



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 56 TO FACILITY OPERATING LICENSE NO. NPF-58

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, ET AL.

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NO. 50-440

1.0 INTRODUCTION

By letter dated September 19, 1990, the Cleveland Electric Illuminating Company, et al. (the licensee), requested changes to the Technical Specifications (TSs) for the Perry Nuclear Power Plant (PNPP), Unit 1. The proposed changes would revise TS 3.6.1.3, "Primary Containment Air Locks," by adding an ACTION statement to address the specific situation when an interlock mechanism is inoperable, and by revising a footnote to allow for personnel entry through an operable containment air lock door when the second door in that air lock is inoperable, for a total time not to exceed one hour per year. By letter dated February 26, 1993, the licensee submitted a revision to the proposed changes in response to discussions with the NRC staff. In addition to format changes, the revision clarified that if only one of the two containment air locks has an inoperable door, the operable door for the inoperable air lock will be locked closed except for activities required to repair the affected air lock components. If both air locks have an inoperable door, the licensee may, under administrative controls, use one of the inoperable air locks for up to seven days to enter and exit the containment for activities inside containment other than just the repair of the air lock. In addition, the licensee proposes to revise the applicable Bases section to reflect the proposed changes. Changes to the proposed Bases were made by telecon of February 2, 1994, involving the licensee (B. Ferrell) and the NRC staff (J. Hopkins). Those changes did not affect the NRC staff's no significant hazards evaluation that was noticed in the Federal Register.

The licensee is currently following the ACTION statement for an inoperable air lock when the interlock mechanism becomes inoperable. The current footnote allows entry through an operable air lock door, not to exceed one hour per year, only to repair an inoperable inner air lock door.

2.0 EVALUATION

The design for the PNPP includes two personnel air locks to allow access to the primary containment. Personnel access is necessary during all modes of plant operation to perform a variety of activities, including required surveillances, routine and corrective maintenance, system operations and chemistry sampling. The double-door design of each air lock allows personnel entry while maintaining primary containment integrity. These air locks form

part of the primary containment pressure boundary and, as such, they function to limit radiological releases to the environment in the event of a design basis accident. Each air lock has a mechanical interlock mechanism which prevents both doors in that air lock from being opened at the same time. Each air lock door has two inflatable seals that are maintained above a specified pressure to ensure that each door is single-failure proof, and therefore independent, in its capability to maintain an essentially leak-tight primary containment boundary.

TS 3.6.1.3 currently requires that when a primary containment air lock is inoperable while in OPERATIONAL CONDITIONS 1, 2, or 3, except as a result of an inoperable air lock door, the air lock must be restored to operable status within 24 hours, or the plant must be placed in hot shutdown within 12 hours and cold shutdown within the following 24 hours. In the absence of an ACTION statement to address the specific case of an inoperable interlock mechanism, the licensee has previously considered such a situation as an inoperable air lock and has invoked the associated ACTION statement. Although the licensee has been able to repair the interlock mechanisms within 24 hours, the current situation creates the potential for an unnecessary plant shutdown if repairs were to take longer. Such a shutdown could be contrary to plant safety, as an inoperable interlock mechanism does not affect the ability of either air lock door to perform its function in maintaining primary containment integrity. However, some additional control would be necessary to assure that both doors in an air lock would not be inadvertently opened at the same time, while an interlock mechanism is inoperable.

In addition, the ACTION statement in TS 3.6.1.3 for an inoperable air lock door currently requires the licensee to lock the OPERABLE door in the air lock closed within 24 hours. A footnote to the ACTION statement allows the licensee to open an OPERABLE outer door to repair an inoperable inner door for a cumulative time not to exceed one hour per year. The footnote does not allow use of an inoperable air lock to access containment if both air locks are inoperable. The licensee must enter the containment regularly to perform activities required for the safe operation of the plant. Therefore, if both airlocks are inoperable the present situation creates the potential for an unnecessary plant shutdown if neither air lock can be restored to an OPERABLE condition quickly. Such a shutdown could be contrary to plant safety, as one of the doors in each of the affected air locks is still capable of performing its function in maintaining primary containment integrity. However, some additional control would be necessary to assure that the operation of the OPERABLE door is properly controlled while personnel are in containment and to assure that the OPERABLE door is locked closed when no personnel are in containment.

The licensee proposes to modify the ACTION statement for an inoperable air lock door in TS 3.6.1.3 to address an inoperable primary containment air lock interlock mechanism and to revise the limitations on the operation of the OPERABLE door in an air lock that has an inoperable door. The proposed statement would read:

- a. With one or both air locks having:
  1. an inoperable interlock mechanism, for each affected air lock,

- a) Maintain at least one OPERABLE air lock door closed\* and within 24 hours lock one OPERABLE air lock door closed.
  - b) Operation may then continue provided that at least once per 31 days, one OPERABLE air lock door is verified to be locked closed\*.
2. one inoperable air lock door, or, both one inoperable door and an inoperable interlock mechanism, for each affected air lock,
    - a) Maintain at least the OPERABLE air lock door closed\*\* and within 24 hours lock one OPERABLE air lock door closed.
    - b) Operation may then continue until performance of the next required overall air lock leakage test provided that at least once per 31 days the OPERABLE air lock door is verified to be locked closed\*.
  3. Otherwise, in OPERATIONAL CONDITION 1, 2, or 3, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
  4. Otherwise, in OPERATIONAL CONDITION #, suspend handling of irradiated fuel in the primary containment, CORE ALTERATIONS, and operations with a potential for draining the reactor vessel.
  5. The provisions of Specification 3.0.4 are not applicable.

The proposed action for an inoperable interlock mechanism is consistent with the actions currently required for an inoperable air lock door, in that it does not require a plant shutdown if an OPERABLE air lock door is closed, locked closed within 24 hours, and periodically verified as such. The securing of a single OPERABLE air lock door is sufficient to ensure primary containment integrity. However, the proposed action allows additional flexibility by permitting the use of an air lock with an inoperable interlock mechanism under administrative controls. The administrative controls are described in greater detail in the revised Bases for TS 3.6.1.3. This provision would allow continued personnel access for the performance of normal activities during the repair of the interlock mechanism. Although personnel access could still be accommodated while alternately maintaining one of the two air lock doors locked closed, that could present a hazard to personnel safety in the event rapid ingress or egress is necessary. The staff finds that this proposed TS revision is acceptable, as it maintains an appropriate level of safety in assuring primary containment integrity while reducing the potential for an unnecessary plant shutdown and the associated challenges to safety systems.

\* Entry into and exit from the air lock(s) or primary containment through the door that is maintained closed (including a "locked closed" door) is permitted under administrative controls.

\*\* If one or both air locks have one inoperable door, entry into and exit from the air lock(s) through the OPERABLE door is permitted under administrative controls to perform repairs of the affected air lock components. Also, if both air locks have one inoperable door, entry into and exit from primary containment is permitted under administrative controls for 7 days.

The proposed revision to the footnote associated with the action for an inoperable door in one air lock utilizes administrative controls to limit the time that an OPERABLE air lock door could be open while the second door in that air lock is inoperable. Use of the OPERABLE door is only permitted to allow repair of the affected air lock components. Entry into and exit from the containment for other purposes would be through the other (OPERABLE) air lock.

If both air locks have an inoperable door, the revised footnote limits the time that an OPERABLE air lock door could be open while the second door in that air lock is inoperable through administrative controls and limits the use of this portion of the footnote to seven days. This change allows some flexibility in defining additional conditions under which the exception could be exercised, including permitting access from inside containment through the inner door for the repair of an inoperable outer door, as well as accounting for personnel safety considerations. The staff notes that the declaration of an inoperable air lock door does not necessarily mean that the door is incapable of performing its containment integrity function to some degree. The staff finds that the use of administrative controls and the seven day limitation will continue to ensure that the probability of an accident during the brief periods when one air lock door is open while the second door is inoperable is acceptably low, and that the additional reasons for allowing the use of the OPERABLE door are valid and acceptable.

Finally, the licensee proposes to revise the TS Bases, Section 3/4.6.1.3, to address the changes discussed above. The staff finds the revised Bases 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 the 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding (56 FR 22479 and 58 FR 19473). Accordingly, this 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 conjunction with the issuance of this 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.

Principal Contributor: Andrew J. Kugler

Date: February 23, 1994