



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 90 TO FACILITY OPERATING LICENSE NPF-9
AND AMENDMENT NO. 71 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 letters dated July 15 and 19, 1988, Duke Power Company (the licensee) proposed amendments to the operating licenses for McGuire Nuclear Station, Units 1 and 2, which would revise Technical Specification (TS) 4.8.1.1.2.e.6)c). This surveillance specification requires each diesel generator (DG) to periodically be demonstrated operable, in part, by simulating a loss-of-offsite power in conjunction with an engineered safety features (ESF) actuation test signal and verifying that all automatic trips, with three specified exceptions, are automatically bypassed upon loss of voltage on the emergency bus concurrent with a safety injection actuation signal (SIAS). The three exceptions are engine overspeed, lube oil pressure, and generator differential. The proposed change would add a fourth exception, generator time overcurrent.

TS 4.8.1.1.2.e.6)c) also requires as part of the above periodic test that all DG breaker trips, except generator time overcurrent, be verified to be automatically bypassed upon concurrent loss of voltage on the emergency bus and an SIAS. The proposed change would delete this portion of the TS in its entirety.

On July 15, 1988, the licensee informed the NRC by telephone call that it is not possible to demonstrate compliance with the TS as written because there are additional DG trips and DG breaker trips not automatically bypassed by design. However, previous tests had been performed using surveillance procedures for the DGs which were consistent with design although inconsistent with the TS. The results had verified the correct operation of the DG trips and, therefore, the DGs were considered to be operable. Accordingly, the licensee requested that the TS be corrected on an emergency basis to avoid all diesels being declared inoperable and the attendant requirement for shutdown of McGuire Unit 1 and extended outage for McGuire Unit 2. The NRC agreed during the telephone call that the additional DG trips and DG breaker trips should not be automatically bypassed when conducting this surveillance test and, as acknowledged by letter dated July 20, 1988, granted a temporary waiver of compliance while it completed the processing of the TS change on an expedited basis.

By letter dated July 21, 1988, the licensee provided additional information in support of the amendment request.

2.0 EVALUATION

On February 1, 1985, the Commission issued McGuire Amendments 38 (Unit 1) and 19 (Unit 2). The amendments were based, in part, upon the licensee's letter of October 4, 1984, which erroneously described the generator time overcurrent protection to be only a DG breaker trip and proposed a corresponding change to the TS consistent with such a design. Specifically, TS 4.8.1.1.2.e.6)c) was changed to specify for this test that all DG breaker trips, except generator time overcurrent, were to be verified to be automatically bypassed upon concurrent loss of voltage on the emergency bus and an SIAS. The purpose of the test is to verify that trips which are automatically bypassed under these conditions do not trip the DG unit.

In reality, the McGuire design, which is described in FSAR Section 8.3.1.1.7, consists of four trips to protect the DG units at all times and which are not bypassed during starting of the DG by an ESF actuation signal. One of the four is the generator time overcurrent trip. The other three are engine overspeed, lube oil pressure and generator differential. These four are each both DG and DG breaker trips. Apart from these four, there are no additional DG trips that are not bypassed. Also, there are no DG breaker trips that are automatically bypassed on an ESF actuation signal. There are additional trips identified in the FSAR, which protect the DG units during testing periods that are bypassed in the event of an accident condition.

The purpose of TS 4.8.1.1.2.e.6)c) is to assure that spurious trips of the DG during emergency situations are prevented, while at the same time providing for protection of the DG from damage. Operation of a DG with a multiphase fault on the switch gear bus could quickly result in destruction of the associated generator. Under such conditions, the generator would not be able to maintain bus voltage and would not fulfill its safety function. It also could probably not be quickly restored. The generator time overcurrent protection trips the DG associated with the faulted bus to prevent such destruction. Three separate measurements of the overcurrent are provided by this device and a specific coincident (2 out of 3) logic is required to initiate a trip of the DG. This meets the position of Regulatory Guide 1.9 regarding coincident logic for trips that are not bypassed under accident conditions. The design also provides redundant DGs to ensure that essential equipment remains energized.

Because of its function to protect the DG from destruction, we agree that it is appropriate that the generator time overcurrent trip is not bypassed by the ESF actuation signal. Therefore, it should be added to the other three trips named in TS 4.8.1.1.2.e.6)c) as trips which are not automatically bypassed. Additionally, because the design does not include an automatic bypass feature for the DG breaker trips, such a feature cannot be tested. Therefore, we find that this portion of the test requirement should be deleted from the TS. Accordingly, the licensee's proposed correction to TS 4.8.1.1.2.e.6)c) are acceptable.

3.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The State of North Carolina was informed by telephone on July 19, 1988, of the staff's no significant hazards consideration determination. The State contact had no comments on the determination.

The staff has reviewed the licensee's request for the above amendments and finds the changes proposed to the TS to be of a corrective nature which are necessary to assure consistency of the test surveillance requirement with the actual design of the DG protection system. We have determined that should this request be implemented, it would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated because the changes do not affect any structure, systems, or components whose failure would result in an accident. Rather, by permitting appropriate testing of automatic DG trips, the corrected TS provides increased assurance that the bounding probabilities and consequences associated with the previously evaluated accidents will not be exceeded. Similarly, the licensee's proposed amendments would not (2) create the possibility of a new or different kind of accident from any accident previously evaluated because the corrected TS provides for appropriate testing and does not affect structures, systems, or components which could create an accident or significantly change the scenario of a previously evaluated accident to a new one. Finally, the proposed amendments would not (3) involve a significant reduction in a margin of safety because of the reasons stated above in items (1) and (2).

Accordingly, the Commission finds that this request does not involve a significant hazards consideration.

4.0 FINDINGS OF EMERGENCY WARRANTING AN AMENDMENT WITHOUT NOTICE

The licensee's application for the TS change has been timely. During the course of reviewing procedures for DG surveillance, the licensee discovered on July 15, 1988 that the McGuire DG surveillance procedures were not in compliance with TS 4.8.1.1.2.e.6)c). The licensee also realized that the TS was inconsistent with the design and that compliance with the TS as revised in February 1985 had not and could not be achieved. However, the DG surveillance procedures used were based upon the correct design and, thus, appropriate surveillances had been performed and had verified the correct operation of the DG trips. Therefore, the licensee considered the DGs to be operable.

On July 15, 1988, McGuire Unit 1 was at full power and McGuire Unit 2 was in a refueling outage scheduled to end about July 26, 1988. Because literal compliance with the TS had not been demonstrated, the DGs were required to be declared inoperable and subject to the action requirements of TS 3.8.1.1, which would have required Unit 1 to shut down and Unit 2 to remain in cold shutdown. The licensee promptly telephoned the NRC to request correction of the TS on an emergency basis and confirmed the call by letter on the same day. The NRC recognized that the DGs were, in fact, operable and granted a temporary waiver of compliance while the TS change was being processed.

The staff finds that failure to grant the proposed changes in a timely manner would result in shutdown of McGuire Unit 1 and would increase the outage time of McGuire Unit 2. We also find that the licensee could not reasonably have avoided this situation, that the licensee has responded in a timely manner, and has not delayed its application to take advantage of the Emergency License Amendments provisions of 10 CFR 50.91. Accordingly, the staff concludes that the licensee has satisfied the requirements of 10 CFR 50.91(a)(5), and that a valid emergency exists.

5.0 ENVIRONMENTAL CONSIDERATION

These amendments involve changes to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and 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 exposures. The NRC staff has made a final determination that the amendments involve no significant hazards consideration. 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.

6.0 CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) the amendment does not (a) significantly increase the probability or consequences of an accident previously evaluated, (b) create the possibility of a new or different kind of accident from any previously evaluated or (c) significantly reduce a safety margin and, therefore, the amendment does not involve a significant hazards consideration; (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) 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: July 22, 1988