

Duke Power Company  
McGuire Nuclear Station  
Units 1 & 2

Report Number: SD-369/80-07, 370/80-06

Report Date: July 7, 1980

Facility: McGuire Nuclear Station, Units 1 & 2

Reference: Westinghouse letter NS-TMA-2245, May 8, 1980, from T. M. Anderson to V. Stello (copy attached)

Description of Deficiency:

See referenced Westinghouse letter NS-TMA-2245. Duke Power Company has performed a specific analysis for the McGuire Plant which indicates that the potential does exist for inadequate minimum flow with consequential damage to one or both centrifugal charging pumps following a secondary side high energy line rupture.

Analysis of Safety Implications:

Inadequate minimum flow through the centrifugal charging pumps may result in degraded performance or loss of function of one or both pumps. This in turn may adversely impact long-term recovery operations for the initiating event and is not permitted by design criteria.

Corrective Action:

Westinghouse Electric Company is currently studying this problem to determine an appropriate permanent solution. Westinghouse has recommended two possible interim solutions to the problem as described in the referenced letter NS-TMA-2245, however, Duke Power Company is awaiting confirmed analytical results supporting acceptability of those solutions with regard to impact on consequences of various accidents which initiate safety injection and are sensitive to centrifugal charging pump flow delivery. A report will be filed by August 12, 1980 detailing both interim and permanent corrective actions.

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Electric Corporation

Water Reactor  
Divisions

Nuclear Technology Division  
Box 355  
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May 8, 1980

NS-TMA-2245

Mr. V. Stello, Director  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
1717 H Street  
Washington, D. C. 20555

Subject: Centrifugal Charging Pump Operation Following Secondary Side  
High Energy Line Rupture

Dear Mr. Stello:

This letter is to confirm the telephone conversation of May 8, 1980 between Westinghouse and Mr. Ed Blackwood of Division of Reactor Operations Inspection, Office of Inspection and Enforcement, regarding notification made pursuant to Title 10 CFR Part 21.

A review of the Westinghouse Safety Injection (SI) Termination Criteria following a secondary side high energy line rupture (feedline or steamline rupture at high initial power levels) has revealed a potential for consequential damage of one or more centrifugal charging pumps (CCPs) before the SI termination criteria are satisfied and CCP operation terminated. Such consequential damage may adversely impact long-term recovery operations for the initiating event and is not permitted by design criteria. This concern exists for plants which utilize the CCPs as Emergency Core Cooling System (ECCS) pumps, where the CCPs are automatically started, and where the CCP miniflow isolation valves are automatically isolated upon safety injection initiation. Attachment A identifies plants potentially subject to this concern. A summary of the concern and recommendations follow.

Following a secondary side high energy line rupture and associated reactor trip, Reactor Coolant System (RCS) pressure and temperature initially decrease. Safety injection is actuated and the CCPs start to increase RCS inventory. Reactor Coolant System pressure and temperature subsequently increase due to the loss of secondary inventory, steamline and feedline isolation, RCS inventory addition and reactor core decay heat generation. The accident scenario may vary with rupture size and specific plant design, but it will develop into a RCS heatup transient with accompanying increase in RCS pressure. er-operated relief valves 2350 psia. Although these signed as safety-related equip- r loss of offsite power,

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