

May 11, 1983

Docket Nos. 50-237/249
LS05-83-05-027

Mr. Dennis L. Farrar
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Farrar:

SUBJECT: NUREG-0737, ITEM III.D.3.4, CONTROL ROOM HABITABILITY

Dresden Nuclear Power Station, Units 2 and 3

We have completed our review of NUREG-0737, Item III.D.3.4, Control Room Habitability. Your initial response, dated September 1, 1981 and a revision dated December 17, 1981 were evaluated against the guidance and criteria of Standard Review Plan Sections 2.2.1, 2.2.2, 2.2.3 and 6.4, and Regulatory Guides 1.78 and 1.95. Commitments to install redundant, low-leakage dampers on all exhaust and intake duct work, except the toilet room exhaust, and redundant ammonia detectors at the control room air intakes with provisions for the automatic isolation of the normal ventilation system upon the detection of ammonia resolve the remaining open items from the initial reviews. Based on the review and the commitments made in your submittals, the staff finds that the control room habitability systems are acceptable.

Our Safety Evaluation Report and the supporting letter report, dated March 23, 1982, prepared by Pacific Northwest Laboratories, our consultant, are enclosed.

Sincerely,

Original signed by/

Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing

Enclosures:

1. Safety Evaluation
2. Letter Report dated
March 23, 1982

cc w/enclosures:

See next page

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Mr. Dennis L. Farrar

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May 11, 1983

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UNITED STATES
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SER INPUT FOR DRESDEN STATION UNITS 2 AND 3 FROM
THE ACCIDENT EVALUATION BRANCH ON NUREG-0737
ITEM NO. III.D.3.4, "CONTROL ROOM HABITABILITY"

III.D.3.4 CONTROL ROOM HABITABILITY REQUIREMENTS (NUREG-0737)

Position

In accordance with Task Action Plan Item III.D.3.4, "Control Room Habitability," licensees shall assure that control room operators will be adequately protected against the effects of accidental release of toxic and radioactive gases and that the nuclear power plant can be safely operated or shutdown under design basis accident conditions (Criterion 19, "Control Room", of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50).

Staff Evaluation

In response to the requirements of the Task Action Plan as promulgated in NUREG-0737, the licensee submitted an analysis of the existing control room habitability system with proposed modifications, dated September 1, 1981. This initial submittal was revised in a second submittal dated December 17, 1981. Pacific Northwest Laboratories (PNL), under contract to the staff (FIN #B2323), evaluated the licensee submittals using the guidance and criteria of Standard Review Plan (NUREG-0800) sections 2.2.1, 2.2.2, 2.2.3 and 6.4, and Regulatory Guides 1.78 and 1.95. The PNL letter report of the results of this evaluation is attached.

In addition to those modifications committed to by the licensee, PNL identified two improvements needed to meet present guidance and criteria:

- 1) redundant dampers on all intake and exhaust ductwork directly communicating with outside air, and
- 2) measures to protect control room operators against offsite accidents involving the release of ammonia and monochloromethane.

The PNL letter report also recommended that the normal ventilation system be provided with means to automatically isolate upon high radiation signals. This last provision is a desirable feature which is not required by present criteria unless the delay caused by manual isolation resulted in unacceptable high control room operator doses.

In a second revision to its submittal, dated June 28, 1982, the licensee committed to the installation of redundant, low-leakage dampers on all exhaust and intake duct work except the toilet room exhaust. The licensee also committed to the installation of redundant ammonia detectors at the control room air intakes with provisions for the automatic isolation of the normal ventilation system upon the detection of ammonia.

The staff reviewed these revised modifications, and agrees that they are sufficient to correct the two deficiencies noted in the PNL letter report. The capacity of the toilet room exhaust is small, and were the

damper to fail to close upon demand, the increased leakage could not prevent the control room from pressurizing, nor could this failure increase the air exchange rate sufficiently to endanger the occupants of an isolated control room from toxic gas releases outside, given the other redundant protective measures provided. In addition, the single damper could be manually closed from within.

Monochloromethane is not highly toxic, and is considered incapacitating only at relatively high concentrations (about 1%). Although prolonged exposure to concentrations above 300 parts per million in air may cause delayed health effects, it can be detected by odor at lower concentrations. For these reasons, self-contained breathing apparatus stored within the control room for toxic gas protection can be relied upon to be used in a timely fashion.

In their submittals, the licensee computed operator doses under the assumptions that the normal control room ventilation system remained in operation for eight hours following the initiation of any accidental release of radioactivity. Since the computed doses are less than those specified in criterion 19 of the staff position, manual initiation of both isolation and emergency ventilation system operation are acceptable. The licensee has been informed of the PNL's recommendation and of the staff's agreement that automatic isolation on high radiation would be desirable, and the licensee has declined the opportunity extended to further revise the proposed modifications to include this feature.

The staff has reviewed the PNL findings as well as the licensee submittals in accordance with NUREG-0737. Based upon this review and the implementation of the licensee's commitments as outlined above and in the attached PNL letter report, the staff finds that the control room habitability systems will be acceptable. The staff concludes that these systems will provide safe, habitable conditions within the control room under both normal and accident radiation and toxic gas conditions, including loss-of-coolant accidents. The staff also concludes that occupancy can be maintained under accident conditions without radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of an accident. Therefore, with the inclusion of the previously identified modifications, the design meets the criteria of item III.D.3.4, "Control Room Habitability," of NUREG-0737, and is acceptable.

Dated: May 11, 1983