

November 7, 2000

Mr. Robert P. Powers, Senior Vice President  
Indiana Michigan Power Company  
Nuclear Generation Group  
500 Circle Drive  
Buchanan, MI 49107

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2 - QUALITY ASSURANCE  
PROGRAM DESCRIPTION REDUCTION IN COMMITMENT FOR SPLICES OF  
REINFORCING STEEL BAR IN CONCRETE (TAC NOS. MA9849 AND MA9850)

Dear Mr. Powers:

By letter dated August 14, 2000, Indiana Michigan Power Company submitted a reduction in commitment change to their Quality Assurance Program Description (QAPD) for Donald C. Cook Nuclear Plant, Units 1 and 2, pursuant to 10 CFR 50.54(a)(4). The proposed change would add a new exception that covers requirements associated with mechanical splices of reinforcing steel bar in concrete. The exception would allow crediting the performance of American Society of Mechanical Engineers *Boiler and Pressure Vessel Code*, Section III, Division 2, 1995 edition, operator qualifications and splice testing in lieu of the current commitment to American National Standards Institute N 45.2.5 - 1974 requirements.

The staff has reviewed the reduction in commitment, as documented by the enclosed safety evaluation. The revised QAPD incorporating these changes will continue to satisfy the criteria of Appendix B to 10 CFR Part 50 and is, therefore, acceptable.

This completes Restart Action Matrix Item 8.6. If you have any questions regarding this matter, please contact me at (301) 415-1345.

Sincerely,

*/RA/*

John F. Stang, Senior Project Manager, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROPOSED CHANGES TO QUALITY ASSURANCE PROGRAM

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-315 AND 50-316

1.0 INTRODUCTION

By letter dated August 14, 2000, Indiana Michigan Power Company submitted a reduction in commitment change to their Quality Assurance Program Description (QAPD) for Donald C. Cook Nuclear Plant (D. C. Cook), Units 1 and 2, pursuant to 10 CFR 50.54(a)(4). The proposed change would add a new exception that covers requirements associated with mechanical Cadweld splices of reinforcing steel bar in concrete. The exception would allow crediting the performance of American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel* (B&PV) *Code*, Section III, "Rule for Construction of Nuclear Power Plant Components," Division 2, "Code for Concrete Reactor Vessel and Containments," 1995 edition, operator qualifications and splice testing in lieu of the current commitment to the requirements of American National Standards Institute (ANSI) N 45.2.5 - 1974, "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants." The proposed changes to the QAPD would result in the following changes:

- Modification of the qualification of operators or initial qualification tests to incorporate newer code requirements.
- Modification of the tensile testing frequency to incorporate newer code requirements.
- Clarification of the use of the word "straight" in reference to splice samples.
- Modification of the type of splice to be tested to incorporate newer code requirements.

2.0 CHANGES TO COMMITMENTS

The proposed change consists of replacing the commitments to ANSI N 45.2.5 - 1974, (1) Section 4.9.1, Qualification of Operators, (2) Section 4.9.3, Tensile Testing, and (3) Section 4.9.4, Tensile Test Frequency, with commitments to ASME B&PV Code, (1) Section III, subparagraph CC-4333.4, Initial Qualification Tests, (2) subparagraph CC-4333.5.2, Splice Samples, and (3) subparagraph CC-4333.5.3, Testing Frequency.

ENCLOSURE

## 2.1 Qualification Changes

### 2.1.1 Current ANSI N 45.2.5 Section 4.9.1 commitment states:

**4.9.1 Qualification of Operators.** Prior to the production splicing of reinforcing bars, each member of the splicing crew (or each crew if the members work as a crew) shall prepare two qualification splices for each of the splice positions (e.g., horizontal, vertical, diagonal) to be used. The qualification splices shall be made using the same materials (e.g., bar, sleeve, powder) as those to be used in the structure. To qualify, the completed splices must meet the specified visual inspection acceptance requirements and meet the tensile test requirements of Section 4.9.3. Each member of the splicing crew (or each crew if members work as a crew) is subject to requalification (1) if the specific splice position (e.g., horizontal, vertical, diagonal) has not been used by member or crew for a period of three months or more or (2) if there is another reason to question their ability, such as the completed splices not passing visual inspection or tensile testing. The requalification procedure should be identical to the qualification procedure.

### 2.1.2 Requested commitment to ASME Code, 1995 edition, subparagraph 4333.4, states:

**CC-4333.4 Initial Qualification Tests.** [A95] Each splicer shall prepare two qualification splices on the largest bar size to be used. In addition, for ferrous filler metal splices, cementitious grouted splices, and swaged splices only, each of the splice positions to be used (e.g., horizontal, vertical, diagonal) shall be qualified. The qualification splices shall be made using reinforcing bar identical to that to be used in the structure. The completed qualification splices shall be tensile tested using the loading rates set forth in SA-370 and the tensile results shall meet those specified in Tables CC-4334-1.[A95]

### 2.1.3 Qualification Evaluation

Regulatory Guide 1.136 endorses the use of ASME Code, 1980 edition, for materials, construction, and testing of concrete containments subject to specific clarifications in Section C Regulatory Positions. The ASME Code 1995 is substantially the same as the ASME Code, 1980 edition; however, the section, "Initial Qualifications Tests," was renumbered from CC-4333.3 in the ASME Code, 1980 edition, to CC-4333.4 in the ASME Code, 1995 edition (as was the referenced table), and the ASME Code, 1995 edition, references additional splice techniques not described in the ASME Code, 1980 edition. The ASME Code, 1995 edition, did not change any of the qualification guidelines from the ASME Code, 1980 edition, associated with Cadweld splices (ferrous filler metal splices). The revised QAPD incorporating these changes will continue to satisfy the criteria of Appendix B to 10 CFR Part 50 and is, therefore, acceptable.

## 2.2 Clarification Change

2.2.1 Current ANSI N 45.2.5 Section 4.9.3 commitment states:

**4.9.3 Tensile Testing.** Splice samples may be production splices (i.e., those cut directly from in-place reinforcing) or sister splices (i.e., those removable splices made in place next to production splices and under the same conditions).

2.2.2 Requested commitment to ASME Code, 1995 edition, subparagraph 4333.5.2, states:

**CC-4333.5.2 Splice Samples.** Splice samples may be production splices (cut directly from in-place reinforcement) or straight sister splices (removable splices made in place next to production splices and under the same conditions), in accordance with the schedule established in CC-4333.5.3.

2.2.3 Clarification Evaluation

The addition of the word “straight” clarifies that a sister splice is made of a straight (noncurving) piece of reinforcing bar to ensure accurate tensile testing results. The revised QAPD incorporating these changes will continue to satisfy the criteria of Appendix B to 10 CFR Part 50 and is, therefore, acceptable.

## 2.3 Splice Sample Test Frequency

2.3.1 Current ANSI N 45.2.5 Section 4.9.4 commitment states:

**4.9.4 Tensile Test Frequency.** Separate test cycles shall be established for mechanical splices in horizontal, vertical, and diagonal bars, for each bar size and for each splicing crew as follows:

2. Test Frequency for Combinations of Production and Sister Splices. If production and sister splices are tested, the sample frequency shall be:

- a. One production splice of the first 10 production splices.
- b. One production and three sister splices for the next 90 production splices.
- c. Three splices, either production or sister splices for the next and subsequent units of 100 splices. At least 1/4 of the total number of splices tested shall be production splices.

2.3.2 Requested commitment to ASME Code, 1995 edition, subparagraph 4333.5.3, states:

**CC-4333.5.3 Testing Frequency.** [A95] Splice samples shall be tensile tested in accordance with the following schedule for the appropriate splice system.

- (a) Separate test cycle shall be established for sleeve with ferrous filler metal splices, sleeve with cementitious grout splices, and swaged splices in the horizontal, vertical, and diagonal bars. Straight sister splices may be substituted for production test samples on

radius bent bars and for splicing sleeves arc welded to structural steel elements or the liner.

(1) For sleeve with ferrous filler metal splices, one splice shall be tested for each unit of 100 production splices.

### 2.3.3 Splice Sample Test Frequency Evaluation

ASME Code, 1980 edition, states in subparagraph CC-4333.4.3:

**“CC-4333.4.3 Testing Frequency.** Separate test cycles shall be established for splices in horizontal, vertical, and diagonal bars. One production splice shall be tested for each unit of 100 production splices.”

The ASME Code, 1995 edition, constitutes equivalent guidelines to those previously accepted by ASME Code, 1980 edition. The revised QAPD incorporating these changes will continue to satisfy the criteria of Appendix B to 10 CFR Part 50 and is, therefore, acceptable.

## 2.4 Testing of Sister Splice Samples Only

2.4.1 Current ANSI N 45.2.5 Section 4.9.4 commitment requires testing of both production and sister splices, as stated in paragraph 2.3.1.

2.4.2 Requested commitment to ASME Code, 1995 edition, subparagraph 4333.5.2, requires testing of either production or sister splices, as stated in paragraph 2.3.2.

### 2.4.3 Testing of Sister Splice Sample Only Evaluation

The NRC accepted the use of all sister splice testing (no production splice tests) for the D. C. Cook, Unit 2, Steam Generator Replacement Project in the safety evaluation associated with Amendment No. 100, dated March 8, 1988. ASME Code, 1995 edition, constitutes equivalent guidelines to those previously accepted by ASME Code, 1980 edition. The revised QAPD incorporating these changes will continue to satisfy the criteria of Appendix B to 10 CFR Part 50 and is, therefore, acceptable.

## 3.0 CONCLUSION

The proposed change consists of replacing the commitments to ANSI N 45.2.5 - 1974 with commitments to ASME B&PV Code, Section III, Division 2, 1995 edition. ASME Code, 1995 edition, constitutes equivalent guidelines to those previously accepted by ASME Code, 1980 edition. The revised QAPD incorporating these changes will continue to satisfy the criteria of Appendix B to 10 CFR Part 50 and is, therefore, acceptable.

Principal Contributor: M. T. Bugg

Date: November 7, 2000

Donald C. Cook Nuclear Plant, Units 1 and 2

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