



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 186 TO FACILITY OPERATING LICENSE NO. NPF-3

TOLEDO EDISON COMPANY

CENTERIOR SERVICE COMPANY

AND

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-346

1.0 INTRODUCTION

By letter dated July 28, 1992, as supplemented on February 17, 1993, Toledo Edison Company (the licensee) proposed to modify the safety features actuation system (SFAS) refueling outage technical specification (TS) requirements for the Davis-Besse Nuclear Power Station (DBNPS), Unit 1. The licensee requested to delete TS 3/4.9.9, since Surveillance Requirement (SR) 4.3.2, "Safety System Instrumentation - Safety Features Actuation System Instrumentation," SR 4.6.3, "Containment Isolation Valves," and TS 3/4.9.4, "Refueling Operations - Containment Penetrations," adequately address the operability requirements of the containment purge and exhaust isolation system.

By the supplemental letter of February 17, 1993, the licensee provided additional information supporting their request. This additional information did not change the proposed amendment nor did it change the staff's evaluation of a proposed no significant hazards consideration published in the Federal Register.

2.0 EVALUATION

The licensee proposed to revise the Technical Specifications to allow an alternative to the SFAS in Mode 6 (refueling). The SFAS is designed to prevent or limit fission product and energy releases from the core, isolate the containment vessel, and initiate the engineered safety feature equipment.

TS 3/4.9.9 ensures the effectiveness of the containment purge and exhaust isolation system to isolate the containment when in Mode 6, during which the reactor head may be unbolted and removed and the fuel transferred to and from the reactor vessel.

Isolation of the containment purge and exhaust penetrations restricts the release of radioactive material from the containment to the environment if high levels of radiation occur in the containment.

The licensee proposed to delete TS 3/4.9.9 because it is redundant to the provision of Surveillance Requirement (SR) 4.3.2, SR 4.6.3 (Containment Isolation Valves), and TS 3/4.9.4, which address the operability requirement for the containment purge and exhaust isolation system during core alterations or movement of irradiated fuel within the containment. The licensee proposed to delete the associated Bases for TS 3/4.9.9 and to revise the TS Index to reflect these deletions.

The licensee also proposed a revision so that the SFAS is not required to be operable in Mode 6 (Refueling). The licensee would revise the Mode 6 requirements in TS 3/4.3.2, Table 3.3-3, "SFAS Instrumentation," Table Notation "\*\*\*\*" (for items 1a, 2a, and 3a) as follows to allow the use of either the SFAS area radiation monitors or the containment purge and exhaust noble gas monitor (RE5052C) during core alterations or movement of irradiated fuel in containment.

This instrumentation, or the containment purge and exhaust system noble gas monitor (with the containment purge and exhaust system in operation), must be OPERABLE during CORE ALTERATIONS or movement of irradiated fuel within containment to meet the requirements of Technical Specification 3.9.4. When using the containment purge and exhaust system noble gas monitor, SFAS is not required to be OPERABLE in Mode 6.

The licensee also proposed to delete table notation '#' from Table 4.3-2, "SFAS Instrumentation Surveillance Requirements," as follows:

These surveillance requirements in conjunction with those of Section 4.9.4 apply during CORE ALTERATIONS OR movement of irradiated fuel within the containment only if using the SFAS area radiation monitors listed in Table 3.3-3, Items 1a, 2a and 3, in lieu of the containment purge and exhaust system noble gas monitor.

The licensee proposed to revise TS 3.9.4.c.2 by deleting "automatic" as follows:

Be capable of being closed by an OPERABLE ~~automatic~~ containment purge and exhaust isolation valve.

This revision will allow the use of the containment purge and exhaust system noble gas monitor (RE5052C) to send the high radiation signal to the control room, such as during core alterations or movement of irradiated fuel inside the containment, and to automatically contain any release in progress by stopping the containment purge system supply and exhaust fans and closing their inlet and outlet dampers. Under this change, when using monitor RE5052C, automatic SFAS initiation of containment isolation in Mode 6 would no longer be required.

The licensee proposed to add the action statement for TS 3.9.9 to the existing action statement in TS 3.9.4 to require closure of the purge and exhaust penetrations if the containment purge and exhaust system is inoperable. The licensee designated the transferred action as Action "b," and the exceptions to TS 3.0.3 in a new Action "c" consistent with the format of other actions.

TS 3.9.4.

ACTION:

- a. With the requirements...The provisions of Specifications 3.0.3 are not applicable.
- b. With the containment purge and exhaust isolation system inoperable, close each of the purge and exhaust penetrations providing direct access from the containment atmosphere to the outside atmosphere.
- c. The provisions of Specification 3.0.3 are not applicable.

TS 4.9.4 would be revised to delete "automatic" and TS would be revised as follows:

Each of the above required containment penetrations shall be determined to be either in its closed/isolated condition or capable of being closed by an OPERABLE ~~automatic~~ containment purge and exhaust valve, within 100 hours prior to the start of and at least once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment, by:

- a. Verifying the penetrations are in their isolated condition, or
- b. Verifying that with the containment purge and exhaust system in operation, and the containment purge and exhaust system noble gas monitor capable of providing a high radiation signal to the control room, that after initiation of the high radiation signal, the containment purge and exhaust isolation valves can be closed from the control room, or

If using the SFAS area radiation monitors, verifying that on a Containment Purge and Exhaust Isolation test signal, each purge and exhaust isolation valve automatically actuates to its isolation position.

The licensee proposed to revise the Bases for TS 3/4.9.4 by adding the following:

3/4.9.4 "CONTAINMENT PENETRATIONS"

...The OPERABILITY and closure requirements are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE.

With the containment purge and exhaust system in operation, a high radiation signal received from the containment purge and exhaust system noble gas monitor will effectively automatically contain the release by shutting down the containment purge system supply and exhaust fans and closing their inlet and outlet dampers. On a valid signal, the control room operator will then manually close the containment purge and exhaust isolation valves. Therefore, the uncontrolled release of radioactive material from the containment to the environment will be restricted.

Likewise, use of the SFAS area radiation monitors provide an automatic containment isolation signal on high radiation, restricting the uncontrolled release of radioactive material from the containment to the environment.

Four SFAS area radiation monitors are located in the containment annulus during normal operations. These monitors can be relocated to the inside of the containment vessel during refueling operations to maximize their sensitivity for detecting a postulated fuel handling accident. The monitors are designed to withstand the containment environment in all modes, are capable of operation during and after a loss of coolant accident (LOCA), and send a containment isolation signal on high containment radiation. This signal will shut down the purge supply and exhaust fans, close the purge and exhaust valves and open the bypass damper to the Emergency Ventilation System (EVS) and start the EVS. These area radiation monitors are the only portion of the SFAS currently required by the TS to be operable in Mode 6.

This proposed change would enable the licensee to do the following: (1) work on the SFAS during Mode 6 when the SFAS is either bypassed or deenergized; (2) avoid physically relocating the SFAS area monitors from the annulus to the containment during Mode 6 when not using them for monitoring radiation releases as is presently done; and (3) when not using the SFAS area radiation monitors, still provide a means for automatically containing any release in progress (RE5052C high radiation signal) and isolating containment by manually closing the containment purge and exhaust isolation valves as required by procedure.

The staff evaluated the radiological aspects of the revised TS requirements for the SFAS during refueling outages and finds that the changes meet the acceptance criteria for the radiological consequences of the design basis fuel handling accident inside containment based on the following:

1. The changes do not involve a significant increase in the probability of an accident because the initiators for the fuel handling accident are not affected by the deletion of TS 3/4.9.9 or the use of the containment purge and exhaust system noble gas monitor (RE5052C).
2. The deletion of TS 3/4.9.9 and the use of the containment purge and exhaust system noble gas monitor (RE5052C) and manual operator action does not involve a significant increase in the consequences of an accident previously evaluated.
3. The possibility of a new accident created by the revision is further reduced because SR 4.3.2, SR 4.6.3, and TS 3/4.9.4 address the operability requirements of the containment purge and isolation system contained in TS 3/4.9.9.

The NRC staff concludes that the postulated design fuel handling accident inside containment is valid as initially analyzed by the staff in Supplement 1 to NUREG-0136, "Safety Evaluation Report Related to Operation Davis-Besse Nuclear Power Station, Unit 1," April 1977, and as supplemented in the safety evaluation dated July 29, 1977. The proposed TS changes meet the requirements for radioactivity control in SRP Section 15.7.4, "Radiological Consequences of Fuel Handling Accidents." The licensee submitted clear drawings depicting the locations of the monitors in the effluent release path and describing their actuation logic. The means by which the containment purge and exhaust system noble gas monitor provides a high radiation signal to the control room, which automatically contains any release in progress by stopping the containment purge system supply and exhaust fans and closing their inlet and outlet dampers, is consistent with NUREG-0472, "Standard Radiological Effluent Technical Specifications for PWR's," Revision 2, February 1980. Therefore, the NRC staff finds the proposed changes to be acceptable.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes a surveillance requirement. The staff has determined that the amendment involves 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 amendment involves no significant hazards consideration and there has been no public comment on such finding (58 FR 599). Accordingly, the amendment meets 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 amendment.

### 5.0 CONCLUSION

The staff 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

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