



**INDIANA  
MICHIGAN  
POWER**

August 14, 2000

C0800-05  
10 CFR 50.54(a)(4)

Docket Nos.: 50-315  
50-316

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Stop O-P1-17  
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Units 1 and 2  
QUALITY ASSURANCE PROGRAM DESCRIPTION  
REDUCTION IN COMMITMENT

Pursuant to 10 CFR 50.54(a)(4), Indiana Michigan Power Company (I&M), the Licensee for Donald C. Cook Nuclear Plant Units 1 and 2, requests approval of a reduction in commitment to the Quality Assurance Program Description (QAPD). The proposed change would add a new Exception 7c, covering requirements associated with mechanical (Cadmium) splices of reinforcing steel bar in concrete, to Appendix B of the QAPD. The exception would allow crediting the performance of ASME Boiler and Pressure Vessel Code, Section III, Division 2, 1995 Edition operator qualifications and splice testing in lieu of the present ANSI N 45.2.5 - 1974 requirements. The basis for the proposed change is substantially the same as that contained in Regulatory Guide 1.136, Revision 2, "Materials, Construction, and Testing of Concrete Containments (Articles CC-1000, -2000, and -4000 through -6000 of the "Code for Concrete Reactor Vessels and Containments"), June 1981."

Through personnel error I&M has already implemented the changes requested in this submittal. The error has been entered into our corrective action program for resolution.

Attachment 1 contains the current commitment, the requested change, the reason for the change, and a detailed discussion of the basis for concluding that the revised commitment requirements continue to satisfy the 10 CFR 50 Appendix B criteria. Attachment 2 provides QAPD pages marked up to show the proposed changes. Attachment 3 provides the QAPD pages with the proposed changes incorporated.

Q004

I&M requests approval of this activity by November 1, 2000, to support Unit 1 restart activities.

There are no commitments contained in this submittal.

Should you have any questions, please contact Mr. Brian A. McIntyre, Acting Director of Regulatory Affairs, at (616) 697-5806.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. P. Powers', with a stylized flourish at the end.

R. P. Powers  
Vice President

/dmb

**Attachments**

c: J. E. Dyer  
MDEQ - DW & RPD  
NRC Resident Inspector  
R. Whale

**AFFIRMATION**

I, Robert P. Powers, being duly sworn, state that I am Vice President of Indiana Michigan Power Company (I&M), that I am authorized to sign and file this Request with the Nuclear Regulatory Commission on behalf of I&M, and that the statements made and the matters set forth herein pertaining to I&M are true and correct to the best of my knowledge, information, and belief.

Indiana Michigan Power Company



R. P. Powers  
Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 14 DAY OF AUGUST, 2000

  
Notary Public

My Commission Expires 5/26/05

**JENNIFER L KERNOSKY**  
Notary Public, Berrien County, Michigan  
My Commission Expires May 26, 2005

**ATTACHMENT 1 TO C0800-05**

**SYNOPSIS OF CHANGES**

**CURRENT COMMITMENT, REQUESTED CHANGE,  
REASON FOR CHANGE AND BASIS FOR CONCLUSION**

## BACKGROUND

During the replacement of the Unit 1 steam generators, the upper part of the concrete steam generator enclosures were cut into manageable sections and removed from containment to facilitate replacement of large steam generator sections. The concrete cuts were made using a wire saw creating a flat plane of concrete and reinforcing steel bar (rebar) ends. Following replacement of the steam generators, each enclosure was reconstructed to the original dimensions. Reconstruction of the enclosures required chipping of the concrete below the flat cut plane to expose existing rebar ends to allow splicing to the new rebar required for the enclosure reconstruction. One of the splicing techniques used was mechanical (Cadmold) splices.

Prior to performing these reconstruction items, reviews were performed that included the quality assurance program description (QAPD) to determine if revisions to previous commitments were required. That QAPD review concluded that a revision of the QAPD was required. However, that review erroneously concluded that changes to certain commitments involving Cadmold were not a reduction in commitment and could be implemented without prior Nuclear Regulatory Commission (NRC) approval by use of 10 CFR 50.54(a)(3) criteria. During preparation of the periodic QAPD update submittal required by 10 CFR 50.54(a)(3), Indiana Michigan Power Company (I&M) determined that the changes constituted a reduction in commitment because previous NRC approval of the specific changes for other facilities could not be identified. Because of that personnel error, I&M has already implemented the changes requested in this submittal. The error has been entered into our corrective action program for resolution.

I&M is requesting NRC approval, pursuant to 10 CFR 50.54(a)(4), of the previously implemented changes to the QAPD commitments involving Cadmold splicing of rebar. The proposed changes to the QAPD would result in the following changes:

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

Throughout the remainder of this discussion, the terms identified below will be used to provide for identification of NRC regulatory guide, ANSI standard and ASME codes.

"Regulatory Guide 1.136" refers to Regulatory Guide 1.136 Revision 2, "Materials, Construction, and Testing of Concrete Containments (Articles CC-1000, -2000, and -4000 through -6000 of the "Code for Concrete Reactor Vessels and Containments"), June 1981."

**“ANSI N 45.2.5” refers to American National Standard 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.”**

**“ASME Code 1995” refers to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, “Rules for Construction of Nuclear Power Plant Components,” Division 2, “Code for Concrete Reactor Vessels and Containments,” 1995 Edition.**

**“ASME Code 1980” refers to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, “Rules for Construction of Nuclear Power Plant Components,” Division 2, “Code for Concrete Reactor Vessels and Containments,” 1980 Edition.**

The ASME Code 1980 has been endorsed by the NRC through the issuance of the Regulatory Guide 1.136. However, even though substantially the same requirements are contained in the ASME Code 1995, the NRC has yet to endorse those specific items being requested by I&M from the applicable portions of the ASME Code 1995 identified below. I&M has concluded that use of the ASME Code 1995 is a reduction in commitment; however, use of the ASME Code 1995 constitutes quality requirements that are equivalent to those previously approved by the NRC in other cases.

The proposed change consists of replacing the commitments to ANSI N 45.2.5

Section 4.9.1, Qualification of Operators

Section 4.9.3, Tensile Testing

Section 4.9.4, Tensile Test Frequency

with commitments to ASME Code 1995

Subparagraph CC-4333.4, Initial Qualification Tests

Subparagraph CC-4333.5.2, Splice Samples

Subparagraph CC-4333.5.3, Testing Frequency

The details of the specific changes requested by I&M are described below.

## **DETAILED DISCUSSION OF CHANGES**

### **1. Qualification Changes**

#### **a) Current Commitment:**

ANSI N 45.2.5 Section 4.9.1, which 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 original qualification procedure.”

**b) Requested Change**

ASME Code 1995 Subparagraph 4333.4, which 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 qualifications 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]”

**c) Reason for the change:**

The change to the commitment to permit the splice operators to perform qualification splices on only the largest bar size used is allowed by the ASME Code 1995. Substantially, the same requirement was in the ASME Code 1980 that has been endorsed by the NRC. I&M has implemented these operator qualifications.

**d) Basis for Concluding that the Revised Program Continues to Satisfy the Criteria of 10 CFR Appendix B and the QAPD Commitments Previously Accepted by the NRC:**

Regulatory Guide 1.136 endorses the use of ASME Code 1980 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, however, the section, ‘Initial Qualification Tests’ was renumbered from CC-4333.3 in the ASME Code 1980 to

CC-4333.4 in the ASME Code 1995 (as was the referenced table) and the ASME Code 1995 references additional splice techniques not described in the ASME Code 1980 edition. The ASME Code 1995 edition did not change any of the qualification requirements from the ASME Code 1980 associated with Cadweld splices (ferrous filler metal splices). I&M has concluded that use of the ASME Code 1995 is a reduction in commitment; however use of the ASME Code 1995 constitutes quality requirements that are equivalent to those previously approved by the NRC in its acceptance of the ASME Code 1980.

## **2. Clarification**

### **a) Current Commitment:**

ANSI N 45.2.5 Section 4.9.3, which 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)."

### **b) Requested Change**

ASME Code 1995 Subparagraph 4333.5.2, which 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."

### **c) Reason for the change:**

The extent of the request is the addition of the word 'straight' to the definition of the type of sister splices to be made. The change to the commitment will more clearly identify the configuration of sister splices to ensure consistency of required testing.

### **d) Basis for Concluding that the Revised Program Continues to Satisfy the Criteria of 10 CFR Appendix B and the QAPD Commitments Previously Accepted by the NRC:**

The addition of the word 'straight' clarifies that a sister splice is made of a straight (non-curving) piece of reinforcing bar to ensure accurate tensile testing results. I&M concluded this is an administrative clarification; however NRC approval is requested because the use of the word 'straight' comes from a later quality assurance standard not approved by the NRC.

### **3. Splice Sample Test Frequency**

#### **a) Current Commitment**

ANSI N 45.2.5 Section 4.9.4, which 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."

#### **b) Requested Change**

ASME Code 1995 Subparagraph 4333.5.3, which 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 cycles 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."

#### **c) Reason for the change:**

The change of the commitment from the test frequency specified by N 45.2.5 to the frequency specified by the ASME Code 1995 will allow the use of reduced testing frequency endorsed by the NRC in the ASME Code 1980.

- d) Basis for Concluding that the Revised Program Continues to Satisfy the Criteria of 10 CFR Appendix B and the QAPD Commitments Previously Accepted by the NRC:

ASME Code 1980 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."

I&M has concluded that use of the ASME Code 1995 is a reduction in commitment; however use of the ASME Code 1995 constitutes quality requirements that are equivalent to those previously approved by the NRC in its acceptance of the ASME Code 1980.

#### **4. Testing of Sister Splice Samples Only**

- a) Current Commitment:

(See paragraph 3.a) Section 4.9.4 of N 45.2.5, which requires testing of both production and sister splices.

- b) Requested Change

(See paragraph 3.b) ASME Code 1995, Subparagraph CC-4333.5.2 which requires testing of either production or sister splices.

- c) Reason for the change:

The change to the commitment for testing of production and sister splices as required by N45.2.5 to testing only sister splices as allowed by the ASME Code 1995 edition has been implemented by I&M.

- d) Basis for Concluding that the Revised Program Continues to Satisfy the Criteria of 10 CFR Appendix B and the QAPD Commitments Previously Accepted by the NRC:

The NRC has endorsed the use of all sister splice testing (no production splice tests) in the Safety Evaluation Report for I&M Unit 2 Steam Generator Replacement Project (SGRP) in the SER for Amendment 100 to the Unit 2 Operating License DPR-74, (Letter from John F. Stang, USNRC, to Milton P. Alexich, Indiana Michigan Power Company, March 8, 1988, "Amendment 100 to Facility Operating License No. DPR-74, Docket No. 50-316").

The NRC safety evaluation report was reviewed and I&M has determined that testing only sister splice samples has been approved for use at a sample frequency greater than that required by the

ASME Code 1995. I&M concluded that testing only sister splices in accordance with the ASME Code 1995 is acceptable because:

- Testing sister splices reduces the number of production splices involved in the repair project. This results from the necessity to perform two production splices to replace the rebar section removed for production splice testing. Minimizing the number of production splices simplifies the repair and provides for higher assurance of rebar integrity. In addition, no advantage is gained by testing production splices, since sister splices are made at the same time and under the same conditions as production splices. Therefore, testing sister splices provides the same information regarding splice quality as testing production splices.
- The process and procedures of splicing reinforcing bar using ferrous metal filler splice kits has improved significantly in the years of its use in nuclear power plant applications. I&M experience confirms this. Recent experience on Unit 1 resulted in 362 Cadweld splices, 41 sister splices were tested with no code failures. Therefore, I&M has high confidence in the integrity of the production splices.

I&M has concluded that use of the ASME Code 1995 is a reduction in commitment; however use of the ASME Code 1995 constitutes quality requirements that are equivalent to those previously approved by the NRC in its acceptance of the ASME Code 1980.

**ATTACHMENT 2 TO C0800-05**

**QAPD PAGES  
MARKED TO SHOW PROPOSED CHANGE**

**Page 1.7-129,  
Page 1.7-129a,  
and  
Page 1.7-130**

Requirement

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 original qualification procedure.

Exception/Interpretation

Frequently, physical size and/or location of installed plant instrumentation precludes attachment of calibration labels or tags. Instead, each instrument is uniquely identified and is traceable to its calibration record.

A scheduled calibration program assures that each instrument's calibration is current.

7. N45.2.5,

7a. Sec. 2.5.2

Requirement

"When discrepancies, malfunctions or inaccuracies in inspection and testing equipment are found during calibration, all items inspected with that equipment since the last previous calibration shall be considered unacceptable until an evaluation has been made by the responsible authority and appropriate action taken."

Exception/Interpretation

I&M uses the requirements of N18.7, Section 5.2.16, rather than N45.2.5, Section 2.5.2. The N18.7 requirements are more applicable to an operating plant.

7b. Sec. 5.4

Requirement

"Hand torque wrenches used for inspection shall be controlled and must be calibrated at least weekly and more often if deemed necessary. Impact torque wrenches used for inspection must be calibrated at least twice daily."

Exception/Interpretation

Torque wrenches are controlled as measuring and test equipment in accordance with ANSI N18.7, Section 5.2.16. Calibration intervals are based on use and calibration history rather than as per N45.2.5.

1.7-129

July 1997

INSERT 7c. here

INSERT PAGE 1.7-129a  
FOLLOWING THIS PAGE

THIS SECTION WAS MOVED  
VERBATIM FROM PAGE  
1.7-130 FOR EDITORIAL  
ADJUSTMENT ONLY

**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).

**4.9.4 Tensile Testing 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.

**Exception/Interpretation**

I&M uses the requirements of ASME Sec. III, Div. 2, Sec CC-4333.4, Sec CC-4333.5.2, & CC-4333.5.3 rather than N45.2.5, Sec. 4.9.1, Sec. 4.9.3 and 4.9.4. Sec. CC-4333.5.2 and CC-4333.5.3 are more applicable to the restoration and repair of a concrete containment.

**"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 qualifications 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]"

**"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."

**"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 cycles 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."

Exception/Interpretation

~~Torque wrenches are controlled as measuring and test equipment in accordance with ANSI N18.7, Section 5.2.16. Calibration intervals are based on use and calibration history rather than as per N45.2.5.~~

8. N45.2.6, Sec. 1.2

Requirement

"The requirements of this standard apply to personnel who perform inspections, examinations and tests during fabrication prior to or during receipt of items at the construction site, during construction, during preoperational and start-up testing and during operational phases of nuclear power plants."

Exception/Interpretation

Personnel participating in testing who take data or make observations, where special training is not required to perform this function, need not be qualified in accordance with ANSI N45.2.6, but need only be trained to the extent necessary to perform the assigned function.

9. Reg. Guide 1.58 - General

Requirement

Qualification of nuclear power plant inspection, examination and testing personnel.

9a. C.2.a(7)

Requirement

Regulatory Guide 1.58 endorses the guidelines of SNT-TC-1A as an acceptable method of training and certifying personnel conducting leak tests.

**ATTACHMENT 3 TO C0800-05**

**PROPOSED QAPD PAGES  
REVISED PAGES**

**Page 1.7-129,  
Page 1.7-129a,  
and  
Page 1.7-130**

**Exception/Interpretation**

Frequently, physical size and/or location of installed plant instrumentation precludes attachment of calibration labels or tags. Instead, each instrument is uniquely identified and is traceable to its calibration record.

A scheduled calibration program assures that each instrument's calibration is current.

- 7. **N45.2.5,**
- 7a. **Sec. 2.5.2**

**Requirement**

"When discrepancies, malfunctions or inaccuracies in inspection and testing equipment are found during calibration, all items inspected with that equipment since the last previous calibration shall be considered unacceptable until an evaluation has been made by the responsible authority and appropriate action taken."

**Exception/Interpretation**

I&M uses the requirements of N18.7, Section 5.2.16, rather than N45.2.5, section 2.5.2. The N18.7 requirements are more applicable to an operating plant.

- 7b. **Sec. 5.4**

**Requirement**

"Hand torque wrenches used for inspection shall be controlled and must be calibrated at least weekly and more often if deemed necessary. Impact torque wrenches used for inspection must be calibrated at least twice daily."

**Exception/Interpretation**

Torque wrenches are controlled as measuring and test equipment in accordance with ANSI N18.7, Section 5.2.16. Calibration intervals are based on use and calibration history rather than as per N45.2.5.

- 7c. **Sec. 4.9 – Mechanical (Cadmeld) Splice**

**Requirement**

**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 original qualification procedure.

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).

4.9.4 Tensile Testing 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.

Exception/Interpretation

I&M uses the requirements of ASME Sec. III, Div. 2, Sec CC-4333.4, Sec CC-4333.5.2, & CC-4333.5.3 rather than N45.2.5, Sec. 4.9.1, Sec. 4.9.3 and 4.9.4. Sec. CC-4333.5.2 and CC-4333.5.3 are more applicable to the restoration and repair of a concrete containment.

"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]"

"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."

"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 cycles 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."

8. N45.2.6, Sec. 1.2

**Requirement**

"The requirements of this standard apply to personnel who perform inspections, examinations and tests during fabrication prior to or during receipt of items at the construction site, during construction, during preoperational and start-up testing and during operational phases of nuclear power plants."

**Exception/Interpretation**

Personnel participating in testing who take data or make observations, where special training is not required to perform this function, need not be qualified in accordance with ANSI N45.2.6, but need only be trained to the extent necessary to perform the assigned function.

9. Reg. Guide 1.58 - General

**Requirement**

Qualification of nuclear power plant inspection, examination and testing personnel.

- 9a. C.2.a(7)

**Requirement**

Regulatory Guide 1.58 endorses the guidelines of SNT-TC-1A as an acceptable method of training and certifying personnel conducting leak tests.