



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 165 TO FACILITY OPERATING LICENSE NPF-9  
AND AMENDMENT NO. 147 TO FACILITY OPERATING LICENSE NPF-17

DUKE POWER COMPANY

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-369 AND 50-370

1.0 INTRODUCTION

By letter dated January 13, 1995, as supplemented by letter dated August 30, 1995, Duke Power Company (the licensee) submitted a request for changes to the McGuire Nuclear Station, Units 1 and 2, Technical Specifications (TS). The requested changes would increase the surveillance test intervals (STIs) and allowed outage times (AOTs) for the reactor trip system (RTS) and engineered safety features actuation system (ESFAS). The licensee's submittal includes the justification for the proposed changes. The August 30, 1995, letter provided clarifying information that did not change the scope of the January 13, 1995, application and the initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

The Westinghouse Owners Group (WOG) previously proposed generic TS changes to increase STIs and AOTs to minimize the number of inadvertent trips and challenges to the safety systems while maintaining the benefits of routine tests and maintenance activities to ensure the reliability of the RTS and ESFAS instruments. The WOG published its proposals in WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation Systems," dated January 1983. This document was later revised several times in response to the staff's comments. The staff issued three safety evaluation reports (SERs); RTS SER on February 21, 1985 (WCAP-10271 RTS SER), ESFAS SER on February 22, 1989 (WCAP-10271 ESFAS SER), and a supplemental SER (SSER) on April 30, 1990 (WCAP-10271 SSER). The staff also issued an additional clarification letter dated July 24, 1985 (WCAP-10271 RTS CLARIFICATION LETTER).

3.0 EVALUATION OF PROPOSED REVISIONS

The staff evaluated the licensee's proposed TS changes to verify that they were consistent with the changes pre-approved in the above SERs and that the licensee has met the conditions identified in the SERs associated with those changes. The staff's evaluation is included in the subsequent subsections 3.1 and 3.2:

3.1 VERIFICATION THAT PROPOSED CHANGES ARE CONSISTENT WITH THE PRE-APPROVED CHANGES

3.1.1 Table 4.3-1, REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

- (1) Proposed change: Functional Units 2 (High Setpoint), 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14. Change OPERATIONAL TEST intervals from monthly to quarterly.

Evaluation: The above change is consistent with the pre-approved changes accepted by the staff in the WCAP-10271 RTS SER and is, therefore, acceptable.

- (2) Proposed Change: Functional Units 2 (Low Setpoint), 4 and 5. Change the STI for the ANALOG CHANNEL OPERATIONAL TEST (ACOT) from monthly to startup. Also, change Notation 1 to require the ACOT to be performed during STARTUP if not performed during the previous 31 days rather than the previous 7 days. Additionally, for Functional Unit 5, change Notation 9 to require the ACOT to be performed quarterly rather than monthly during extended shutdown.

Evaluation: The above changes are acceptable because they are consistent with the pre-approved changes accepted by the staff in the WCAP-10271 RTS SER and the WCAP-10271 RTS CLARIFICATION LETTER.

- (3) Proposed Change: Delete the existing Functional Unit 17.b (Low Power Reactor Trips Block, P-7) from the RTS Instrument Surveillance Requirements.

Evaluation: Functional Unit 17.b is fully tested under the surveillances performed on Functional Units 17.d (Low Setpoint Power Range Neutron Flux, P-10) and Functional Unit 17.e (Turbine Impulse Chamber Pressure, P-13). The deletion of Functional Unit 17.b from TS Table 4.3-1 is editorial in nature and does not change the existing requirement and is, therefore, acceptable to the staff.

- (4) Proposed Change: Functional Unit 17. Change the STI for the ACOT for Functional Unit 17 from monthly to N.A. (not applicable). Delete Table 4.3-1 Notation 8 as it does not apply in the refueling mode.

Evaluation: Changing the STI for the ACOT for Functional Unit 17 from "monthly" to "N.A." effectively changes this STI from "monthly" to "refueling outage" because the CHANNEL CALIBRATION, which continues to be required by TS during each refueling outage, encompasses the testing required by the ACOT. Therefore, this change is acceptable because it is consistent with the pre-approved changes accepted by the staff in the WCAP-10271 RTS CLARIFICATION LETTER. Also, the staff finds it acceptable to delete Notation 8 since it does not apply in the refueling mode.

3.1.2 Table 3.3-1, REACTOR TRIP SYSTEM INSTRUMENTATION ALLOWABLE OUTAGE TIME REQUIREMENTS

- (1) Proposed change: Delete from the RTS Table 3.3.1 the notation, "\*\*\*\*Comply with the provisions of Specification 3.3.2 for any portion of the channel required to be OPERABLE by Specification 3.3.2."

Evaluation: The "\*\*\*\*" notation required that RTS instrument channels for Functional Units 8 (Pressurizer Pressure-Low) and 9 (Pressurizer Pressure High), and 12 (Steam Generator Water Level--Low-Low) channels be tested per surveillance frequency and/or mode as described in Specification 3.3.2 (for ESF instrumentation channels) because the ESFAS requirements were more restrictive. This notation became a part of the McGuire TS through the issuance by the staff on April 7, 1986 of TS changes that increased the AOT for the RTS analog channels, and satisfied a condition in the WCAP-10271 RTS SER for all channels that provided input to both the RTS and the ESFAS. Now that the previously approved relaxations for the McGuire RTS channels are being applied to the McGuire ESFAS channels, this condition is no longer applicable. Therefore, the \*\*\* and the associated cautionary note can be removed. This change is acceptable to the staff.

- (2) Proposed Change: Add new ACTION 7 to allow 6 hours to restore an inoperable channel to operable status before requiring shutdown to HOT STANDBY within the next 6 hours, and to allow bypass of a channel for up to 4 hours for surveillance testing, provided the other channel is OPERABLE. Make the new ACTION 7 (instead of ACTION 9) applicable to Functional Units 16 (Safety Injection Input from ESF) and 19 (Automatic Trip and Interlock Logic).

Evaluation: The previously applicable ACTION 9 requires the plant "to be in at least HOT STANDBY within 6 hours, however, one channel may be bypassed for up to 2 hours for surveillance test provided the other channel is operable."

The new ACTION 7 allows 6 hours to restore the inoperable channel before requiring shutdown to HOT STANDBY within the next 6 hours, and allows bypassing one channel up to 4 hours, instead of 2 hours, for surveillance testing.

The above change is acceptable because it is consistent with the pre-approved changes accepted by the staff in the WCAP-10271 ESFAS SER and the WCAP-10271 SSER.

- (3) Proposed Change: For Functional Unit 18 (Reactor Trip Breakers), the licensee proposes to change ACTION 9 to allow bypassing one channel for surveillance testing for 4 hours instead of 2 hours.

EVALUATION: The staff stated in the WCAP-10271 SSER that the above proposed extension from 2 hours to 4 hours in the case of the Reactor Trip Breakers was not acceptable because it unnecessarily increases plant risk by reducing the availability of these breakers. This proposed

change for ACTION 9 is, therefore, not acceptable because it is not consistent with the staff's approval of WCAP-10271.

3.1.3 Table 4.3-2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

- (1) Proposed Change: Functional Units 1.c, 1.d, 1.e, 2.c, 3.b.3, 4.c, 4.d, 4.e, 5.b, 7.c, 10.a and 10.b. Revise the ACOT entries to increase the STI from monthly to quarterly for each of the above functional units.

Evaluation: This change is acceptable because it is consistent with the pre-approved changes accepted by the staff in the WCAP-10271 ESFAS SER and is, therefore, acceptable.

- (2) Proposed Change: Replace the current surveillance requirements for Functional Unit 5b with the current surveillance requirements for Functional Unit 10d. Delete the current surveillance requirements for Functional Unit 10d from Table 4.3-2.

Evaluation: This change is editorial in nature and does not change the existing requirement and is, therefore, acceptable to the staff.

3.1.4 Table 3.3-3, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION ALLOWABLE OUTAGE TIME REQUIREMENTS

- (1) Proposed change: For Functional Units 1c, 1d, 1e, 4d, 4e, 5b, 7c1, 7c2, 7f1, 7f2, 9a and 9b, increase the time that an inoperable ESFAS channel may be maintained in an untripped condition from 1 hour to 6 hours (ACTIONS 15, 15a and 19).

Evaluation: The revised ACTION statements require an inoperable channel to be placed in the tripped condition within 6 hours. Thus, the time for putting the inoperable channel in the tripped condition is extended from 1 hour to 6 hours. This proposed change is consistent with the pre-approved changes accepted by the staff in the WCAP-10271 ESFAS SER and is, therefore, acceptable.

- (2) Proposed Change: For Functional Units 1b, 1d, 2b, 2c, 3a2, 3b2, 3b3, 4b, 4c, 5a, 7b, 7c1, 7c2, 7f1 and 7f2, increase the time that an inoperable ESFAS channel may be bypassed to allow testing of another channel in the same function from 2 hours to 4 hours (ACTIONS 14, 16, 19 and 21).

Evaluation: The revision to the ACTION statements allows the inoperable channel to be placed in a bypassed status up to 4 hours instead of the current 2 hours for surveillance testing of other channels in the same function per Specification 4.3.2.1. The proposed changes are consistent with the pre-approved changes accepted by the staff in the WCAP-10271 ESFAS SER and are, therefore, acceptable.

- (3) Proposed change: For Functional Units 1b, 2b, 3a2 and 3b2, change ACTION 14 to increase the time allotted to reach HOT SHUTDOWN from 6 hours to

12 hours when the number of operable channels is one less than the Minimum Channels OPERABLE requirement.

Evaluation: The above change is consistent with the pre-approved change accepted by the staff in the WCAP-10271 ESFAS SER and is, therefore, acceptable.

- (4) Proposed Change: For Functional Units 4b, 5a and 7b, revise ACTION 21 to allow 6 hours to restore an inoperable channel to OPERABLE status before requiring shutdown to HOT STANDBY within the next 6 hours.

Evaluation: If the number of operable channels is one less than the minimum number of Channels OPERABLE required, existing ACTION 21 requires the plant to be in HOT STANDBY within 6 hours. The revised action-statement allows 6 hours to restore the inoperable channel to OPERABLE status before requiring shutdown to HOT STANDBY within the next 6 hours. The above change is consistent with the pre-approved change accepted by the staff in the WCAP-10271 ESFAS SER and is, therefore, acceptable.

### 3.2 VERIFICATION OF CONDITIONS

In the proposed TS change submittal, the licensee confirmed that the conditions to be satisfied, as identified by the staff in the generic SERs for WCAP-10271, have been met as described below.

- (1) Testing on a staggered basis was originally stipulated in the WCAP-10271 RTS SER for RTS channel surveillances changed to the quarterly test frequency. However, this condition was later removed in the WCAP-10271 ESFAS SER. Therefore staggered testing is not specified for McGuire as part of the proposed RTS and ESFAS surveillance frequency extension. This is acceptable to the staff.
- (2) The WCAP-10271 RTS SER specified implementation or confirmation of plant procedures that identify/evaluate common cause RTS channel failures and specify additional testing for plausible common cause failures. The licensee stated that its existing plant procedures require RTS/ESFAS failures to be evaluated for common cause. Testing of additional channels is conducted when there is reason to believe a common cause failure mechanism exists. Also, problems that may be introduced into the equipment as a result of calibration and other maintenance or testing activities also are evaluated for common cause potential. This is consistent with the WCAP-10271 RTS SER condition and is, therefore, acceptable to the staff.
- (3) The WCAP-10271 RTS SER stipulated that approval of routine channel testing in a bypassed condition is contingent on the capability of the RTS design to allow such testing without lifting leads or installing temporary jumpers. The licensee stated that the McGuire design currently provides installed bypass capability within the 7300 Protection and Control System and thus, lifting of leads or installing temporary jumpers to conduct routine channel testing is not necessary. This is consistent

with the WCAP-10271 RTS SER condition and is, therefore, acceptable to the staff.

- (4) The WCAP-10271 RTS SER permits the revisions to the RTS TS to apply to the operational test interval for the reactor coolant pump undervoltage and underfrequency functional units (Functional Units 13 & 14). The licensee proposes in Table 4.3-1 to change the Operational Test interval for these units. This change is consistent with the WCAP-10271 RTS SER condition and is, therefore, acceptable to the staff.
- (5) The WCAP-10271 RTS SER states that approval to extend the STI and AOT for channels that provide dual inputs to other safety related systems such as ESFAS, applies to the RTS function only. However, because the WCAP-10271 ESFAS SER has been issued by the staff and all of the relaxations for the RTS analog channels are now applicable to the ESFAS analog channels, this condition no longer applies. Thus, the licensee's proposed TS change deletes from Table 3.3-1 the cautionary note, "\*\*\*Comply with the provisions of Specification 3.3.2 and portion of the channel required to be OPERABLE by Specification 3.3.2." This change is consistent with the WCAP-10271 RTS and ESFAS SERs and is, therefore, acceptable to the staff.
- (6) The WCAP-10271 RTS and ESFAS SERs indicated that approval of increased STIs is contingent on confirmation by the licensee that their setpoint methodology includes sufficient margin to offset the additional drift anticipated as a result of less frequent surveillance. The licensee reviewed "as found" and "as left" data for the RTS and ESFAS setpoints for a 16-month period for McGuire Unit 1, and for a 14-month period for McGuire Unit 2. The licensee stated that sufficient margins are present to offset the drift anticipated as a result of quarterly surveillance. This is consistent with the conditions of the WCAP-10271 RTS SER and the WCAP-10271 ESFAS SER and is, therefore, acceptable to the staff.
- (7) The WCAP-10271 ESFAS SER states that the licensee must confirm the applicability of the generic analyses to the subject plant. In response, the licensee confirmed that the WCAP-10271 methodology is applicable to the McGuire proposed TS change. This response is consistent with the condition set forth in the WCAP-10271 ESFAS SER and is, therefore, acceptable to the staff.

#### 4.0 STAFF CONCLUSION

Based on the above the staff concludes, with the one exception noted below, that the proposed TS changes to McGuire Units 1 and 2 RTS and ESFAS surveillance test intervals and allowable outage times are consistent with the staff's previous generic approval and required plant-specific conditions as indicated in the SERs for WCAP-10271 and its revisions and supplements and are, therefore, acceptable.

The one proposed TS change that the staff found to be not acceptable is the change to ACTION 9 for Functional Unit 18 (Reactor Trip Breakers). See Section 3.1.2(3), above, for the staff's comments on this proposed change.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the North Carolina State official was notified of the proposed issuance of the amendments. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC 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 radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (60 FR 14019 dated March 15, 1995). 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 the amendments.

### 5.0 CONCLUSION

The Commission has 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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