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JUN 8 1983

Docket Nos. 50-315
and 50-316

Mr. John Dolan, Vice President
Indiana and Michigan Electric Company
Post Office Box 18
Bowling Green Station
New York, New York 10004

Dear Mr. Dolan:

SUBJECT: NUREG-0737 ITEM II.F.1.4 CONTAINMENT PRESSURE MONITOR
II.F.1.5 CONTAINMENT WATER LEVEL MONITOR
II.F.1.6 CONTAINMENT HYDROGEN MONITOR

RE: D. C. Cook Nuclear Power Plant, Unit Nos. 1 and 2

We have reviewed your submittals dated December 23, 1981, January 11, 1982 and April 29, 1982, on TMI Action Plan Items II.F.1.4, "Containment Pressure Monitor," II.F.1.5, "Containment Water Level Monitor," and II.F.1.6, "Containment Hydrogen Monitor." The scope of our review included all requirements except for the criteria requiring that the equipment be environmentally qualified (Appendix B of NUREG-0737). This latter issue will be reviewed separately under the scope of the Commission's environmental qualification program.

As discussed in the enclosed Safety Evaluation, we have concluded that the requirements of NUREG-0737, Items II.F.1.4, II.F.1.5 and II.F.1.6 for the D. C. Cook Nuclear Power Plant have been met and thus, are considered resolved.

Sincerely,

/S/

Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Enclosure:
Safety Evaluation

cc w/enclosures:
See next page

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SAFETY EVALUATION OF THREE TMI ACTION PLAN ITEMS (NUREG-0737)

II.F.1.4 CONTAINMENT PRESSURE MONITOR

II.F.1.5 CONTAINMENT WATER LEVEL MONITOR

II.F.1.6 CONTAINMENT HYDROGEN MONITOR

Donald C. Cook Nuclear Plant Units 1 & 2

Docket Nos. 50-315 & 50-316

Indiana and Michigan Electric Company

Safety Evaluation by

Office of Nuclear Reactor Regulation

United States Nuclear Regulatory Comission

March 1983

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1.0 BACKGROUND

By our letter of 5 Sep 80 (Reference 1) to: (1) licensees of operating plants; (2) applicants for operating licenses; and (3) holders of construction permits; we issued a summary listing of all the approved TMI Action Plan Requirements. In November of 1980 we issued NUREG-0737, Clarification of TMI Action Plan Requirements (Reference 2), which specifies TMI Action Plan Items approved by the Commission for implementation. This Safety Evaluation (SE) addresses three of the TMI Action Plan Items, II.F.1.4,5,6. For Items II.F.1.4,5,6 there is no difference in the hardware being installed in the two plants being reviewed. Therefore the discussion in this SE refers to both plants.

2.0 SCOPE OF REVIEW

This SE addresses all the requirements of II.F.1.4,5,6 except the following:

(1) Clarification (1) of Each Item.
This clarification is the equipment qualification described in Appendix B of NUREG-0737. The staff's review of this clarification of each item will be performed separately.

(2) Implementation Schedule.
NUREG-0737 requires that three items addressed in this SE be implemented by 1 Jan 82. Verifying that the implementation schedule is acceptable is not part of this SE, but will be handled separately.

3.0 II.F.1.4: CONTAINMENT PRESSURE MONITOR SYSTEM (CPMS)

3.1 NUREG-0737 CPMS POSITION

A continuous indication of containment pressure shall be provided in the control room of each operating reactor. Measurement and indication capability shall include three times the design pressure of the containment for concrete, four times the design pressure for steel, and -5 psig for all containments.

3.2 NUREG-0737 CPMS CLARIFICATION

(1) Design and qualification criteria are outlined in Appendix B of NUREG-0737. [As stated in section 2.0, this clarification will be reviewed separately.]

(2) Measurement and indication capability shall extend to 5 psia (-10 psig) for subatmospheric containments.

(3) Two or more instruments may be used to meet the range requirements. However, instruments that need to be switched from one scale to another scale to meet the range requirements are not acceptable.

(4) Continuous display and recording of the containment pressure over the specified range in the control room is required.

(5) The accuracy and response time specifications of the pressure monitor shall be provided and justified to be adequate for their intended function.

3.3 SCOPE OF CPMS EVALUATION

The licensee has described his design for the CPMS in references from 3 on. Our review of the licensee's submittals consisted of the following: (1) checking for deviations from our requirements which are stated in Sections 3.1 and 3.2 above, (2) reviewing the adequacy of the accuracy specifications of the CPMS, and (3) reviewing the adequacy of the response time specifications of the CPMS. The accuracy figures are expressed as a percentage of full scale. The figures quoted for response time are the 100% response values. For linear transfer functions we are using the convention that the time for 100% response is four time constants.

3.4 LICENSEE COMPLIANCE WITH NUREG-0737 CPMS REQUIREMENTS

After reviewing the licensee's submittals, we find that the CPMS design meets all the requirements of Sections 3.1 and 3.2 above.

3.5 EVALUATION OF CPMS ACCURACY AND TIME RESPONSE

The CPMS indicator and recorder are separate devices. The CPMS indicator chosen by the licensee has a system accuracy of 3.4% of full scale and a response time of 4 seconds. The CPMS recorder has a system accuracy of 3.1% of full scale and a system response time of 1.6 seconds. These values, which are consistent with the present state of the art, will provide information over the intended range of the CPMS that is sufficiently accurate and useful to allow the plant operator to adequately assess pressure conditions within containment.

4.0 II.F.1.5: CONTAINMENT WATER LEVEL MONITOR SYSTEM (CWLMS)

4.1 NUREG-0737 CWLMS POSITION

A continuous indication of containment water level shall be provided in the control room for all plants. A narrow-range instrument shall be provided for PWRs and cover the range from the bottom to the top of the containment sump. A wide-range instrument shall also be provided for PWRs and shall cover the range from the bottom of the containment to the elevaton equivalent to 600,000 gallon capacity. For BWRs, a wide-range instrument shall be provided and cover the range from the bottom to five feet above the normal water level of the suppression pool.

4.2 NUREG-0737 CWLMS CLARIFICATION

(1) The containment wide-range water level indication channels shall meet the design and qualification criteria as outlined in Appendix B of NUREG-0737. The narrow-range channel shall meet the requirements of Regulatory Guide 1.89. [As stated in section 2.0, this clarification will be reviewed separately.]

(2) The measurement capability of 600,000 gallons is based on recent plant designs. For older plants with smaller water capacities, licensees may propose deviations from this requirement based on the available water supply capability at their plant.

(3) Narrow range water level monitors are required for all sizes of sumps inside the containment.

(4) For BWR pressure-suppression containments, the Emergency Core Cooling System (ECCS) suction line inlets may be used as a starting reference point for the wide-range water level monitors, instead of the bottom of the suppression pool.

(5) The accuracy requirements of the water level monitors shall be provided and justified to be adequate for their intended function.

4.3 SCOPE OF CWLMS EVALUATION

The licensee has described his design for the CWLMS in references from 3 on. Our review of the licensee's submittals consisted of the following: (1) checking for deviations from our requirements which are stated in Sections 4.1 and 4.2 above, and (2) reviewing the adequacy of the accuracy specifications for the CWLMS. The accuracy figures are expressed as a percentage of full scale.

4.4 LICENSEE COMPLIANCE WITH NUREG-0737 CWLMS REQUIREMENTS

After reviewing the licensee's submittals, we find that the CWLMS design meets all the requirements of Sections 4.1 and 4.2 above.

4.5 EVALUATION OF CWLMS ACCURACY

The licensee has installed a narrow-range CWLMS in the sump and a wide-range CWLMS in the containment, both of which have readout on indicators only. Both indicators have an accuracy of 3.4% of full scale. This value, which is consistent with the present state of the art, will provide information over the intended range of the CWLMS that is sufficiently accurate and useful to allow the plant operator to adequately assess water level conditions within containment.

5.0 II.F.1.6: CONTAINMENT HYDROGEN MONITOR SYSTEM (CHMS)

5.1 NUREG-0737 CHMS POSITION

A continuous indication of hydrogen concentration in the containment atmosphere shall be provided in the control room. Measurement capability shall be provided over the range of 0% to 10% hydrogen concentration under both positive and negative ambient pressures.

5.2 NUREG-0737 CHMS CLARIFICATION

(1) Design and qualification criteria are outlined in Appendix B of NUREG-0737. [As stated in section 2.0, this clarification will be reviewed separately.]

(2) The continuous indication of hydrogen concentration is not required during normal operation. If an indication is not available at all times, continuous indication and recording shall be functioning within 30 minutes of the initiation of safety injection.

5.3 SCOPE OF CHMS EVALUATION

The licensee has described his design for the CHMS in references from 3 on. Our review of the licensee's submittals consisted of the following: (1) checking for deviations from our requirements which are stated in Sections 5.1 and 5.2 above, (2) reviewing the adequacy of the accuracy specifications for the CHMS, and (3) reviewing the adequacy of the hydrogen sample port placement for the CHMS. The accuracy figures are expressed as a percentage of full scale.

5.4 LICENSEE COMPLIANCE WITH NUREG-0737 CHMS REQUIREMENTS

After reviewing the licensee's submittals, we find that the CHMS design meets all the requirements of Sections 5.1 and 5.2 above.

5.5 EVALUATION OF CHMS ACCURACY AND SAMPLE PORT PLACEMENT

The CHMS indicator and recorder are separate devices. The CHMS indicator chosen by the licensee has a system accuracy of 4.1% of full scale and the CHMS recorder has a system acccuracy of 3.7% of full scale. These values, which are consistent with the present state of the art, will provide information over the intended range of the CHMS that is sufficiently accurate and useful to allow the plant operator to adequately assess the hydrogen concentration within containment. The licensee has installed 9 hydrogen sample ports within containment, which permits rapid detection of hydrogen escaping from the reactor.

6.0 CONCLUSION

Except for the review of clarification (1) and a review of the implementation schedule, the licensee has met all the requirements of NUREG-0737 for items II.F.1.4,5,6; we therefore find his design for these three items acceptable.

7.0 REFERENCES

(1) Letter from D. G. Eisenhut (NRC) to All Licensees of Operating Plants and Applicants for Operating Licenses and Holders of Construction Permits, dated 5 Sep 80. Subject: Preliminary Clarification of TMI Action Plan Requirements.

(2) NUREG-0737, "Clarification of TMI Action Plan Requirements," U. S. Nuclear Regulatory Commission, Nov 1980.

(3) Letter from R. S. Hunter (I&MEC) to Harold R. Denton (NRC), 23 Dec 81. Subject: System descriptions of the CPMS, CWLMS and CHMS.

(4) Letter from R. S. Hunter (I&MEC) to Harold R. Denton (NRC), 11 Jan 82. Subject: System descriptions of the CPMS, CWLMS and CHMS.

(5) Letter from R. F. Hering (I&MEC) to Harold R. Denton (NRC), 29 Apr 82. Subject: Response to NRC Request for Additional Information.