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JUN 01 1984

Dr. Zack T. Pate, President  
Institute of Nuclear Power Operations  
1100 Circle 75 Parkway, Suite 1500  
Atlanta, GA 30339

SUBJECT: STUCK OPEN ISOLATION CHECK VALVE ON THE  
RESIDUAL HEAT REMOVAL SYSTEM AT HATCH UNIT 2

Dear Dr. Pate:

I am enclosing a recently completed Engineering Evaluation Report on the above subject for your review. Our evaluation determined that the stuck open isolation check valve on the low pressure coolant injection line at Hatch Unit 2 was caused by a series of human errors. They involved a maintenance error on the air actuator of the valve; inadequate post-maintenance testing; and inadequate surveillance of control room indications related to valve disk position and actuator travel. The safety significance of this event stems from the observation that the open check valve substantially degraded the isolation barriers between the high-pressure reactor coolant system and the low-pressure residual heat removal system. This in turn led to a significant increase in reactor accident risks for Hatch Unit 2 because the mispositioned valve significantly increased the probability of an interfacing loss-of-coolant accident. Such an accident which in this situation would be caused by a single failure of the normally closed motor-operated injection valve would involve the sudden discharge of high-pressure reactor coolant outside the primary containment and would also likely disable the low-pressure residual heat removal system.

Our evaluation found that a large number of BWRs have a similar system isolation configuration between the reactor coolant system and the residual heat removal system to that in Hatch Unit 2. These plants incorporate a normally closed (testable) air-actuated inboard isolation check valve and a normally closed outboard injection gate valve on the low pressure coolant injection line. Therefore, these plants may be susceptible to a similar occurrence if the air operator is not disabled during normal power operation.

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Dr. Zack T. Pate

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One of the suggestions from our evaluation is that it would be desirable for an industry group such as the Institute of Nuclear Power Operations to define good industry practice for disabling the air actuators of testable check valves in instances when flow testing is performed in accordance with ASME Section XI. A discussion on this suggestion is contained in the main body of the enclosed report and its Appendix B. We believe this would further enhance plant safety and would welcome your comments on this topic. If you have questions regarding the enclosed report, please contact Peter Lam (301-492-4438) of my staff.

Sincerely yours,

Original signed by:  
C. J. Heltemes, Jr.

C. J. Heltemes, Jr., Director  
Office for Analysis and Evaluation  
of Operational Data

Enclosure:  
As stated

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cc w/enclosure:  
S. Rosen, INPO  
J. Roe, NRC

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