



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 91 TO FACILITY OPERATING LICENSE NPF-9
AND AMENDMENT NO. 72 TO FACILITY OPERATING LICENSE NPF-17
DUKE POWER COMPANY
DOCKET NOS. 50-369 AND 50-370
MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

1.0 INTRODUCTION

By letter dated December 17, 1986, Duke Power Company (the licensee) requested a change to McGuire Unit 1 and Unit 2 Technical Specification (TS) 4.5.1.1.c which regards the surveillance requirements for power lockout of the cold leg accumulator isolation valves. Specifically, the present method for disconnecting power to the isolation valves, which is "by removal of the breaker from the circuit," would be deleted. By letters dated February 13, 1987, March 2, 1987, and September 8, 1987, the licensee provided additional information in support of this request. At the request of the NRC, the licensee submitted an additional request on July 13, 1988, which would add TS 4.5.1.1.d. This additional TS would require that each cold leg accumulator be demonstrated operable at least once per 18 months by verifying proper operation of the power disconnect circuit.

The supporting information provided by the licensee's letters of March 2 and September 8, 1987, and the additional associated surveillance requirement requested by the NRC to periodically verify proper operation of the power disconnect circuit, as proposed by the licensee July 13, 1988, do not alter the substance of the changes or the proposed no significant hazards determination as noticed in the Federal Register on March 12, 1987.

2.0 EVALUATION

The isolation valves in the discharge piping of the ECCS cold leg accumulators are required to be open during Operating Modes 1, 2 and 3 to assure that the accumulators can discharge their borated water into the reactor coolant system when needed to mitigate the consequences of a depressurization accident such as a LOCA. Once the valves are in proper ECCS position during startup, the TS requires that power to the valves be disconnected, and periodically verified to remain disconnected, in order to assure that the valves do not subsequently change position. Power is presently disconnected by removing the breaker from the circuit. The licensee has now modified the design of the power lockout circuit for the cold leg accumulator isolation valves and proposes to revise the TS to reflect use of this modification to disconnect power.

In its February 13, 1987 letter, the licensee provided an electrical schematic of the power lockout circuit modification provided for the cold leg accumulator isolation valves. The modification consists of an additional circuit breaker and motor contactor assembly that is inserted in the motor operator circuit of the accumulator isolation valve between the existing motor contactor and the valve motor. There is a two position switch (power disconnect switch) located in the control room with one set of contacts in the control circuit of the new motor contactor operating coil and an additional set of contacts in the seal-in circuit of the existing motor contactor close circuit. When the power disconnect switch is in the disconnect position the new motor contactor will remain open, removing power from the valve motor and preventing spurious or inadvertent actuation of the valve motor. When the power disconnect switch is in the enable position the new motor contactor will close following closure of the existing motor contactor, thereby allowing the valve motor to operate and reposition the valve.

Under the existing TS requirements, power is removed from cold leg accumulator isolation valve motors by removal of the circuit breaker that supplies power to the valve motor. The proposed new way of removing power from the valve motor is to place the power disconnect switch described above in the disconnect position so that the new motor contactor prevents connection of power to the valve motor. The existing McGuire Technical Specification calls for verifying that power to the isolation valve operator is disconnected by removal of the breaker from the circuit at least once per 31 days when the RCS pressure is above 2000 psig. The proposed new technical specifications deletes the words "by removal of the breaker from the circuit" and, as first requested, called only for verifying at least every 31 days that power to the isolation valve operator is disconnected when RCS pressure is above 2000 psig. By letter dated March 2, 1987, the licensee indicated that it would verify that power to the isolation valve operator is disconnected by verifying that the power disconnect switch was in the disconnect position and the valve indicator light indicated the valve was open.

The staff reviewed the licensee's submittal and found that the hardware modifications made to achieve power lockout for the cold leg accumulator isolation valves from the main control room were acceptable. However, the staff was concerned about the means that the licensee had indicated it would use to periodically verify the disconnection of power to the isolation valves. Specifically, the surveillance, which only verified that the power disconnect switch was in the disconnect position and the valve indicator light indicated the valve was open, would not verify that the power lockout circuit was actually functioning. Thus, the staff was concerned that undetected failures could occur, such as a short or malfunction of the switch contacts, which could result in disabling of the power lockout function.

The staff requested that the licensee provide additional justification for conducting the surveillance as proposed, or that the licensee provide a periodic surveillance that actually verifies the proper functioning of the power lockout circuit. By its September 8, 1987 letter, the licensee responded by comparing the existing and the proposed method of disconnecting power from the cold leg accumulator isolation valves. The licensee found the number of failures required to close the accumulator isolation valves was the same for each method.

However, the licensee also stated that all of the failures for the existing method may be personnel errors, whereas, in the case of the power disconnect switch, two of the failures must be equipment failures of a specific nature. The licensee therefore concluded that the power disconnect switch, in conjunction with the proposed surveillance, provided at least the same, if not greater, assurance that the valve was open with the power removed as does physically opening the breaker.

The staff disagreed with the above conclusion. Although we recognized the benefit to be gained in terms of reducing personnel errors by locating the power disconnecting means in the main control room where it can be more closely monitored, this advantage is more than offset by the fact that the proper functioning of the power disconnect circuit would not be checked. With the existing method called for in the McGuire Technical Specification of removing the breaker from the circuit, the verification that power is removed from the circuit when this done is obvious. Even when the breaker is left in the circuit and is the breaker is simply opened, verification that power is actually removed can be checked by the loss of valve position indication in the control room, although the loss of the position indication is not a desirable condition. No such direct indication of power removal existed with the proposed modification. Therefore, the NRC advised the licensee that the proposed surveillance was deficient because periodic surveillance of the proper functioning of the power disconnect circuitry was also needed.

The licensee responded to this NRC concern on July 13, 1988. The response proposed the addition of new surveillance TS 4.5.1.1.1d which requires verification of the correct operation of the power disconnect circuit at least once every 18 months. With this addition, the staff finds that removal of power is reasonably assured and, therefore, that the proposed changes are acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve changes in surveillance requirements. The staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational exposure. The NRC staff has made a determination that the amendments involve no significant hazards consideration, and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

4.0 CONCLUSION

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register (52 FR 7681) on March 12, 1987. The Commission consulted with the state of North Carolina. No public comments were received, and the state of North Carolina did not have any comments.

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Dated: August 19, 1988 J. Lazevenick, SELB/DEST

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AMENDMENT NO. 91 TO FACILITY OPERATING LICENSE NPF-9 - McGuire Nuclear Station, Unit 1
AMENDMENT NO. 72 TO FACILITY OPERATING LICENSE NPF-17 - McGuire Nuclear Station, Unit 2

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