



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT No. 231 TO FACILITY OPERATING LICENSE NO. DPR-58  
AND AMENDMENT No. 214 TO FACILITY OPERATING LICENSE NO. DPR-74

INDIANA MICHIGAN POWER COMPANY  
DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2  
DOCKET NOS. 50-315 AND 50-316

1.0 INTRODUCTION

By application dated September 10, 1999, the Indiana Michigan Power Company (the licensee) requested amendments to the Technical Specifications (TSs) for the Donald C. Cook Nuclear Plant, Units 1 and 2. The proposed amendments would revise TS 3/4.4.7 "Reactor Coolant System Chemistry;" TS 3/4 11.2.2, "Radioactive Effluents, Gas Storage Tanks;" TS Table 4.4-3, "Reactor Coolant System Chemistry Limits Surveillance Requirements;" and TS Table 3.4-1, "Reactor Coolant System Chemistry Limits."

Units 1 and 2 are currently in extended outages. The units are defueled with the reactor coolant system (RCS) depressurized and there is no forced circulation of the reactor coolant. Upcoming plant modifications and maintenance, including the replacement of the Unit 1 steam generators, necessitate changes to the RCS configuration and coolant levels. As a result of these changes, the licensee has proposed to change the above sections of the TSs to reflect the plant conditions, as well as making the Unit 1 and Unit 2 TSs consistent, which would more align the TSs to current industry standards.

2.0 EVALUATION

2.1 Proposed Change to Unit 1 and 2 TS Surveillance Requirement 4.4.7

The current Unit 1 and Unit 2 TS Surveillance Requirement 4.4.7 states that "The Reactor Coolant System Chemistry shall be determined to be within the limits by analysis of those parameters at the frequencies specified in Table 4.4-3." The licensee proposed to modify the TS by removing the requirement to perform the required surveillance when the reactor is defueled with no forced circulation. The TS is therefore proposed to read as "The Reactor Coolant System Chemistry shall be determined to be within the limits by analysis of those parameters at the frequencies specified in Table 4.4-3. *Performance of this surveillance is not required when the reactor is defueled with no forced circulation.*"

TS 3/4.4.7 requires periodic sampling and analysis of the RCS to verify that chemistry parameters are below established limits. This TS places concentration limits on dissolved oxygen, chloride, and fluoride concentrations in the RCS. Sampling of the RCS chemistry provides assurance that the concentration of corrosive contaminants in the RCS is within acceptable levels and that the structural integrity of the RCS is maintained. Under normal operating procedures, the normal sampling system, which consists of several sampling points on two RCS hot legs and two residual heat removal system trains, is used to sample the chemistry parameters. However, the normal sampling system can not be used correctly under low-temperature, low-pressure conditions (*i.e.*, under conditions of no forced circulation and the reactor vessel being defueled). When the RCS is drained below mid-loop, the coolant remaining in the piping system low points is not in contact with coolant in other system low points. Therefore a representative sample of all coolant can not be taken. The RCS is designed with alternate sampling locations. However, these sampling locations are also insufficient for adequate test results due to the collection of reactor coolant in low points of the system. Moreover, some low points do not have sampling capability. With the lack of adequate sampling points, the licensee will not be able to take a representative sample of RCS coolant.

The Electric Power Research Institute document, TR-105714, "PWR Primary Water Chemistry Guidelines," dated March 1999, states that coolant temperature contributes more significantly to the rate at which stress corrosion and cracking occurs than does coolant chemistry. The licensee states that "The proposed change to modify the RCS chemistry sampling when fuel is off loaded and forced coolant circulation is not in use would only be in effect during low temperature and low pressure conditions." Therefore stress corrosion is not likely to occur under the conditions the licensee has proposed. Furthermore, no chemical contaminants are expected to be added to the system while under low-temperature, low-pressure conditions (*i.e.*, no change is expected in RCS chemistry). Additionally, administrative controls on RCS makeup sources, which consist of the primary water storage tank and refueling water storage tank, ensure that the concentration of chemical contaminants from these sources will not exceed the TS limits while RCS chemistry sampling is suspended. The licensee also states that the "RCS chemistry sampling is to be reinstated within 72 hours of returning forced circulation to operation and prior to entering Mode 6."

Based on the above, the staff finds that suspension of Surveillance Requirement 4.4.7 with the reactor defueled with no forced circulation does not constitute a reduction in safety. Therefore the staff finds the proposed change acceptable.

## 2.2 Proposed Editorial Change to Unit 1 and 2 Table 3.4-1

### Changes to Unit 1 Table 3.4-1

Unit 1 Table 3.4-1 defines the chemistry limits in terms of steady-state and transient limits. The licensee proposes to remove asterisks for a footnote from the allowable chemistry limits of steady state and transient limits for dissolved oxygen. The asterisk is proposed to be placed by the dissolved oxygen parameter. Additionally, the licensee proposes to

modify the footnote. The footnote currently states "Limit not applicable with average temperature less than or equal to 250 degrees Fahrenheit." The footnote is proposed to read as "Limits not applicable with average temperature less than or equal to 250 degrees Fahrenheit."

The proposed changes with the asterisks for Table 3.4-1 are meant to provide consistency between the Unit 1 and Unit 2 TSs and NUREG-0452, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors." The proposed changes are not intended to affect the TS requirement. The plural of the word "limit" is proposed because the word applies to both the steady state and transient limits. The editorial change is not intended to alter the requirement or safety function.

The staff finds that the proposed editorial changes do not represent a reduction in safety or alter the TS requirement. The editorial changes are intended to maintain consistency and enhance usability and clarity of the TS. Therefore, the staff finds the proposed changes are acceptable.

#### Change to Unit 2 Table 3.4-1

Unit 2 Table 3.4-1 footnote reads as "Limit not applicable with average temperature less than or equal to 250 degrees Fahrenheit." The footnote is proposed to read as "Limits not applicable with average temperature less than or equal to 250 degrees Fahrenheit."

The plural of the word "limit" is proposed because the word applies to both the steady state and transient limits. This editorial change is not intended to alter the requirement or safety function, but is intended to provide clarity and consistency between the two units.

The staff finds that the proposed editorial change does not represent a reduction in safety or alter the TS requirement. The editorial change is intended to maintain consistency and enhance the usability and clarity of the TS. Therefore, the staff finds proposed change is acceptable.

#### 2.3 Proposed Change to Unit 1 Table 4.4-3

Current Unit 1 Table 4.4.3 designates a maximum time interval between samples of 72 hours for the chemistry parameters of dissolved oxygen, chloride, and fluoride. Table 4.4.3 designates a minimum RCS analysis frequency of three times per 7 days. The licensee proposes to *remove* the "minimum analysis frequencies" requirement in Unit 1 Table 4.4-3 of "3 times per 7 days" for the dissolved oxygen, chloride, and fluoride parameters. The licensee also proposes to *remove* the "maximum time between analyses" requirement of 72 hours for dissolved oxygen, chloride, and fluoride. The licensee proposes to consolidate the two requirements by *inserting* a "sample and analysis frequency" requirement of "at least once per 72 hours" for dissolved oxygen, chloride, and fluoride. Additionally, the licensee proposes to *add* an asterisk to the dissolved oxygen parameter for reference to a footnote. The proposed changes would make the Unit 1 TS similar to the current Unit 2 TS.

The proposed change to determine the chemistry parameters concentration is not intended to affect the maximum interval between samples. It is intended to change the RCS chemistry sampling from three times per 7 days with a maximum interval of 72 hours to a frequency of at least once per 72 hours. The proposed change is consistent with the approved Unit 2 TS and with guidance provided in NUREG-0452. Retaining the bounding 72-hour surveillance requirement, while deleting the redundant requirement to sample three times per 7 days, provides assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective actions. The requirement itself is not altered.

The staff finds that the proposed change does not constitute a reduction in safety and is intended to maintain consistency between the Unit 1 and Unit 2 TSs and enhance the usability and clarity of the TS. Therefore, the staff finds the proposed change is acceptable.

#### 2.4 Proposed Change to Unit 1 and 2 TS Surveillance Requirement 4.11.2.2

Current Unit 1 and 2 TS Surveillance Requirement 4.11.2.2 states that "The quantity of radioactive material contained in each gas storage tank shall be determined to be within the above limit at least once per 7 days whenever radioactive materials are added to the tank and at least once per 24 hours during primary coolant system degassing operations, by analysis of the Reactor Coolant System noble gases." The licensee proposes to *delete* "by analysis of the Reactor Coolant System noble gases." The proposed surveillance requirement is to read as "The quantity of radioactive material contained in each gas storage tank shall be determined to be within the above limit at least once per 7 days whenever radioactive materials are added to the tank and at least once per 24 hours during primary coolant system degassing operations."

The proposed change would delete the descriptive methods used to demonstrate compliance with the TS and is not intended to alter the general requirement to verify compliance with the TS limits. The change is intended to allow for alternate demonstrations of how the TS can be met. An example of an alternate testing method is direct gas sampling of the gas storage tanks. The current method requiring analysis of RCS noble gases is described in the licensee's Updated Final Safety Analysis Report. The licensee states that "Plant procedures will be revised to specify allowable sampling methods" (e.g., direct gas sampling of the gas storage tank or analysis of the RCS noble gases), and that "Implementation of alternative sampling approaches will be evaluated in accordance with 10 CFR 50.59." The licensee also states that "occupational dose associated with all sampling and analysis activities will be maintained within the established regulatory and procedural limits. Adherence to as low as reasonably achievable (ALARA) principles will provide additional assurance that these activities will not result in a significant increase in radiation exposure." The proposed change provides consistency with the gas storage tank sampling requirements in NUREG-0452.

The staff finds that the proposed change does not constitute a reduction in safety. The change is intended to allow for alternate methods of meeting the requirement and will be controlled by the licensee in accordance 10 CFR 50.59. Therefore, the staff finds the proposed change is acceptable.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

These amendments change the requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or change the surveillance requirements. The staff has determined that the amendments involve 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 amendments involve no significant hazards consideration and there has been no public comment on such finding (64 FR 54376). Accordingly, the amendments meet 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 amendments.

### 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 the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Date: November 19, 1999