire Unit 1 as will as at an operating nuclear power facility can effectively initiate a hydrogen burn. In the event of an accident resulting in the release of hydrogen in excess of the amount specified in 10 CFR §50.44 these igniters will burn the released hydrogen at low concentations, thereby preventing the burning of a large concentration of hydrogen. A report and evaluation of this testing program is contained in "Duke Power Company, An Analysis of Hydrogen Control Measures at McGuire Nuclear Station" (November 17, 1980).

Professional Qualifications
of
WILLIAM H. RASIN
Design Engineer
Duke Power Company

My name is William H. Rasin. My business address is 442 South Church Street, Charlotte, North Carolina, 28242. I am a Design Engineer in the Safety Review, Analysis, and Licensing Division, Design Engineering Department, Duke Power Company.

I graduated from the University of Virginia with a Bachelor of Science degree in Nuclear Engineering.

From June 1977 to the present, I have been employed by Duke Power Company in the Design Engineering Department. I am currently head of the Integrated Systems Analysis Section. Previous assignments with Duke have been as head of the Nuclear Group and supervisor of the Nuclear Fuels and Licensing subgroups. I was a member of the initial contingent of Duke engineers which responded to the Three Mile Island accident and served on the Industry Advisory Group at the TMI site.

My major responsibility is currently to coordinate and direct Design Engineering's efforts to address the hydrogen issue.

Prior to my employment with Duke Power Company, I spent approximately 6 years at the University of Virginia Research Reactor Facility as Staff Reactor Engineer. In this position, I held a Senior Reactor Operator License from the Nuclear Regulatory Commission. I also spent approximately eight years in the U.S. Naval Nuclear Power Program where I was qualified as a Reactor Operator and Engineering Officer of the Watch.

I am a member of the Safety and Analysis Task Force of the Electric Power Research Institute, a member of the American Nuclear Society, and a registered Professional Engineer in North Carolina.