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July 28, 2000

Docket Nos.: 50-348  
50-364

NEL-00-0182

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

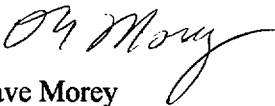
Joseph M. Farley Nuclear Plant  
Inservice Inspection Relief Request Numbers RR-41, RR-42, and RR-43

Ladies and Gentlemen:

Southern Nuclear Operating Company (SNC) is submitting three Relief Requests dealing with ISI Pressure Testing. Approval in accordance with 10 CFR 50.55a(a)(3)(i) is requested by February 1, 2001 to support activities to be performed during the Unit 2 refueling outage scheduled for February 24, 2001.

There are no commitments contained in this letter. If you have any questions, please advise.

Respectfully submitted,

  
Dave Morey

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Attachments:

- I. Southern Nuclear Operating Company  
Farley Unit 1 Third 10-Year Interval  
Request for Relief – No. RR-41, RR-42, RR-43
- II. Southern Nuclear Operating Company  
Farley Unit 2 Updated Program  
Request for Relief – No. RR-41, RR-42, RR-43

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Page 2

U. S. Nuclear Regulatory Commission

cc: Southern Nuclear Operating Company  
Mr. L. M. Stinson, General Manager – Farley

U. S. Nuclear Regulatory Commission, Washington, D. C.  
Mr. L. M. Padovan, Licensing Project Manager – Farley

U. S. Nuclear Regulatory Commission, Region II  
Mr. L. A. Reyes, Regional Administrator  
Mr. T. P. Johnson, Senior Resident Inspector – Farley

**ATTACHMENT I**

**Southern Nuclear Operating Company  
Farley Unit 1 Third 10-Year Interval  
Request for Relief – No. RR-41, RR-42, RR-43**

SOUTHERN NUCLEAR OPERATING COMPANY  
FARLEY UNIT 1  
THIRD 10-YEAR INTERVAL  
REQUEST FOR RELIEF NO. RR-41

- I. System/Component(s) for Which Alternative Rules are Requested: Corrective actions associated with leakage at Class 1, 2, and 3 bolted connections as prescribed by IWA-5250, "Corrective Measures."
- II. Code Requirement: Subparagraph IWA-5250(a)(2) of the 1989 Edition of ASME Section XI states "if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100." In addition, subparagraph IWA-5250(a)(2) of the 1992 Edition of ASME states "if leakage occurs at a bolted connection, one of the bolts shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100."
- III. Code Requirement for Which Alternative Rules are Requested: Alternative rules are requested from the requirement to remove, and VT-3 examine any bolting from a bolted connection which shows evidence of leakage.
- IV. Basis for Alternative Rules: Several issues associated with the current requirements of IWA-5250(a)(2) are summarized as follows:
  1. The Code requires that bolting be removed from the bolted connection without regard to the severity of the leakage. However, the Code does not specify that leakage be stopped, but does require that the leakage be evaluated. SNC has developed and incorporated into the ISI Pressure Test Plan, generic structural integrity evaluations for the various plant systems which establish acceptable administrative leakage limits for these systems. The ISI Pressure Test Plan specifies that leakage exceeding these administrative limits must be evaluated for structural integrity. In addition, the increased leakage must be approved by plant management.
  2. IWA-3100 does not provide an acceptance standard for a VT-3 bolt examination.
  3. Removing bolts from a leaking connection, even one bolt at a time, may increase the leakage.
- V. Alternative Examination: Farley Nuclear Plant will perform one of the following when evidence of leakage is found at bolted connections in borated and non-borated systems:
  1. The leakage will be stopped or reduced to acceptable limits as established by the Farley Nuclear Plant ISI Pressure Test Plan. The bolts and component material will then be evaluated for joint integrity. This evaluation will be documented and included as part of the ISI outage report and sent to the NRC within 90 days of the conclusion of each refueling outage.
  2. If the leakage is not stopped or reduced to acceptable administrative limits, the joint will be evaluated for integrity. This evaluation will determine the susceptibility of the bolts to corrosion and failure and will include the following:
    - a. The number and service age of the bolts,
    - b. Bolt and component material,
    - c. Corrosiveness of process fluid,
    - d. Leakage location and system function,
    - e. Leakage history at the connection or other system components,
    - f. Visual evidence of corrosion at the assembled connection.

This evaluation will be documented and included as part of the ISI outage report and sent to the NRC within 90 days of the conclusion of each refueling outage.

3. If the evaluation is unable to justify joint integrity, the bolted connection will be repaired/replaced.

- VI. Justification for Granting Approval of Alternative Rules: The ASME Code Committees have evaluated alternatives similar to those proposed herein and determined that they are acceptable corrective action for leakage at bolted connections. These alternatives resolve the implementation problems associated with IWA-5250(a)(2) and provide acceptable corrective actions for evidence of leakage at bolted connections.

The use of these alternatives will not affect the level of quality and safety, nor decrease the margin of public health and safety. Therefore, it is requested that the proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

- VII. Implementation Schedule: This request for alternative rules is applicable to Pressure Testing performed during the Third Ten-Year Interval ending on November 30, 2007, using the 1989 or 1992 Editions of Section XI.

- VIII. Request for Alternative Rules Status: This request for alternative rules is presently awaiting NRC approval. A similar request RR-23, which allowed a structural integrity evaluation of a leaking bolted connection and the deferral of bolting removal, has previously been approved for Farley Nuclear Plant, Units 1 and 2 and may be withdrawn when this request for alternative rules is approved. An equivalent relief request has previously been approved for use at Vogtle Electric Generating Plant.

SOUTHERN NUCLEAR OPERATING COMPANY  
FARLEY UNIT 1  
THIRD 10-YEAR INTERVAL  
REQUEST FOR RELIEF NO. RR-42

- I. System/Component (s) for Which Alternative Rules are Requested: Insulated Class 1, 2, and 3 pressure-retaining bolted connections where corrosion-resistant bolting materials (greater than 11% chromium) are used.
- II. Code Requirement: The 1989 Edition of ASME Section XI, IWA-5242(a) requires that, for systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure-retaining bolted connections for visual examination VT-2. Table IWB-2500-1, Examination Category B-P, requires this be accomplished once each refueling outage for Class 1 components. Table IWC-2500-1, Examination Category C-H, requires this be accomplished once each inspection period for Class 2 components. Table IWD-2500-1, Examination Categories D-A, D-B, and D-C, requires this be accomplished once each inspection period for Class 3 components.
- III. Code Requirement for Which Alternative Rules are Requested: Alternatives are requested from removing insulation from corrosion-resistant, pressure-retaining bolted connections in borated systems for VT-2 visual examination at the Code required frequencies.
- IV. Basis for Alternative Rules: The requirement to remove insulation prior to performing VT-2 examinations was added to the 1989 Section XI of the ASME Code after events occurred in the nuclear industry where bolt degradation was observed as a result of boric acid corrosion attack caused by leaks at bolted connections. At sufficiently high bolt surface temperatures, borated water leakage may concentrate through evaporation and subsequently corrode carbon steel or low alloy steel bolts. However, high chromium content stainless steels are not significantly affected by the concentrated boric acid.

The resistance of high chromium content stainless steels to boric acid corrosion is discussed in several studies, including EPRI's "Boric Acid Corrosion Guidebook". This guidebook indicates that one remedial measure to preventing future degradation is to replace carbon and low-alloy steel fasteners with corrosion resistant materials, such as 304, 316, 410, and 17-4 PH stainless steels or Inconel Alloy 718 and X-750. Recent experience at Farley Nuclear Plant with 410 stainless steel (SA-193 Grade B6) bolts supports this conclusion. Stainless steel (410) bolts, which had been in service for more than 20 years exposed to boric acid leakage, showed no evidence of wastage or other corrosion damage when cleaned and visually examined.

Under certain conditions some grades of corrosion-resistant bolts have exhibited stress-corrosion cracking (both intergranular and transgranular) when exposed to high stress levels in a boric acid environment. SA-453 Grade 660 (also known as A-286 stainless steel) has been found to be susceptible to stress corrosion cracking if preloaded above 100 ksi. However, a study by Piascik and Moore of Babcock & Wilcox found that SA-453 Grade 660 bolts preloaded below 100 ksi showed no failures. Other studies have shown that SA-453 Grade 660 stress relieved at a temperature of 1100 °F or higher or material that has a hardness of 30 RC or lower does not experience stress corrosion cracking. An EDF study that heated A-286 stainless steel (SA-453 Grade 660) at 212 °F in a concentrated boric acid solution showed no evidence of stress corrosion cracking after 3000 hours.

Two grades of corrosion-resistant bolts are used by Farley. These are ASTM SA-453 Grade 660 (A-286 stainless steel) and ASTM SA-193 B6 Type 410 stainless steel. The yield strength of both these grades is 85 ksi. An evaluation (Log. No. 00-MT-009) performed for plant Farley by Southern Company Services has shown that the corrosion-resistant bolts in use at Farley Nuclear Plant are not susceptible to stress-corrosion cracking when exposed to plant operating conditions.

Corrosion resistant bolts in use at Farley Nuclear Plant, purchased to the above mentioned ASTM specifications, requires a minimum heat treating (tempering) temperature of 1100 °F or higher for the SA-193 Grade B6 and a minimum hardening temperature of 1325 °F for the SA-453 Grade 660. Bolts are torqued to values permitted by FNP General Maintenance Procedure FNP-0-GMP-80.0 and vendor manuals. FNP-0-GMP-80.0 permits no torquing above 85% of the bolt yield strength. Most torque values are considerably below this maximum value.

At Farley Nuclear Plant, a minor leak which may not be detectable with the insulation in place, will not affect the structural integrity of the corrosion resistant bolted connection through either wastage, other types of corrosion, or stress-corrosion cracking. The primary issue is the potential for a minor leak to increase such that it jeopardizes other non-corrosion resistant component, or equipment important to safety. Implementation of the Alternate Examination in lieu of the Code requirements will detect such conditions and continue to assure that the structural integrity of the bolted connections will be maintained.

- V. Alternative Examination: Perform the VT-2 examination with the insulation in place after the system containing the affected bolted connection has been at pressure for a minimum of four (4) hours. This will allow adequate time for any leakage to penetrate the insulation which provides a means for detecting any significant leakage with the insulation in place. If evidence of leakage is observed at a bolted connection during the VT-2 examination, the insulation will then be removed from that bolted connection and the connection re-examined with the insulation removed. In addition, during each inspection period, the insulation will be removed from approximately 1/3 of the corrosion resistant Class 1, 2, or 3 bolted connections (on a rotating basis), and each of these connections will be VT-2 examined with the insulation removed. This will permit each corrosion resistant bolted connections to be VT-2 examined on an ongoing basis, with the insulation removed, at least once during each ten-year interval.
- VI. Justification for Granting Approval of Alternative Rules: The proposed alternative will provide adequate assurance that the level of quality and safety for corrosion resistant bolting will be maintained. Therefore, the proposed alternative should be granted pursuant to 10CFR50.55a(a)(3)(i).
- VII. Implementation Schedule: This request for alternative rules is applicable to ISI examinations performed during the Third ISI Interval ending on November 30, 2007 using the 1989 Edition of Section XI.
- VIII. Request for Alternative Rules Status: This request for alternative rules is awaiting NRC approval.

SOUTHERN NUCLEAR OPERATING COMPANY  
FARLEY UNIT 1  
THIRD 10-YEAR INTERVAL  
REQUEST FOR RELIEF NO. RR-43

- I. System/Component(s) for Which Alternative Rules are Requested: Insulated bolted connections located in borated Class 2 and 3 systems.
- II. Code Requirement: ASME Section XI, 1989 Edition, Paragraph IWA-5242(a) requires that, for systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure retaining bolted connections prior to performing the visual examination. Table IWC-2500-1 requires a system pressure test and corresponding VT-2 visual examination be performed on Class 2 components once each inspection period and a system hydrostatic test and corresponding VT-2 visual examination be performed on Class 2 components once each inspection interval. Table IWD-2500-1 requires a system pressure test and corresponding VT-2 visual examination be performed on Class 3 components once each inspection period and a system hydrostatic test and corresponding VT-2 visual examination be performed on Class 3 components once each inspection interval.
- III. Code Requirement for Which Alternative Rules are Requested: Insulation will not be removed from pressure-retaining Class 2 and 3 bolted connections prior to performing VT-2 visual examinations during the conduct of pressure tests.
- IV. Basis for Alternative Rules: ASME has approved Code Case N-533-1 to require a system pressure test and VT-2 visual examination be performed each period for Class 2 and 3 bolted connections without removal of insulation. The connections are not required to be pressurized during this pressure test. Further, the insulation is required to be removed from bolted connections each period and a VT-2 visual examination is required to be performed during a subsequent pressure test with the system at nominal operating pressure. Evidence of leakage is required to be evaluated in accordance with IWA-5250.
- V. Alternative Examination: Insulated Class 2 and 3 pressure-retaining bolted connections will be uninsulated and VT-2 examined as scheduled per the ISI Pressure Test Plan while the connections are at atmospheric or static pressure. The bolted connections will also be examined (with insulation installed) during the regularly scheduled system pressure test conducted at nominal operating pressure. This re-examination will be conducted no earlier than 4 hours after reaching nominal system operating pressure.
- VI. Justification for Granting Approval of Alternative Rules: The pressure test with the 4-hour hold time will allow adequate time for any leakage to penetrate the insulation, thereby, providing a means of detecting any significant leakage with the insulation in place. Secondly, by removing the insulation at the prescribed intervals, any boric acid residue can be detected. This two-phase approach provides an acceptable level of quality and safety for Class 2 and 3 bolted connections; therefore, the proposed alternative should be authorized pursuant to 10CFR50.55a(a)(3)(i).
- VII. Implementation Schedule: This request for alternate rules is applicable to Pressure Testing performed during the Third Ten-Year Interval which ends on November 30, 2007, using the 1989 Edition of Section XI.
- VIII. Request for Alternative Rules Status: This request for alternative rules is waiting approval by the NRC to use at FNP. RR-27, to eliminate removal of insulation from Class 1 bolted connections prior to performing VT-2 examinations, was previously approved by NRC SER dated January 22, 1998 for use at Farley Nuclear Plant. A similar relief request has previously been approved for use at Vogtle Electric Generating Plant covering Class 1, 2, and 3 components.



**ATTACHMENT II**

**Southern Nuclear Operating Company  
Farley Unit 2 Updated Program  
Request for Relief – No. RR-41, RR-42, RR-43**

SOUTHERN NUCLEAR OPERATING COMPANY  
FARLEY UNIT 2  
UPDATED PROGRAM  
REQUEST FOR RELIEF NO. RR-41

- I. System/Component(s) for Which Alternative Rules are Requested: Corrective actions associated with leakage at Class 1, 2, and 3 bolted connections as prescribed by IWA-5250, "Corrective Measures."
- II. Code Requirement: Subparagraph IWA-5250(a)(2) of the 1989 Edition of ASME Section XI states "if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100." In addition, subparagraph IWA-5250(a)(2) of the 1992 Edition of ASME states "if leakage occurs at a bolted connection, one of the bolts shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100."
- III. Code Requirement for Which Alternative Rules are Requested: Alternative rules are requested from the requirement to remove, and VT-3 examine any bolting from a bolted connection which shows evidence of leakage.
- IV. Basis for Alternative Rules: Several issues associated with the current requirements of IWA-5250(a)(2) are summarized as follows:
  1. The Code requires that bolting be removed from the bolted connection without regard to the severity of the leakage. However, the Code does not specify that leakage be stopped, but does require that the leakage be evaluated. SNC has developed and incorporated into the ISI Pressure Test Plan, generic structural integrity evaluations for the various plant systems which establish acceptable administrative leakage limits for these systems. The ISI Pressure Test Plan specifies that leakage exceeding these administrative limits must be evaluated for structural integrity. In addition, the increased leakage must be approved by plant management.
  2. IWA-3100 does not provide an acceptance standard for a VT-3 bolt examination.
  3. Removing bolts from a leaking connection, even one bolt at a time, may increase the leakage.
- V. Alternative Examination: Farley Nuclear Plant will perform one of the following when evidence of leakage is found at bolted connections in borated and non-borated systems:
  1. The leakage will be stopped or reduced to acceptable limits as established by the Farley Nuclear Plant ISI Pressure Test Plan. The bolts and component material will then be evaluated for joint integrity. This evaluation will be documented and included as part of the ISI outage report and sent to the NRC within 90 days of the conclusion of each refueling outage.
  2. If the leakage is not stopped or reduced to acceptable administrative limits, the joint will be evaluated for integrity. This evaluation will determine the susceptibility of the bolts to corrosion and failure and will include the following:
    - a. The number and service age of the bolts,
    - b. Bolt and component material,
    - c. Corrosiveness of process fluid,
    - d. Leakage location and system function,
    - e. Leakage history at the connection or other system components,

f. Visual evidence of corrosion at the assembled connection.

This evaluation will be documented and included as part of the ISI outage report and sent to the NRC within 90 days of the conclusion of each refueling outage.

3. If the evaluation is unable to justify joint integrity, the bolted connection will be repaired/replaced.

- VI. Justification for Granting Approval of Alternative Rules: The ASME Code Committees have evaluated alternatives similar to those proposed herein and determined that they are acceptable corrective action for leakage at bolted connections. These alternatives resolve the implementation problems associated with IWA-5250(a)(2) and provide acceptable corrective actions for evidence of leakage at bolted connections.

The use of these alternatives will not affect the level of quality and safety, nor decrease the margin of public health and safety. Therefore, it is requested that the proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

- VII. Implementation Schedule: This request for alternative rules is applicable to Pressure Testing performed for Unit 2 under the Updated Program which ends on November 30, 2007, using the 1989 or 1992 Editions of Section XI.

- VIII. Request for Alternative Rules Status: This request for alternative rules is presently awaiting NRC approval. A similar request RR-23, which allowed a structural integrity evaluation of a leaking bolted connection and the deferral of bolting removal, has previously been approved for Farley Nuclear Plant, Units 1 and 2 and may be withdrawn when this request for alternative rules is approved. An equivalent relief request has previously been approved for use at Vogtle Electric Generating Plant.

SOUTHERN NUCLEAR OPERATING COMPANY  
FARLEY UNIT 2  
UPDATED PROGRAM  
REQUEST FOR RELIEF NO. RR-42

- I. System/Component (s) for Which Alternative Rules are Requested: Insulated Class 1, 2, and 3 pressure-retaining bolted connections where corrosion-resistant bolting materials (greater than 11% chromium) are used.
- II. Code Requirement: The 1989 Edition of ASME Section XI, IWA-5242(a) requires that, for systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure-retaining bolted connections for visual examination VT-2. Table IWB-2500-1, Examination Category B-P, requires this be accomplished once each refueling outage for Class 1 components. Table IWC-2500-1, Examination Category C-H, requires this be accomplished once each inspection period for Class 2 components. Table IWD-2500-1, Examination Categories D-A, D-B, and D-C, requires this be accomplished once each inspection period for Class 3 components.
- III. Code Requirement for Which Alternative Rules are Requested: Alternatives are requested from removing insulation from corrosion-resistant, pressure-retaining bolted connections in borated systems for VT-2 visual examination at the Code required frequencies.
- IV. Basis for Alternative Rules: The requirement to remove insulation prior to performing VT-2 examinations was added to the 1989 Section XI of the ASME Code after events occurred in the nuclear industry where bolt degradation was observed as a result of boric acid corrosion attack caused by leaks at bolted connections. At sufficiently high bolt surface temperatures, borated water leakage may concentrate through evaporation and subsequently corrode carbon steel or low alloy steel bolts. However, high chromium content stainless steels are not significantly affected by the concentrated boric acid.

The resistance of high chromium content stainless steels to boric acid corrosion is discussed in several studies, including EPRI's "Boric Acid Corrosion Guidebook". This guidebook indicates that one remedial measure to preventing future degradation is to replace carbon and low-alloy steel fasteners with corrosion resistant materials, such as 304, 316, 410, and 17-4 PH stainless steels or Inconel Alloy 718 and X-750. Recent experience at Farley Nuclear Plant with 410 stainless steel (SA-193 Grade B6) bolts supports this conclusion. Stainless steel (410) bolts, which had been in service for more than 20 years exposed to boric acid leakage, showed no evidence of wastage or other corrosion damage when cleaned and visually examined.

Under certain conditions some grades of corrosion-resistant bolts have exhibited stress-corrosion cracking (both intergranular and transgranular) when exposed to high stress levels in a boric acid environment. SA-453 Grade 660 (also known as A-286 stainless steel) has been found to be susceptible to stress corrosion cracking if preloaded above 100 ksi. However, a study by Piascik and Moore of Babcock & Wilcox found that SA-453 Grade 660 bolts preloaded below 100 ksi showed no failures. Other studies have shown that SA-453 Grade 660 stress relieved at a temperature of 1100 °F or higher or material that has a hardness of 30 RC or lower does not experience stress corrosion cracking. An EDF study that heated A-286 stainless steel (SA-453 Grade 660) at 212 °F in a concentrated boric acid solution showed no evidence of stress corrosion cracking after 3000 hours.

Two grades of corrosion-resistant bolts are used by Farley. These are ASTM SA-453 Grade 660 (A-286 stainless steel) and ASTM SA-193 B6 Type 410 stainless steel. The yield strength of both these grades is 85 ksi. An evaluation (Log. No. 00-MT-009) performed for plant Farley by Southern Company Services has shown that the corrosion-resistant bolts in use at Farley Nuclear Plant are not susceptible to stress-corrosion cracking when exposed to plant operating conditions.

Corrosion resistant bolts in use at Farley Nuclear Plant, purchased to the above mentioned ASTM specifications, requires a minimum heat treating (tempering) temperature of 1100 °F or higher for the SA-193 Grade B6 and a minimum hardening temperature of 1325 °F for the SA-453 Grade 660. Bolts are torqued to values permitted by FNP General Maintenance Procedure FNP-0-GMP-80.0 and vendor manuals. FNP-0-GMP-80.0 permits no torquing above 85% of the bolt yield strength. Most torque values are considerably below this maximum value.

At Farley Nuclear Plant, a minor leak which may not be detectable with the insulation in place, will not affect the structural integrity of the corrosion resistant bolted connection through either wastage, other types of corrosion, or stress-corrosion cracking. The primary issue is the potential for a minor leak to increase such that it jeopardizes other non-corrosion resistant component, or equipment important to safety. Implementation of the Alternate Examination in lieu of the Code requirements will detect such conditions and continue to assure that the structural integrity of the bolted connections will be maintained.

- V. Alternative Examination: Perform the VT-2 examination with the insulation in place after the system containing the affected bolted connection has been at pressure for a minimum of four (4) hours. This will allow adequate time for any leakage to penetrate the insulation which provides a means for detecting any significant leakage with the insulation in place. If evidence of leakage is observed at a bolted connection during the VT-2 examination, the insulation will then be removed from that bolted connection and the connection re-examined with the insulation removed. In addition, during each inspection period, the insulation will be removed from approximately 1/3 of the corrosion resistant Class 1, 2, or 3 bolted connections (on a rotating basis), and each of these connections will be VT-2 examined with the insulation removed. This will permit each corrosion resistant bolted connections to be VT-2 examined on an ongoing basis, with the insulation removed, at least once during each ten-year interval.
- VI. Justification for Granting Approval of Alternative Rules: The proposed alternative will provide adequate assurance that the level of quality and safety for corrosion resistant bolting will be maintained. Therefore, the proposed alternative should be granted pursuant to 10CFR50.55a(a)(3)(i).
- VII. Implementation Schedule: This request for alternative rules is applicable to ISI examinations performed for Unit 2 under the Updated Program which ends on November 30, 2007 using the 1989 Edition of Section XI.
- VIII. Request for Alternative Rules Status: This request for alternative rules is awaiting NRC approval.

SOUTHERN NUCLEAR OPERATING COMPANY  
FARLEY UNIT 2  
UPDATED PROGRAM  
REQUEST FOR RELIEF NO. RR-43

- I. System/Component(s) for Which Alternative Rules are Requested: Insulated bolted connections located in borated Class 2 and 3 systems.
- II. Code Requirement: ASME Section XI, 1989 Edition, Paragraph IWA-5242(a) requires that, for systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure retaining bolted connections prior to performing the visual examination. Table IWC-2500-1 requires a system pressure test and corresponding VT-2 visual examination be performed on Class 2 components once each inspection period and a system hydrostatic test and corresponding VT-2 visual examination be performed on Class 2 components once each inspection interval. Table IWD-2500-1 requires a system pressure test and corresponding VT-2 visual examination be performed on Class 3 components once each inspection period and a system hydrostatic test and corresponding VT-2 visual examination be performed on Class 3 components once each inspection interval.
- III. Code Requirement for Which Alternative Rules are Requested: Insulation will not be removed from pressure-retaining Class 2 and 3 bolted connections prior to performing VT-2 visual examinations during the conduct of pressure tests.
- IV. Basis for Alternative Rules: ASME has approved Code Case N-533-1 to require a system pressure test and VT-2 visual examination be performed each period for Class 2 and 3 bolted connections without removal of insulation. The connections are not required to be pressurized during this pressure test. Further, the insulation is required to be removed from bolted connections each period and a VT-2 visual examination is required to be performed during a subsequent pressure test with the system at nominal operating pressure. Evidence of leakage is required to be evaluated in accordance with IWA-5250.
- V. Alternative Examination: Insulated Class 2 and 3 pressure-retaining bolted connections will be uninsulated and VT-2 examined as scheduled per the ISI Pressure Test Plan while the connections are at atmospheric or static pressure. The bolted connections will also be examined (with insulation installed) during the regularly scheduled system pressure test conducted at nominal operating pressure. This re-examination will be conducted no earlier than 4 hours after reaching nominal system operating pressure.
- VI. Justification for Granting Approval of Alternative Rules: The pressure test with the 4-hour hold time will allow adequate time for any leakage to penetrate the insulation, thereby, providing a means of detecting any significant leakage with the insulation in place. Secondly, by removing the insulation at the prescribed intervals, any boric acid residue can be detected. This two-phase approach provides an acceptable level of quality and safety for Class 2 and 3 bolted connections; therefore, the proposed alternative should be authorized pursuant to 10CFR50.55a(a)(3)(i).
- VII. Implementation Schedule: This request for alternate rules is applicable to Pressure Testing performed for Unit 2 under the Updated Program which ends on November 30, 2007, using the 1989 Edition of Section XI.
- VIII. Request for Alternative Rules Status: This request for alternative rules is waiting approval by the NRC to use at FNP. RR-27, to eliminate removal of insulation from Class 1 bolted connections prior to performing VT-2 examinations, was previously approved by NRC SER dated January 22, 1998 for use at Farley Nuclear Plant. A similar relief request has previously been approved for use at Vogtle Electric Generating Plant covering Class 1, 2, and 3 components.