

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

# SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

## RELATED TO AMENDMENT NO. 35 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 March 16, 1990, the Cleveland Electric Illuminating Company (CEI), et al. the licensees for the Perry Nuclear Power Plant, Unit 1, proposed changes to the plant technical specifications (TSs) to revise the Primary Containment Integrity requirements during fuel handling. The proposed changes would allow the opening of up to six 3/4-inch vent and drain line pathways during refueling activities, for the purpose of performing Type C local leak rate testing (LLRT) as required by 10 CFR Part 50, Appendix J. Under the proposed changes, these lines could be opened to perform Type C testing only after the reactor has been subcritical for at least 7 days. These changes were proposed to reduce the duration of refueling outages, by allowing limited Type C testing in parallel with fuel handling activities, while maintaining adequate control for establishing containment integrity.

#### 2.0 EVALUATION

In Amendment Number 19 to Facility Operating License No. NPF-58, dated March 31, 1989, the staff approved changes to the Perry TSs to allow up to two vent and drain pathways to be opened during fuel movement for the performance of Type C tests. That approval was granted for the first refueling outage only and was based, in part, on the fact that the reactor had been subcritical for 15 days prior to issuance of the amendment. The current Perry TSs would require the suspension of fuel handling activities if primary containment integrity is not maintained. As a result, most Type C testing required by Appendix J could not be performed while refueling is in progress.

The licensees have submitted an analysis to demonstrate that following a 7-day decay period, offsite doses due to a fuel handling accident, assuming no containment (i.e., a direct release to the environment), would fall within the guidelines of NRC Standard Review Plan (SRP) Section 15.7.4 (less than 25% of the limits specified in 10 CFR Part 100). Although this analysis supports an unlimited number of open vent and drain lines from a dose consequence perspective, the licensees have proposed that the number of open vent and drain pathways be limited to six, to assure adequate administrative control for closing these pathways in the event of an accident.

9010090089 900928 PDR ADOCK 05000440 PDC In evaluating the proposed amendment, the staff performed independent offsite dose calculations using the same assumptions used to evaluate a postulated fuel handling accident as described in the Perry Safety Evaluation Report (NUREG-0887) dated May 1982, with the following exceptions:

- 1) A decay period of 7 days was assumed, following reactor shutdown, and,
- 2) All activity inside containment following the postulated accident was assumed to be immediately and directly released to the environment. This extremely conservative assumption does not take credit for containment, filtration or dilution of the release (and bounds the case of all 3/4-inch vent and drain lines being open).

The offsite doses computed for the Exclusion Area boundary (EAB) and 1 4 Population Zore (LPZ) boundary using the above assumptions, assumptions contained in Regulatory Guide 1.25, and the procedures specified in SRP Section 15.7.4, are within the dose reference values of 10 CFR Part 100. The dose reference values of 10 CFR Part 100 are 300 rem to the thyroid and 25 rem to the whole body at EAB and LPZ. SRP Section 15.7.4 provides additional guidance by defining "well within" as 25 percent of the 10 CFR Part 100 dose reference values or 75 rem to the thyroid and 6 rem to the whole body at EAB and LPZ. The doses calculated were 47 rem to the thyroid and less than 1 rem to the whole body at EAB and 5.3 rem to the thyroid and less than 1 rem to the whole body at LPZ.

These values are in close agreement with the offsite dose calculations performed by the licensee (46 rem and 5 rem to the thyroid at the EAB and LPZ, respectively, and less than 1 rem whole body).

As discussed in Amendment 19 to the Perry License, Type C leak rate testing typically involves the following:

- (a) Draining and refilling of the liquid from the test volume (between inboard and outboard manual isolation valves). Each of these operations will take less than 8 hours on the average. During these draining and refilling operations, a water seal will exist which would prevent (due to the lack of differential pressure) release of airborne radioactivity from the primary containment.
- (b) Connection and disconnection of lest apparatus to and from the vent valves. The potential for airbo he radioactivity releases from the primary containment does exist through a vent valve, a drain valve, and two inboard and outboard containment isolation valves during the time intervals between (i) completion of test volume drain and connection of test apparatus, and (ii) disconnection of test apparatus and start of refill. At no time during the entire testing process are any open containment isolation valves disabled. Therefore, these valves would remain available if called upon to perform their isolation function. The plant operators would also be able to close any open automatic containment isolation valve from the main control room.

(c) Actual testing. The leak rate test itself will take less than 4 hours on the average. No airborne radioactivity release pathways exist during actual leak rate testing.

Any flow from the containment through the open vent and drain pathways would occur only if the inboard containment isolation valve is open. When utilizing the proposed change, the containment isolation valves would remain available if called upon to close. Additionally, administrative controls will ensure that the number of 3/4-inch vent and drainline pathways opened at any one time will be limited to six, control room operators will be aware of the openings, and test engineers will make reasonable attempts to isolate vent/drain lines prior to evacuating if evacuation is announced over the PA system. These administrative controls will ensure that timely action will be taken to close open vent and drain valves and the isolation valves in the event of a fuel handling accident.

The staff has determined, based on the operability of the containment isolation valves during the testing phase, administrative controls, the small size of the vent and drain lines and the low ofisite dose consequences based on a 7-day decay period, that the proposed changes to the Perry Technical Specifications concerning the primary containment integrity requirements during fuel handling are acceptable.

#### 3.0 ENVIRONMENTAL CONSILEFATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35 an environmental assessment and finding of no significant impact has been prepared and published in the Federal Register on September 28, 1990 (55 FR 39767). Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of this amendment will not have a significant effect on the quality of the human environment.

#### 4.0 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, and (2) such activities will be conducted in compliance with the Commission's regulations and 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: J. R. Hall J. Lee

Dated: September 28, 1990