

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)

METROPOLITAN EDISON COMPANY)

(Three Mile Island Nuclear
Station, Unit No. 1))

Docket No. 50-289
(Restart)

NRC STAFF TESTIMONY OF WALTON L. JENSEN, JR., RELATIVE TO
PRIMARY SYSTEM FORCED FLOW CIRCULATION
UCS CONTENTION 2

Q1) Please state your name and position with the NRC.

A) My name is Walton L. Jensen, Jr. I am an employee of the U.S. Nuclear Regulatory Commission assigned to the Reactor Systems Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation. From June through December 1979, I was assigned to the Analysis Group of the Bulletins and Orders Task Force, Office of Nuclear Reactor Regulation.

Q2) Have you prepared a statement of professional qualifications?

A) Yes. A copy of this statement is attached to the NRC response to ECNP Contention 1d.

Q3) Please state the nature of the responsibilities that you have had with respect to the Three Mile Island Nuclear Station - Unit 1.

- A) The accident at Three Mile Island Unit 2 (TMI-2) on March 28, 1979, involved a feedwater transient coupled with the equivalent of a small break in the reactor coolant system, though the accident's ultimate severity resulted from a number of interacting elements including lack of complete understanding of system response, misleading instrument readings and inadequate operator training and procedures. Because of the resulting severity of ensuing events and the potential generic applicability of the accident to other reactors, the NRC staff initiated prompt action to:
- (1) assure that other reactor licensees, particularly those plants such as TMI-1 which have a similar design to TMI-2, took the necessary actions to substantially reduce the likelihood of future TMI-2-type events from occurring, and
 - (2) initiate comprehensive investigations into the potential generic implications of this accident on other operating plants.

To accomplish some of this work, the Bulletins and Orders Task Force (B&OTF) was established within the Office of Nuclear Reactor Regulation (NRR) in early May 1979. The B&OTF was responsible for reviewing and directing the TMI-2-related staff activities associated with loss of feedwater transient and small break loss-of-coolant accidents (LOCAs) for all operating plants to assure their continued safe operation.

I was assigned to the Task Force in June 1979. I participated in the preparation of NUREG-0565, "Generic Evaluation of Small Break Loss-of-Coolant Accident Behavior in Babcock & Wilcox Designed 177-FA Operating Plants."

Following my assignment to the Reactor Systems Branch, I participated in the evaluation of potential feedwater transients at operating B&W plants

and participated in the final preparation of the staff Safety Evaluation on the Three Mile Island 1 restart.

Q4) Please state the purpose of this testimony.

A) The purpose of this testimony is to respond to UCS Contention 2 which reads:

"Using the existing equipment at TMI-1, there are only 3 ways of providing forced cooling of the reactor: (1) the reactor coolant pumps; (2) the residual heat removal system; and (3) the emergency core cooling system in a "bleed and feed" mode. None of these methods meets the NRC's regulations applicable to systems important to safety and is sufficiently reliable to protect public health and safety:

"(a) The reactor coolant pumps do not have an on-site power supply (GDC 17), their controls do not meet IEEE 279 (10 CFR 50.55a(h)) and they are not seismically and environmentally qualified (GDC 2 and 4).

"(b) The residual heat removal system is incapable of being utilized at the design pressure of the primary system.

"(c) The emergency core cooling system cannot be operated in the bleed and feed mode for the necessary period of time because of inadequate capacity and radiation shielding for the storage of the radioactive water bled from the primary coolant system."

Q5) When is forced cooling required?

A) Forced cooling is required at any time when the reactor is critical. The shutdown rods are automatically inserted into the core in the event that the reactor coolant pumps do not provide forced cooling.

Q6) Is forced cooling required for safe shutdown in the event of a loss of main feedwater or small break LOCA?

A) No. In the event of a loss of main feedwater, emergency feedwater would be effective in removing decay heat. This heat would be transmitted to the steam generators by means of natural circulation. Natural circulation

will be effective in removing decay heat even in the event of a small break LOCA. See the NRC response to UCS contention 1.

Q7) Then is it necessary to operate the reactor coolant pumps, residual heat removal system or emergency core cooling system in the feed and bleed mode following a loss of main feedwater or small break LOCA to protect the health and safety of the public?

A) No.