

September 27, 2002

Mr. Lew W. Myers
Chief Operating Officer
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1 - REQUESTS FOR RELIEF FOR THE THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN (TAC NO. MB1607)

Dear Mr. Myers:

By letter dated September 19, 2000 (Serial Number 2672), FirstEnergy Nuclear Operating Company submitted the Third 10-Year Interval Inservice Inspection Program for the Davis-Besse Nuclear Power Station, Unit 1. Included in the submittal were requests for relief from conformance with certain requirements of Section XI of the 1995 Edition and Addenda through the 1996 Addenda, of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. Additional information was provided in your letters dated September 7, 2001 (Serial Number 2729), November 27, 2001 (Serial Number 2736), February 6, 2002 (Serial Number 2762), August 9, 2002 (Serial Number 1-1281), and September 3, 2002 (Serial Number 2805).

The staff's evaluation for relief requests (RRs) RR-A13, RR-A18, RR-A19, and RR-E1 through E8 are included in Enclosures 1, 2 and 3 as follows:

Enclosure 1 includes the staff's evaluation of RR-A13. RR-A13, which implements Code Case N-528, provides an alternative to certain administrative requirements of Section III, when material is purchased, exchanged, or transferred between nuclear plant sites. The staff concludes that the proposed alternative provides an acceptable level of quality and safety. Therefore, the licensee's proposed alternative to use Code Case N-528 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third 10-year interval or until such time Code Case N-528 is referenced in a future revision of Regulatory Guide (RG) 1.147. At that time, if the licensee intends to continue to implement Code Case N-528, the licensee should follow all provisions in the subject code case with the limitations (if any) listed in RG 1.147.

Enclosure 2 includes the staff's evaluation of RR-A18 and RR-A19. The staff concludes the licensee's proposed use of Davis-Besse Unit 1 Technical Specification 3/4.7.7 as an alternative to the ASME Code, Section XI, Subsection IWF-5200(a) and (b) and IWF-5300(a) and (b) for the examination and testing requirements for snubbers provides an acceptable level of quality and safety (RR-A18). In addition, the staff concludes that the requirements of IWA-2317 of the 1998 Edition of ASME Section XI as an alternative to the provisions of IWA-2313 and IWA-2314 for visual examination personnel performing VT-3 snubber examination provides an acceptable level of quality and safety (RR-A19). Therefore, the licensee's proposed alternatives with

L. Myers

-2-

regard to the examination and testing of snubbers and VT-3 examination personnel qualifications are authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third 10-year interval.

Enclosure 3 includes the staff's evaluation of RR-E1 through E8. The staff concludes that for RR-E2, RR-E4 and RR-E8, the licensee's proposed alternatives will provide an acceptable level of quality and safety. Therefore, the proposed alternatives may be authorized pursuant to 10 CFR 50.55a(a)(3)(i) for Davis-Besse's third 10-year containment inservice inspection (ISI) interval. The staff concludes that for RR-E1, RR-E3, RR-E5, RR-E6, and RR-E7, compliance with the code requirements would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety, and that the licensee's proposed alternatives will provide reasonable assurance of containment pressure integrity. Therefore, these proposed alternatives may be authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for Davis-Besse's third 10-year containment ISI interval.

RR-E6 implements Code Case N-604 and RR-E8 implements Code Case N-605. Therefore, the licensee's proposed alternatives to use Code Cases N-604 and N-605 are authorized for the third 10-year interval or until such time Code Cases N-604 and N-605 are referenced in a future revision of Regulatory Guide (RG) 1.147. At that time, if the licensee intends to continue to implement either Code Case N-604 or N-605, the licensee should follow all provisions in the subject code case with the limitations (if any) listed in RG 1.147.

The remaining RRs included in your submittal of September 19, 2000, will be included in separate correspondence.

Sincerely,

/RA by L. Raghavan for/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosures: As stated

cc w/encl: See next page

regard to the examination and testing of snubbers and VT-3 examination personnel qualifications are authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third 10-year interval.

Enclosure 3 includes the staff's evaluation of RR-E1 through E8. The staff concludes that for RR-E2, RR-E4 and RR-E8, the licensee's proposed alternatives will provide an acceptable level of quality and safety. Therefore, the proposed alternatives may be authorized pursuant to 10 CFR 50.55a(a)(3)(i) for Davis-Besse's third 10-year containment inservice inspection (ISI) interval. The staff concludes that for RR-E1, RR-E3, RR-E5, RR-E6, and RR-E7, compliance with the code requirements would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety, and that the licensee's proposed alternatives will provide reasonable assurance of containment pressure integrity. Therefore, these proposed alternatives may be authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for Davis-Besse's third 10-year containment ISI interval.

RR-E6 implements Code Case N-604 and RR-E8 implements Code Case N-605. Therefore, the licensee's proposed alternatives to use Code Cases N-604 and N-605 are authorized for the third 10-year interval or until such time Code Cases N-604 and N-605 are referenced in a future revision of Regulatory Guide (RG) 1.147. At that time, if the licensee intends to continue to implement either Code Case N-604 or N-605, the licensee should follow all provisions in the subject code case with the limitations (if any) listed in RG 1.147.

The remaining RRs included in your submittal of September 19, 2000, will be included in separate correspondence.

Sincerely,
/RA by L. Raghavan for/
 Anthony J. Mendiola, Chief, Section 2
 Project Directorate III
 Division of Licensing Project Management
 Office of Nuclear Reactor Regulation

Docket No. 50-346
 Enclosures: As stated
 cc w/encl: See next page

DISTRIBUTION:

PUBLIC	AMendiola	OGC	KManoly
PDIII-2 R/F	JHopkins	THarris	DTerao
DPickett	GHill(2)	TBergman	TQuay
SCoffin	TChan	ACRS	HNieh
GGrant, RIII			

ADAMS ACCESSION NO. ML022560349

OFFICE	PM:LPD3	LA:LPD3	BC:IEHB	SC:EMEB
NAME	JHopkins for DPickett	THarris	TQuay*	KManoly**
DATE	09/27/02	09/13/02	09/25/01	02/25/02
OFFICE	SC:EMEB	OGC/NLO****	SC:LPD3	
NAME	DTerao***	RHoefling	LRaghavan for AMendiola	
DATE	10/09/01	09/23/02	09/27/02	

*See TQuay to SBajwa memorandum dated 9/25/01

**See KManoly to AMendiola memorandum dated 2/25/02

***See DTerao to AMendiola memorandum dated 10/09/01

****No legal objection with changes

OFFICIAL RECORD COPY

Davis-Besse Nuclear Power Station, Unit 1

cc:

Mary E. O'Reilly
FirstEnergy Corporation
76 South Main St.
Akron, OH 44308

Manager-Regulatory Affairs
First Energy Nuclear Operating Company
Davis-Besse Nuclear Power Station
Oak Harbor, OH 43449-9760

Director
Ohio Department of Commerce
Division of Industrial Compliance
Bureau of Operations & Maintenance
6606 Tussing Road
P.O. Box 4009
Reynoldsburg, OH 43068-9009

Regional Administrator
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60523-4351

Michael A. Schoppman
Framatome ANP
1911 N. Ft. Myer Drive
Rosslyn, VA 22209

Resident Inspector
U.S. Nuclear Regulatory Commission
5503 North State Route 2
Oak Harbor, OH 43449-9760

Plant Manager, Randel J. Fast
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
5501 North State - Route 2
Oak Harbor, OH 43449-9760

Dennis Clum
Radiological Assistance Section Supervisor
Bureau of Radiation Protection
Ohio Department of Health
P.O. Box 118
Columbus, OH 43266-0118

Carol O'Claire, Chief, Radiological Branch
Ohio Emergency Management Agency
2855 West Dublin Granville Road
Columbus, OH 43235-2206

Zack A. Clayton
DERR
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, OH 43266-0149

State of Ohio
Public Utilities Commission
180 East Broad Street
Columbus, OH 43266-0573

Attorney General
30 East Broad Street
Columbus, OH 43216

President, Board of County
Commissioners of Ottawa County
Port Clinton, OH 43252

President, Board of County
Commissioners of Lucas County
One Government Center, Suite 800
Toledo, Ohio 43604-6506

Terry Lodge, Convenor and Chair
Toledo Coalition for Safe Energy
316 N. Michigan Street, Suite 520
Toledo, OH 43624-1627

David Lochbaum, Nuclear Safety Engineer
Union of Concerned Scientists
1707 H Street NW, Suite 600
Washington, DC 20006

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI

RELIEF REQUEST RR-A13 TO USE ASME CODE CASE N-528

FIRSTENERGY NUCLEAR OPERATING COMPANY

DAVIS-BESSE NUCLEAR POWER STATION

DOCKET NO. 50-346

1.0 INTRODUCTION

By letter dated September 19, 2000, First Energy Nuclear Operating Company (the licensee) submitted relief from the administrative requirements of Section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code for the third 10-year interval inspection program at the Davis-Besse Nuclear Power Station Unit 1. The licensee proposes to apply ASME Code Case N-528, "Purchase, Exchange, or Transfer of Material Between Nuclear Plant Sites." The third 10-year interval will began on September 21, 2001.

Relief Request (RR)-A13 proposes to adopt Code Case N-528 as an alternative means of satisfying certain requirements of Section XI, Subarticle IWA-4220, "Code Applicability," with respect to the possession of a Certificate of Authorization or Quality System Certificate (Materials). This safety evaluation addresses the acceptability of this alternative.

2.0 BACKGROUND

2.1 Regulatory Requirements (Procurement)

Appendix B to 10 CFR Part 50 contains the Nuclear Regulatory Commission's (NRC's) regulations for procurement quality assurance and quality control for items to be used in safety-related applications. The NRC has provided further guidance in Regulatory Guides (RGs) 1.33, and 1.123 (Ref. ¹, ²). RG 1.33 and RG 1.123 respectively endorse American National Standards Institute (ANSI) N18.7-1976 and ANSI N45.2.13-1976. For replacement parts, RG 1.123 also specifically endorses Section 5.2.13 of ANSI N18.7-1976. These standards supplement the Appendix B criteria in providing further guidance for procurement of safety-related applications. This guidance, if properly implemented, provides a measure of assurance for the suitability of equipment for safety-related applications.

Criterion III of Appendix B requires licensees to select and review for suitability of application materials, parts, equipment, and processes that are essential to the safety-related functions of

the structures, systems, and components. Criterion IV requires that procurement documents specify the applicable requirements necessary to ensure functional performance. Criterion VII requires licensees to assure that the following are sufficient to identify whether specification requirements for the procured material and equipment have been met: source evaluation and selection, objective evidence of quality, inspection of the source, and examination of products upon delivery. The process of ensuring compliance with 10 CFR Part 50, Appendix B, must include all those activities necessary to establish and confirm the quality and suitability of the procured material and equipment for its intended safety-related application.

2.2 Regulatory Requirements (ASME)

Section 50.55a, "Codes and Standards," of 10 CFR Part 50 requires, in part, that each operating license for a boiling or pressurized water-cooled nuclear power facility be subject to the conditions in paragraph 50.55a(g), "Inservice Inspection Requirements." Inservice examination of components and system pressure tests conducted during successive 120-month inspection intervals must comply with the requirements of the latest edition and addenda of the ASME Code incorporated by reference in paragraph 50.55a(b). Paragraph 50.55a(b) incorporates the 1995 Edition and addenda of Section XI, Division 1, through the 1996 addenda.

2.3 Alternatives to Section XI Inservice Inspection Requirements

The regulations require that inservice inspection of certain components be performed in accordance with Section XI of the ASME Code and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to 10 CFR 50.55a, paragraph (a)(3)(i), (a)(3)(ii), or (g)(6)(i). These provisions provide for relief when the applicant demonstrates that (1) the proposed alternative would provide an acceptable level of quality and safety, (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety, or (3) the Code requirements are impractical.

The ASME Boiler and Pressure Vessel Committee publishes a document entitled "Code Cases," which is updated every three years (Ref. ³.) Generally, the individual Code Cases that make up this document explain the intent of Code rules or provide for alternative requirements under special circumstances. Most Code Cases are eventually superseded by revision of the Code and then are annulled by action of the ASME.

RG 1.147 (Ref. ⁴) lists those Section XI ASME Code Cases that are generally acceptable to the NRC staff for implementation in the inservice inspection of light-water-cooled nuclear power plants. Code Cases that are not listed in RG-1.147 require supplementary provisions on an individual plant basis to attain endorsement status. The staff has not generally endorsed Code Case N-528 by inclusion in RG-1.147 and, consequently, its acceptability must be evaluated on an individual plant basis.

2.4 Affected ASME Code Requirements

Article IWA-7000 of the Section XI, 1989 edition (Article IWA-4000, subsequent to the 1991 addenda) provides the rules and requirements for the specification and construction of items to be used for replacement. Replacement includes the addition of components, such as valves, pumps and system changes, such as rerouting of piping. Subarticle IWA-7210 (IWA-4170 for the 1991 addenda through the 1995 addition, no addenda and IWA 4220 subsequent to the

1995 edition, no addenda) require that an item to be used for replacement meet the original Construction Code (Section III of the Code) and existing design requirements.

Article NCA-3000 of Section III of the Code defines the responsibilities of N Certificate Holders. Subarticle NCA-3700 defines the responsibilities of holders of Certificates of Authorization, which is generally the organization which performs the activities to place and attach components to their support structures. The responsibilities of N Certificate Holders include surveying, qualifying, and auditing suppliers of subcontracted services, including material suppliers and material manufacturers. When material suppliers or material manufacturers hold a Quality System Certificate (Materials), as defined in subarticle NCA-3800, the Certificate Holder does not need to survey or audit the supplier for work within the scope of the Quality System Certificate.

2.5 Code Case N-528

Case N-528 applies to metallic material (meeting the definition of IWA-9000) that is purchased, exchanged, or transferred between nuclear plant sites. Case N-528 provides an alternative to the specific administrative requirements of Section III that refer to possession of a Certificate of Authorization or Quality System Certificate (Materials). The case was approved by the ASME Boiler and Pressure Vessel Committee on December 12, 1994, and reaffirmed on August 14, 1997. Code Case N-528-1 was approved on May 7, 1999, and is still active.

Code Case N-528 provides an alternative to the requirements of NCA-3700/NCA-3800 in that the responsibilities of the N Certificate Holder are, in fact, imposed on the supplying plant. All documentation required by NCA-3700/NCA-3800 are provided to the receiving plant with the material.

For material that has been fabricated in accordance with specific dimensional requirements in addition to those provided in a national standard (e.g., nonwelded valve bonnet or nonwelded pump casing), Code Case N-528 requires the licensee to include in the evaluation of suitability, required by IWA-7220 (IWA-4150 for the 1991 addenda through the 1995 edition, no addenda and IWA 4160 subsequent to the 1995 edition, no addenda), an evaluation of the material for its intended application, including any differences that might affect form, fit, or function.

The licensee shall obtain, and incorporate into its plant record system, certifying documentation that the subject material was purchased in accordance with the provisions of NCA-3700/NCA-3800 and maintained in accordance with the supplier's quality assurance program.

The licensee shall also obtain and incorporate into its plant records system, certification provided by the supplier that the material was not placed in service, nor subject to any operation that might affect the mechanical properties of the material. The licensee shall document, on the ASME Owner's Report for Inservice Inspection (Form NIS-2), each instance in which Code Case N-528 was applied.

3.0 EVALUATION

With the exception to the ASME Section XI administrative requirements explicitly stated by Code Case N-528, the licensee makes no changes to its approved Appendix B program or regulatory guides to which it has committed. The licensee's quality assurance program conforms to the guidance provided by RG-1.33, Revision 2 and RG-1.123, Revision 1.

With respect to Appendix B criteria, Criterion VII provides the specific regulatory requirements for control of purchased material, equipment, and services. Criterion VII requires, in part, that

“...measures be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents. These measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, and examination of products upon delivery. Documentary evidence that material and equipment conform to the procurement requirements shall be available at the nuclear power plant or fuel reprocessing plant site prior to installation or use of such material and equipment. This documentary evidence shall be retained at the nuclear power plant or reprocessing plant site and shall be sufficient to identify the specific requirements, such as codes, standards, or specifications, met by the purchased material and equipment.”

The licensee requests relief in the specific area of source evaluation. In effect, the supplying plant fulfills the regulatory requirement for source evaluation by originally procuring the material and documentation in conformance with Section III of the Code and subsequently maintaining the material in accordance with its approved Appendix B quality assurance program. In addition, Code Case N-528 stipulates that the documentary evidence required by Criterion VII be transferred to the licensee with the material and subsequently maintained by the licensee.

Other regulatory procurement requirements continue to apply. The licensee is responsible for ensuring that the material is in conformance with all other Code requirements, applicable design requirements, its Appendix B program, and other regulatory requirements and commitments. The licensee is also responsible for ensuring that the item is suitable for the intended application and documenting this evaluation. The proposed alternative is acceptable on the basis that it provides an acceptable level of quality and safety.

4.0 CONCLUSIONS

The staff has evaluated Code Case N-528 as an acceptable alternative to certain administrative requirements of Section III, when material is purchased, exchanged, or transferred between nuclear plant sites. The code case requires that the material was originally procured in compliance with ASME Code, Section III requirements, maintained in conformance with an approved Appendix B program, and not subject to any operation that might affect the mechanical properties of the material.

The licensee is responsible for ensuring that the received documentation is complete and in compliance with Code requirements, that the material meets the design requirements for the intended application, and that the material conforms to the licensee's Appendix B program and all other regulatory requirements and commitments.

These requirements provide reasonable assurance that the proposed alternative provides an acceptable level of quality and safety in accordance with paragraph 50.55a(a)(3)(i). Therefore, the alternative provided by Code Case N-528 is acceptable for the licensee's third 10-year inspection interval or until such time Code Case N-528 is referenced in a future revision of Regulatory Guide (RG) 1.147. At that time, if the licensee intends to continue to implement Code Case N-528, the licensee should follow all provisions in the subject code case with the limitations (if any) listed in RG 1.147.

5.0 REFERENCES

1. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2, 1978.
2. Regulatory Guide 1.123, "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants," Revision 1, 1977.
3. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, "1995 Code Cases," published July 1, 1995, and "1998 Code Cases," published July 1, 1998.
4. Regulatory Guide 1.147, "Inservice Code Case Acceptability, ASME Section XI, Division 1," Revision 12, May 1999.
5. Letter, First Energy Nuclear Operating Company to the NRC, "Third 10-year Interval Inservice Inspection Program for Davis-Besse Nuclear Power Station Unit 1, dated September 19, 2000.

Principal Contributor: R. McIntyre, NRR

Date: September 27, 2002

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI

RELIEF REQUEST RR-A18 AND RR-A19

FIRSTENERGY NUCLEAR OPERATING COMPANY

DAVIS-BESSE NUCLEAR POWER STATION

DOCKET NO. 50-346

1.0 INTRODUCTION

The inservice inspection (ISI) of the ASME Code Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (ASME Code) and applicable addenda as required by Title 10 of the *Code of Federal Regulations* 10 CFR Section 50.55a(g), except where specific written relief has been granted by the Commission, pursuant to 10 CFR 50.55a(g)(6)(i). Section 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the Nuclear Regulatory Commission (NRC), if: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) will meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b), 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Davis-Besse Nuclear Power Station Unit No. 1 third 10-year ISI interval is the 1995 Edition and Addenda through the 1996 Addenda.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information will be submitted to the Commission in support of that determination and a request must be made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and/or may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

By a letter, dated September 19, 2000, the licensee and operator of Davis-Besse Nuclear Power Station Unit No. 1, requested the staff approval for the use of Davis-Besse Unit No. 1 Technical Specification 3/4.7.7 as an alternative to the ASME Code, Section XI, Subsection IWF-5200(a) and (b) and IWF-5300(a) and (b) for the examination and testing requirements for snubbers (RR-A18), and the use of the requirements of IWA-2317 of the 1998 Edition of ASME Section XI as an alternative to the provisions of IWA-2313 and IWA-2314 for visual examination personnel performing VT-3 snubber examination (RR-A19).

As a result of its review of the licensee's submittal, the staff identified certain areas where additional information and clarification were needed from the licensee. The licensee responded to the staff questions in a telephone conference held on January 24, 2002, and documented its responses and revised Relief Request RR-A18 in a submittal, dated February 6, 2002.

2.0 BASIS FOR REQUEST FOR APPROVAL

IWF-5200(a) of the 1995 Edition, 1996 Addenda of ASME Section XI requires preservice examination be performed in accordance with ASME/ANSI OM, Part 4, using the VT-3 visual examination method described in IWA-2213. IWF-5200(b) of the 1995 Edition, 1996 Addenda of ASME Section XI requires preservice tests be performed in accordance with ASME/ANSI OM, Part 4. IWF-5300(a) of the 1995 Edition, 1996 Addenda of ASME Section XI requires inservice examination be performed in accordance with ASME/ANSI OM, Part 4, using the VT-3 visual examination method described in IWA-2213.

ASME section XI, Subsection IWF-5200(a) and (b) and Subsection IWF-5300(a) and (b) of 1995 Edition, 1996 Addenda specify that snubber examinations and tests be performed in accordance with the 1987 Edition with OMA-1988 of ASME/ANSI OM, Part 4.

10 CFR 50.55a(b)(3)(v) permits the use of the Subsection ISTD of the ASME OM Code 1995 Edition up to and including the 1996 Addenda in lieu of the 1987 Edition with OM-1988 of ASME/ANSI OM, Part 4.

Snubber examination and testing is currently performed in accordance with the Davis-Besse Unit No. 1 technical specifications. The Davis-Besse Unit No. 1 technical specifications meet the requirements of NRC Generic Letter 90-09, Alternative Requirements for Snubber Visual Inspection Intervals and Corrective actions.

The requirements for the examination and testing of snubbers in the Davis-Besse Unit No. 1 technical specifications are similar to and provide more thorough examinations and tests than required by ASME/ANSI OM Code, Subsection ISTD. For example, while the examination boundary specified in Subsection ISTD 2.1 includes only the snubber assembly from pin to pin, inclusive, the Davis-Besse Unit No. 1 technical specifications extend examination includes the attachments to the foundation or supporting structures. In addition, while the Davis-Besse Unit No. 1 technical specifications require examination and testing of snubbers which are installed on non-safety related systems when their failure or failure of the system on which they are installed would have an adverse effect on safety-related system during a dynamic event, the snubbers under IWF-5000 would not include these non-safety related snubbers because they would not be within the ASME Section XI Class 1, 2, or 3 boundaries.

The 1995 Edition, 1996 addenda of ASME Section XI requires personnel conducting VT-3 examinations be qualified and certified to comparable levels of qualification as defined in ANSI/ASNT CP-189 and the Employer's written practice. IWA-2317 of the 1998 Edition of the

ASME Section XI provides alternative requirements for the qualification of VT-3 examination personnel. The requirements of IWA-2317 are less burdensome than qualifying and maintaining the VT-3 certification program required by IWA-2313. IWA-2317 makes it feasible to train and qualify experienced personnel to perform VT-3 examinations.

3.0 EVALUATION

The licensee states that its applicable edition of Section XI of the ASME Code for the Davis-Besse Nuclear Power Station Unit No. 1 third 10-year ISI interval is the 1995 Edition and Addenda through the 1996 Addenda. ASME section XI, Subsection IWF-5200(a) and (b) and Subsection IWF-5300(a) and (b) of 1995 Edition, 1996 Addenda specify that snubber examinations and tests be performed in accordance with the 1987 Edition with OMa-1988 of ASME/ANSI OM, Part 4. 10 CFR 50.55a(b)(3)(v) permits the use of the Subsection ISTD of the ASME OM Code 1995 Edition up to and including the 1996 Addenda in lieu of the 1987 Edition with OM-1988 of ASME/ANSI OM, Part 4.

The licensee states that snubber examination and testing is currently performed in accordance with the Davis-Besse Unit No. 1 technical specifications, and the Davis-Besse Unit No. 1 technical specifications meet the requirements of NRC Generic Letter 90-09, Alternative Requirements for Snubber Visual Inspection Intervals and Corrective actions. Therefore, the licensee's testing frequency for snubbers is acceptable to the staff.

The Davis-Besse Unit No. 1 technical specifications require a 10 percent representative sample of the snubbers be tested each refueling outage with each snubber requiring testing at least once every ten refueling outages. This is similar to the Subsection ISTD 10 percent sampling plan, and is acceptable. Subsection ISTD 7 requires the establishment of failure mode groups when test failures occur within a Design Test Plan Group. If the cause of the failure can be determined and the failure is determined to be isolated, no further testing is required of the test group when using Subsection ISTD. The Davis-Besse Unit No. 1 technical specifications state that any snubber failure in tests, whether isolated or not, requires testing an additional 10 percent of the snubbers within the failed snubber's group to ensure the acceptability of the group. This testing continues in 10 percent increments until that additional 10 percent sample is acceptable. The staff finds the licensee's 10 percent sampling plan and the 10 percent increment testing method comparable to the ISTD's requirements and is acceptable.

Subsection ISTD 2.1 specifies the examination boundary to be the snubber assembly from pin-pin, and the Davis-Besse Unit No. 1 technical specifications specify the same examination boundary and extend it to attachments. The staff finds the examination boundary in the Davis-Besse Unit No. 1 technical specifications acceptable. The staff also finds the Davis-Besse Unit No. 1 technical specifications' requirements to examine and test snubbers which are installed on non-safety related systems when their failure or failure of the system on which they are installed would have an adverse effect on safety-related system during a dynamic event acceptable.

Subsection IWA-2317 of the 1998 Edition of ASME Section XI provides alternative requirements for the qualification of VT-3 examination personnel. The staff accepted Subsection IWA-2317 of the 1998 Edition of ASME Section XI because it provides an acceptable level of quality and safety comparable to that which would be obtained by using personnel qualified to the levels of qualification as defined in ANSI/ASNT CP-189.

4.0 CONCLUSION

The staff concludes the licensee's proposed use of the Davis-Besse Unit No. 1 technical specification 3/4.7.7 as an alternative to the ASME Code, Section XI, Subsection IWF-5200(a) and (b) and IWF-5300(a) and (b) for the examination and testing requirements for snubbers (RR-A18), and use of the requirements of IWA-2317 of the 1998 Edition of ASME Section XI as an alternative to the provisions of IWA-2313 and IWA-2314 for visual examination personnel performing VT-3 snubber examination (RR-A19) acceptable. This is based on the staff's determination that pursuant to 10 CFR 50.55a(a)(3)(i), the alternatives proposed by the licensee provide an acceptable level of quality and safety in regard to the examination and testing of snubbers and VT-3 examination personnel qualifications.

Principal Contributor: J. Ma, NRR

Date: September 27, 2002

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI

RELIEF REQUESTS E1 THROUGH E8

FIRSTENERGY NUCLEAR OPERATING COMPANY

DAVIS-BESSE NUCLEAR POWER STATION

DOCKET NO. 50-346

1.0 INTRODUCTION

In the *Federal Register* dated August 8, 1996 (61 FR 41303), the Nuclear Regulatory Commission (NRC) amended its regulations to incorporate by reference the 1992 edition with 1992 addenda of Subsections IWE and IWL of Section XI of the ASME Boiler and Pressure Vessel Code (Code). Subsections IWE and IWL provide the requirements for inservice inspection (ISI) of Class CC (concrete containment), and Class MC (metallic containment) of light-water cooled power plants. The effective date for the amended rule was September 9, 1996, and it requires the licensees to incorporate the new requirements into their ISI plans and to complete the first containment inspection by September 9, 2001. However, a licensee may propose alternatives to or submit a request for relief from the requirements of the regulation pursuant to 10 CFR 50.55a(a)(3) and (g)(5).

By the letter dated September 19, 2000 (Reference 1), FirstEnergy Nuclear Operating Company (FENOC), the licensee, proposed several alternatives to the requirements of Subsection IWE of Section XI of the ASME Code (Relief Requests RR-E1 through RR-E8) for its Davis-Besse Nuclear Power Station (DBNPS). The NRC's findings with respect to authorizing the alternative or denying the proposed request are discussed in this evaluation.

2.0 EVALUATION

2.1 Relief Request RR-E1:

2.1.1 Code Requirements:

IWE-2500, Table IWE-2500-1, Examination Category E-D, "Seals, Gaskets, and Moisture Barriers," requires seals and gaskets on airlocks, hatches, and other devices to be visually examined, VT-3, when disassembled.

2.1.2 Requirements from Which Relief is Requested:

Relief is requested from performing the Code-required visual examination, VT-3, on the metal containment seals and gaskets.

2.1.3 Basis for Relief:

The penetrations discussed below contain seals and gaskets.

Electrical Penetrations:

Electrical penetrations use a header plate attached to a containment penetration nozzle flange with redundant O-rings between the header plate and flange face. Modules through which electrical conductors pass are installed in the header plate. One type, manufactured by Amphenol, uses seals and gaskets to assure leak-tight integrity. A second type, manufactured by Conax, uses a set of compression fittings. Replacement modules for the Amphenol penetrations use a combination of O-rings and compression fittings. Each penetration is pressurized by dry nitrogen to maintain and monitor integrity and to prevent the intrusion of moisture into the penetration.

These seals and gaskets cannot be inspected without disassembly of the penetration to gain access to the seals and gaskets.

Containment Personnel, Equipment, and Emergency Escape Hatches:

The personnel, equipment, and emergency escape hatches utilize an inner and outer door with gasket surfaces to ensure the leak-tight integrity. These hatches also contain other gaskets and seals such as the handwheel shaft seals, electrical penetrations, blank flanges, and equalizing pressure connections that require disassembly to gain access to the gaskets and seals.

Seals and gaskets receive a 10 CFR Part 50, Appendix J, Type B test. As noted in 10 CFR Part 50, Appendix J, the purpose of Type B tests is to measure leakage of containment or penetrations whose design incorporates resilient seals, gaskets, sealant compounds, and electrical penetrations fitted with flexible metal seal assemblies. The seals and gaskets in these joints are therefore proven adequate through Appendix J testing.

The equipment hatch is removed during maintenance outages, when necessary, and during refueling outages. Prior to final closure, the hatch gaskets and door sealing face are inspected for damage that could prevent sealing. The personnel hatch and emergency escape hatch are included in the DBNPS preventive maintenance program. This program requires that the door gaskets be inspected for damage that could prevent sealing and be coated with an approved silicon lubricant to preserve their integrity. These inspections are performed each refueling outage. Prior to establishing containment integrity, the equipment hatch, personnel hatch, and the emergency escape hatch are tested in accordance with 10 CFR Part 50, Appendix J to confirm their sealing capability.

When the electrical penetrations, airlocks and hatches containing seals and gaskets are tested in accordance with 10 CFR Part 50, Appendix J, degradation of the seal or gasket material would be revealed by an increase in leakage rate. Corrective measures would be applied and the component retested. Repair or replacement of seals and gaskets is not subject to Code (1995 Edition, 1996 Addenda) rules in accordance with Paragraph IWA-4120(b)(5) of ASME Section XI.

The visual examination of seals and gaskets in accordance with IWE-2500, Table IWE-2500-1 is a burden without any compensating increase in the level of safety or quality.

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(i). Testing the seals and gaskets in accordance with 10 CFR Part 50, Appendix J will provide adequate assurance of the leak-tight integrity of the seals and gaskets.

Subsection IWE of the 1998 Edition of ASME Section XI no longer requires the examination of seals and gaskets.

2.1.4 Alternative Examination:

The leak-tightness of seals and gaskets will be tested in accordance with 10 CFR Part 50, Appendix J.

2.1.5 Justification for Granting Relief:

The functionality of containment seals and gaskets is verified during the Type B testing required by 10 CFR Part 50, Appendix J. This testing provides an acceptable level of quality and safety in lieu of the Code required visual examinations.

2.1.6 Staff Evaluation of RR-E1:

As an alternative to the requirements (VT-3 examinations) of the ASME Section XI, Subsection IWE, the licensee proposed to use leak-rate testing in accordance with 10 CFR Part 50, Appendix J to examine the leak-tight integrity of containment seals and gaskets.

In its relief request, the licensee stated that because the seals and gaskets associated with these penetrations are not accessible for examination when the penetration is assembled, containment penetrations seals and gaskets must be disassembled and re-assembled for the purpose of performing the VT-3 visual examination. These activities (disassembly and reassembly of seals and gaskets) associated with a VT-3 visual examination would result in hardship without a compensating increase in the level of quality and safety, and also would introduce the possibility of component damage that would not otherwise occur. The periodic test in accordance with 10 CFR Part 50, Appendix J will detect and measure local leakage of containment or penetrations whose design incorporates resilient seals, gaskets, sealant compounds, and electrical penetrations fitted with flexible metal seal assemblies. If unacceptable leakage is identified during the test, corrective measures would be taken and the components would be re-tested.

Also, the staff finds that the changes to ASME Section XI, 1992 Edition, 1993 Addenda reflect that disassembly of joints for the sole purpose of performing visual examination is unwarranted. Requiring the licensee to disassemble components for the sole purpose of inspecting seals and gaskets would place a significant hardship on the licensee without a compensating increase in the level of quality and safety.

On the basis discussed above, the staff concludes that the alternative proposed by the licensee will provide reasonable assurance of the functional capability and integrity of the containment penetration seals and gaskets during the testing required by 10 CFR Part 50, Appendix J. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) on the basis that compliance with the specific requirements of the Code would result in hardship without a compensating increase in the level of quality and safety.

2.2 Relief Request RR-E2:

2.2.1 Code Requirements:

ASME Section XI, Subsection IWE-2200(g) requires that when paint or coatings are reapplied, the condition of the new paint or coating shall be documented in the preservice examination records.

2.2.2 Requirements from Which Relief is Requested:

Relief is requested from the requirement to perform a preservice inspection of new paint or coatings.

2.2.3 Basis for Relief:

SECY 96-080, "Issuance of Final Amendment to 10 CFR Section 50.55a to Incorporate by Reference the ASME Boiler and Pressure Code (ASME Code), Section XI, Division 1, Subsection IWE and Subsection IWL," dated April 17, 1996, response to Comment 3.2 about IWE-2200(g) states, "In the NRC's opinion, this does not mean that a visual examination must be performed with every application of paint or coating. A visual examination of the topcoat to determine the soundness and the condition of the topcoat should be sufficient." This is currently accomplished through the inspection performed by the DBNPS coating maintenance program.

The adequacy of applied coatings is verified through the inspections performed by the DBNPS coating maintenance program. The coatings on the interior surface of the containment vessel are considered nuclear safety-related. They are applied and inspected in accordance with the NRC-approved FENOC Quality Assurance Program. This program endorses NRC Regulatory Guide 1.54, "Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants," June 1973, and ANSI Standard N101.4-1972, "Quality Assurance Protective Coatings Applied to Nuclear Facilities." The following requirements are applicable for coatings applied to the interior surface of the containment vessel:

- The quality assurance requirements of Section 3 of ANSI N101.4 applicable to the coating manufacturer are imposed on the coating manufacturer through the procurement process.
- Coating application procedures are developed based on the manufacturer's recommendations for application of the selected coating systems.
- Coating applicators are qualified to demonstrate their ability to satisfactorily apply the coatings in accordance with the manufacturer's recommendations.
- Quality Control personnel perform inspections to verify conformance of the coating application procedures. Section 6 of ANSI N101.4 is used as a guideline in the establishment of the inspection program.
- Quality Control inspection personnel are qualified to the requirements of Regulatory Guide 1.58, Revision 1.

- Documentation demonstrating conformance to the above is maintained.

The condition of the coatings are examined every four to six years in accordance with 10 CFR 50.65, "Requirements for Monitoring Effectiveness of Maintenance at Nuclear Power Plants." The general visual examination required by IWE is also performed each inspection period. These periodic examinations will identify evidence of flaking, blistering, peeling, discoloration, or other signs of coating distress that might be indicative of degradation of the containment structural integrity.

Recording the condition of reapplied coating in the preservice record does not substantiate the containment structural integrity. Should deterioration of the coating in the reapplied area occur, the area will require additional evaluation regardless of the preservice record. Recording the condition of new paint or coating in the preservice records does not increase the level of quality and safety of the containment.

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(i). The DBNPS coating maintenance program currently provides an adequate level of quality and safety.

Subsection IWE of the 1998 Edition of ASME Section XI no longer requires a preservice record of reapplied coatings.

2.2.4 Alternative Examination:

Reapplied paint and coatings on the containment vessel will be examined in accordance with the DBNPS coatings program. Although repairs to paint or coatings are not subject to the repair/replacement rules of ASME Section XI (Inquiry 97-22), repairs to the primary containment boundary, if required, would be conducted in accordance with ASME Section XI Code rules.

2.2.5 Justification for Granting Relief:

The code requirement to establish a preservice record is a duplication of requirements contained in the DBNPS coatings program. The DBNPS coating program provides the inspections and quality assurance provisions for the application of coatings necessary for protecting the inside steel surfaces of the Davis-Besse containment vessel.

2.2.6 Staff Evaluation of RR-E2:

In lieu of meeting the ASME Section XI, 1992 Edition, 1992 Addenda, Subsection IWE-2200(g) requirements to perform a preservice inspection of new paint or coatings, the licensee proposed to examine the reapplied paint and coatings on the containment vessel in accordance with the DBNPS coatings program. In the "Basis for Relief" section of the request, the licensee provided a description of the requirements used for coatings applied to the interior surface of the containment vessel.

In this request, the licensee stated that the reapplied paint and coatings on the containment vessel will be examined in accordance with the DBNPS coatings program. The adequacy of paint and coatings will be verified following application through inspections performed by the DBNPS coating maintenance program. The coatings on the interior surface of the containment vessel are applied and inspected in accordance with the NRC-approved FENOC Quality Assurance Program which meets the guidelines of Regulatory Guide 1.54, "Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants,"

June 1973, and ANSI Standard N101.4-1972, "Quality Assurance Protective Coatings Applied to Nuclear Facilities." The licensee also stated that the condition of the coatings are examined every 4 to 6 years in accordance with 10 CFR 50.65. The general visual examination required by IWE is also performed each inspection period. In addition, the licensee committed that repairs to the primary containment boundary would be conducted in accordance with the ASME Section XI Code rules.

The staff finds that SECY 96-080, response to Comment 3.2 about IWE-2200(g) states, "in the NRC's opinion, this does not mean that visual examination must be performed with every application of paint or coating. A visual examination of the topcoat to determine the soundness and the condition of the topcoat should be sufficient." The staff also finds that the licensee used the DBNPS coatings program together with the DBNPS coating maintenance program and FENOC Quality Assurance Program for the response to NRC Generic Letter 98-04, "Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System After a Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment," (Reference 2). Through the NRC close-out letter for Generic Letter 98-04 dated December 2, 1999 (Reference 3), this program was approved by the staff.

From the discussion above, the staff finds that the DBNPS Coatings Program is adequate for the examinations of the safety-related protective coating work and will provide an acceptable level of quality and safety for protecting containment components. On this basis, the staff concludes that the alternative proposed by the licensee to the requirements of IWE-2200(g) is authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.3 Relief Request RR-E3:

2.3.1 Code Requirements:

ASME Section XI, 1992 Edition, 1992 Addenda, Subarticle IWE-2500(b) requires that when paint or coatings are to be removed, the paint or coatings shall be visually examined in accordance with Table IWE-2500-1 prior to removal.

2.3.2 Requirements from Which Relief is Requested:

Subarticle IWE-2500(b) requires that when paint or coatings are to be removed, the paint or coatings shall be visually examined in accordance with Table IWE-2500-1 prior to removal.

2.3.3 Basis for Relief:

The DBNPS coating program is described in Relief Request RR-E2.

Paint and coatings are not part of the containment pressure boundary under current Code rules as they are not associated with the pressure retaining function of the component (Paragraph NE-2210(b)(5) of ASME Section III). The interiors of containments are painted to prevent rusting. Neither paint nor coatings contribute to the structural integrity or leakage tightness of the containment. Furthermore, the paint and coatings on the containment pressure boundary were not subject to Code rules when they were originally applied and are not subject to ASME Section XI rules for repair or replacement in accordance with IWA-4111(b)(5). Degradation or discoloration of the paint or coating materials on containment would be an indicator of potential degradation of the containment pressure boundary. Additional measures would have to be

employed to determine the nature and extent of any degradation, if present. The application of ASME Section XI rules for removal of paint or coatings when unrelated to a Section XI repair or replacement activity, is a burden without a compensating increase in quality or safety.

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(i). The DBNPS Coating Program currently provides an adequate level of quality and safety.

Subsection IWE of the 1998 Edition of ASME Section XI no longer requires an examination of coatings prior to removal.

2.3.4 Alternative Examination:

The condition of the containment vessel base material will be verified prior to the application of new paint or coating as required by the DBNPS Coatings Program. If degradation is identified, additional measures will be applied to determine if the containment pressure boundary is affected. Repairs to the primary containment pressure boundary, if required, will be conducted in accordance with ASME Section XI Code rules.

2.3.5 Justification for Granting Relief:

The DBNPS Coating Program is adequate to monitor the proper removal of the old paint and application of new coatings. Performing the Code required examination prior to removal of the old paint and documenting its condition in addition to performing the inspections required by the DBNPS Coatings Program would be a burden without a compensating increase in quality or safety.

2.3.6 Staff Evaluation of RR-E3:

In lieu of performing visual examination of paint or coatings in accordance with Table IWE-2500-1 prior to removal, the licensee proposed to inspect the condition of the containment base material prior to application of new paint or coatings in accordance with the DBNPS coating program. The licensee also committed that if degradation is identified, additional measures will be applied to determine if the containment pressure boundary is affected. Repairs to the primary containment pressure boundary, if required, will be conducted in accordance with ASME Section XI Code rules.

As discussed in the evaluation of Relief Request RR-E2, the staff finds that the DBNPS Coating program is adequate for monitoring the proper removal of the old paint and application of new coatings. To perform additional examinations prior to removal of the old paint and to document the condition of the old paint or coatings would result in hardship to the licensee without a compensating increase in the level of quality and safety. On this basis, the staff concludes that the alternative coating program proposed by the licensee is acceptable and the licensee's proposed alternative to the requirement of Subsection IWE-2500(b) is authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

2.4 Relief Request RR-E4:

2.4.1 Code Requirements:

Paragraph IWE-5240, "Visual Examination," of the 1995 Edition, 1996 Addenda of ASME Section XI requires that the requirements of Paragraph IWA-5240, "Visual Examination," for visual examination, VT-2, are applicable following repair, replacement, or modification.

2.4.2 Requirements from Which Relief is Requested:

Relief is requested from performing the VT-2 visual examination in connection with system pressure testing following repair, replacement, or modification under Article IWE-5000, "System Pressure Tests."

2.4.3 Basis for Relief:

Repair/replacements are performed in accordance with the DBNPS repair/replacement program which specifies the repair methods and nondestructive examinations necessary to ensure the original quality and construction requirements of the containment vessel are met. The DBNPS containment vessel is a code stamped pressure vessel which was designed and constructed in accordance with the 1968 Edition including the Summer 1969 Addenda of ASME Section III, Subsection "B" for nuclear vessels.

Table IWE-2500-1, Examination Category E-P, identifies the examination method of 10 CFR Part 50, Appendix J following each repair, modification, or replacement. Paragraph IWE-5222 permits leakage tests for minor repair/replacement activities to be deferred to the next scheduled leakage test provided nondestructive examinations are performed in accordance with the repair/replacement plan. These nondestructive examinations would be required to meet the construction code requirements, which would require volumetric surface examinations based on the type of repair.

Paragraph IWE-5210 states that except as noted within Paragraph IWE-5240, "Visual Examination," the requirements of Article IWA-5000 are not applicable to Class MC or Class CC components. Paragraph IWE-5240 states that the requirements of Paragraph IWA-5240 for visual examinations are applicable. Paragraph IWA-5240 addresses VT-2 visual examination requirements. These requirements are written to apply to systems containing fluids. The VT-2 examination requires access to the repaired area during performance of the pressure test. Access to the repaired area may not be available if the repaired area is on the interior surface of the containment vessel if a 10 CFR Part 50, Appendix J, Type A is performed. If the repaired area is subjected to a localized 10 CFR Part 50, Appendix J pressure test, the repaired area would be covered by the test fixture and not available for visual examination. Paragraph IWA-2211 defines a VT-1 visual examination as an examination conducted to detect discontinuities and imperfection on the surfaces of components, including such conditions as cracks, wear, corrosion, or erosion. Paragraph IWA-2213 defines a VT-3 visual examination as an examination conducted to determine the general mechanical and structural condition of components.

The performance of VT-1 and VT-3 examinations are more appropriate than performing a VT-2 examination during a 10 CFR Part 50, Appendix J test. Following a repair/replacement activity affecting the containment pressure boundary when a 10 CFR Part 50, Appendix J test is performed to verify the leak-tight integrity of the containment pressure boundary, a VT-3 visual

examination would be appropriate. As the 10 CFR Part 50, Appendix J test will confirm the pressure boundary integrity, a VT-3 examination on the area affected by the repair/replacement activity performed either during or after the pressure test would be appropriate to verify if any conditions exist which could affect the future leak tightness of the containment vessel. If the 10 CFR Part 50, Appendix J test is deferred as permitted by IWE-5222, a more detailed VT-1 examination of the area affected by the repair/replacement would be appropriate to identify any conditions which could affect the leak tightness of the containment vessel.

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(i). Performance of VT-1 or VT-3 examinations will provide an acceptable level of quality and safety.

2.4.4 Alternative Examination:

Following a repair/replacement activity affecting containment pressure boundary when a 10 CFR Part 50, Appendix J test is performed to verify the leak-tight integrity of the affected containment pressure boundary, a VT-3 examination will be performed during or after the pressure test on the area affected by the repair/replacement activity.

Following a repair/replacement activity affecting containment pressure boundary when a 10 CFR Part 50, Appendix J test is deferred, a VT-1 examination will be performed on the area affected by the repair/replacement activity. When the deferred pressure test is performed, a VT-3 examination will be performed as noted above.

2.4.5 Justification for Granting Relief:

The Code required VT-2 examination requires access to the repaired area during performance of the pressure test. Access to the repaired area may not be available if the repaired area is on the interior surface of the containment vessel during a full scale 10 CFR Part 50, Appendix J Type A test. If the repaired area is subjected to a localized 10 CFR Part 50, Appendix J test, access is not available as the test fixture will cover the area affected by the repair/replacement activity. The VT-2 examination is performed to confirm the leak tightness of the area of repair/replacement.

Following a repair/replacement activity affecting the containment pressure boundary when a 10 CFR Part 50, Appendix J test is performed to verify the leak-tight integrity of the containment pressure boundary, a VT-3 visual examination is proposed. In this case, the 10 CFR Part 50, Appendix J test will confirm the pressure boundary integrity. The VT-3 examination on the area affected by the repair/replacement activity will verify if any conditions exist which could affect the future leak tightness of the containment vessel. As pressure is not a factor in performing the VT-3 examination, it can be performed either during or after the 10 CFR Part 50, Appendix J test. If the 10 CFR Part 50, Appendix J test is deferred as permitted by IWE-5222, a more detailed VT-1 examination of the area affected by the repair/replacement would be appropriate to identify any conditions which could affect the leak tightness of the containment vessel prior to its testing per the requirements of 10 CFR Part 50, Appendix J.

The VT-1 or VT-3 visual examinations in conjunction with the nondestructive examinations required by the repair/replacement plan will ensure that an acceptable level of quality and safety will be attained.

2.4.6 Staff Evaluation of RR-E4:

In lieu of performing the Code required VT-2 visual examination in connection with system pressure testing following repair, replacement, or modification, the licensee proposed an alternative as follows:

- (1) If a 10 CFR Part 50, Appendix J test is performed to verify the leak-tight integrity of the affected containment pressure boundary, a VT-3 examination will be performed during or after the pressure test on the area affected by the repair/replacement activity area after the repair or replacement is completed.
- (2) Following a repair/replacement activity affecting containment pressure boundary when a 10 CFR Part 50, Appendix J test is deferred, a VT-1 examination will be performed on the area affected by the repair/replacement activity.

The staff finds that Table IWE-2500-1, Examination Category E-P, requires only an examination method of 10 CFR Part 50, Appendix J for the containment vessel pressure retaining boundary following each repair, replacement, or modification and does not specifically identify a VT-2 visual examination. The staff also finds that 10 CFR Part 50, Appendix J provides requirements for testing including acceptable leakage criteria to ensure the leak-tight integrity of the pressure boundary. In addition, the VT-2 visual examination based on the IWA-5240 requires access to the repaired area during performance of the pressure test. Access to the repaired area may not be available if the repaired area is on the interior surface of the containment vessel if a 10 CFR Part 50, Appendix J, Type A is performed. If the repaired area is subjected to a localized 10 CFR Part 50, Appendix J pressure test, the repaired area would be covered by the test fixture and not available for visual examination. Furthermore, the licensee committed that if a 10 CFR Part 50, Appendix J test is performed to verify the leak-tight integrity of the affected containment pressure boundary, a VT-3 examination will be performed during or after the pressure test on the area affected by the repair/replacement activity area after the repair or replacement is completed. A VT-1 examination will be performed on the area affected by the repair/replacement activity following a repair/replacement activity affecting containment pressure boundary when a 10 CFR Part 50, Appendix J test is deferred.

On the basis discussed above, the staff finds that the alternative examination proposed by the licensee will provide an acceptable level of quality and safety for protecting the containment pressure boundary integrity. Therefore, the staff concludes that the licensee's alternative coating program is authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.5 Relief Request RR-E5:

2.5.1 Code Requirements:

Paragraphs IWE-2420(b) and IWE-2420(c) of the 1995 Edition, 1996 Addenda of ASME Section XI, require that when a component is acceptable for continued service or when the examinations result in a repair/replacement activity, the areas containing such flaws, degradation, or repairs shall be reexamined during the next inspection period listed in the schedule of the inspection program of Paragraph IWE-2411, "Inspection Program A," or Paragraph IWE-2412, "Inspection Program B," in accordance with Table IWE-2500-1, Examination Category E-C.

2.5.2 Requirements from Which Relief is Requested:

Relief is requested from the requirements of Paragraphs IWE-2420(b) and IWE-2420(c) to perform successive examination of repairs/replacements.

2.5.3 Basis for Relief:

The purpose of a repair/replacement is to restore the component to an acceptable condition for continued service in accordance with acceptance standards of Article IWE-3000. Paragraph IWE-4160, "Verification of Acceptability," requires the owner to conduct an evaluation of the suitability of the repair/replacement including consideration of the cause of failure.

If the repair/replacement has restored the component to an acceptable condition, successive examinations are not warranted. If the repair/replacement was not suitable, then the repair/replacement does not meet code requirements and the component is not acceptable for continued service. Neither Paragraph IWB-2420(b), Paragraph IWC-2420(b), nor Paragraph IWD-2420(b) requires a repair to be subject to successive examination requirements. Furthermore, if the repair area is subject to accelerated degradation, it would still require augmented examination in accordance with Table IWE-2500-1, Examination Category E-C. The successive examination of repairs in accordance with Paragraphs IWE-2420(b) and IWE-2420(c) constitutes a burden without a compensating increase in quality or safety.

In SECY 96-080, "Issuance of Final Amendment to 10 CFR Section 50.55a to Incorporate by Reference the ASME Boiler and Pressure Vessel Code (ASME Code), Section XI, Division 1, Subsection IWE and Subsection IWL," dated April 17, 1996, the response to Comment No. 3.3, states "The purpose of IWE-2420(b) is to manage components found to be acceptable for continued service (meaning no repair or replacement at this time) as an Examination Category E-C component ... If the component had been repaired or replaced, then more frequent examination would not be needed."

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(ii). Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Subsection IWE of the 1998 Edition of ASME Section XI no longer requires successive examination of areas that have been repaired/replaced.

2.5.4 Alternative Examination:

Successive examination in accordance with Paragraphs IWE-2420(b) and IWE-2420(c) are not required for repairs made in accordance with Article IWA-4000.

2.5.5 Justification for Granting Relief:

Since IWA-4160 of the Code requires the suitability of the repair/replacement including its cause, successive examination of the repair/replacement does not provide an additional safety benefit. This is consistent with the requirements of ASME Class 1, 2, and 3 systems in which successive examinations are only required when an item is accepted by evaluation.

2.5.6 Staff Evaluation of RR-E5:

In lieu of meeting ASME Section XI, Subarticles IWE-2420(b) and (c) that require successive examinations of repaired areas in accordance with Table IWE-2500-1, the licensee proposes to use the process and acceptance examinations and evaluations required by the Code for repairs.

The staff finds that when repairs are complete, IWA-4160 requires licensees to evaluate the suitability of the repair. When a repair is required because of failure of an item, the evaluation shall consider the cause of failure to ensure that the repair is suitable. Considering that the failure mechanism is identified and corrected as required and the repair receives preservice examinations, as required, the proposed alternative will provide reasonable assurance of structural integrity. In doing this, the hardship associated with the requirements of successive examinations can be eliminated. Furthermore, Subparagraphs IWB-2420(b), IWC-2420(b), and IWD-2420(b) do not require the successive inspection of repairs for ASME Code Class 1, 2, and 3 components as required in Subparagraph IWE-2420(b) for ASME Code Class MC components. On this basis, the alternative proposed by the licensee is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) that compliance with the specific code requirements would result in hardship without a compensating increase in the level of quality and safety.

2.6 Relief Request RR-E6:

2.6.1 Code Requirements:

ASME Section XI, 1992 Edition with 1992 Addenda, Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item E8.20 requires that Class MC bolted connections be subject to a bolt torque or tension test.

2.6.2 Requirements from Which Relief is Requested:

Relief is requested from meeting the requirements of ASME Section XI 1992 Edition, 1992 Addenda, Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item E8.20. Table IWE-2500-1 requires bolt torque or tension test on bolted connections that have not been disassembled and reassembled during the inspection interval. ASME Code Case N-604 will be used in lieu of the requirements of Table IWE-2500-1, Examination Category E-G, Item E8.20.

2.6.3 Basis for Relief:

ASME Code Case N-604 provides requirements, which may be used in lieu of the requirements of Table IWE-2500-1, Examination Category E-G, Item E8.20. Note 5 of Table IWE-2500-1, Examination Category E-G requires bolt torque or tension testing on bolted connections that have not been disassembled and reassembled during the inspection interval. Determination of the torque or tension value would require that the bolting be re-torqued and then re-torqued or re-tensioned.

ASME Code Case N-604 states that the following examinations may be performed to satisfy the inservice inspection requirements for pressure retaining bolting.

- (a) Exposed surfaces of bolted connections shall be visually examined in accordance with requirements of Table IWE-2500-1, Examination Category E-G, Item E8.10.

- (b) Bolting connections shall meet the pressure test requirements of Table IWE-2500-1, Examination Category E-P, Item E9.40.

Each containment penetration receives a 10 CFR Part 50, Appendix J, Type B test in accordance with the specified testing frequencies. As noted in 10 CFR Part 50, Appendix J, the purpose of Type B tests is to measure leakage of containment penetrations whose design incorporates resilient seals, gaskets, sealant compounds, and electrical penetrations fitted with flexible metal seal assemblies. The performance of the Type B test itself proves that the bolt torque or tension remains adequate to provide a leak rate that is within acceptable limits. The torque or tension value of bolting only becomes an issue if the leak rate is excessive. Once a bolt is torqued or tensioned, it is not subject to dynamic loading that would cause it to experience significant change. Only bolting which would be subject to pressure loading which would tend to induce tension in bolts under accident conditions changes (i.e., pressure-unseating containment penetrations) would be expected to affect the preload of bolting. Davis-Besse has no pressure-unseating bolting as blank flanges are installed on both the interior and exterior flanges on penetrations not in use during normal operation. Penetrations which are pressurized, such as electrical penetrations, are not considered to be pressure-unseating penetrations. Appendix J testing and visual inspection is adequate to demonstrate that the design function is met. Torque or tension testing is not required on any other ASME Section XI, Class 1, 2, or 3 bolted connections or their supports as part of the inservice inspection program.

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(ii). Un-torquing and subsequent re-torquing of bolted connections which are verified not to experience unacceptable leakage through 10 CFR Part 50, Appendix J, Type B testing results in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The requirement to perform bolt torque or tension tests is not required in Subsection IWE of the 1998 Edition of ASME Section XI.

2.6.4 Alternative Examination:

The requirements of ASME Code Case N-604 will be implemented.

2.6.5 Justification for Granting Relief:

The only bolting in which the torque value of bolting would be affected is that bolting which is subjected to tension. This bolting would be that installed in penetrations which are pressure unseating. Davis-Besse has no pressure unseating bolting. The torque or tension testing of bolts required by Examination Category E-G, when the bolts are not disassembled, will result in a hardship without a commensurate increase in the level of quality or safety.

2.6.6 Staff Evaluation of RR-E6:

In lieu of meeting the requirements of Table IWE-2500-1, Examination Category E-G, Item E8.20, the licensee proposed to use the ASME Code Case N-604 requirements to ensure the tightness of the Class MC bolted connections. Code Case N-604 states that exposed surfaces of bolted connections shall be visually examined in accordance with requirements of Table IWE-2500-1, Examination Category E-G, Item E8.10 (VT-1 visual examination). Bolting connections shall meet the pressure test requirements of Table IWE-2500-1, Examination Category E-P, Item E9.40 (10 CFR Part 50, Appendix J, Type B test).

The staff finds that bolt torque or tension testing on bolted connections that have not been disassembled and reassembled during the inspection interval would require the bolting be un-torqued and then re-torqued or re-tensioned, whereas the leak testing as required by 10 CFR Part 50, Appendix J would adequately verify the leak-tight integrity of the containment. The staff also finds that torque or tension testing is not required on any other ASME Section XI, Class 1, 2, or 3 bolted connections or their supports as part of the inservice inspection program. In addition, compliance with ASME Code requirements will cause a hardship or unusual difficulty because un-torquing and subsequent re-torquing bolted connections involve unnecessary radiation exposure and costs to perform the work without a compensating increase in the level of quality and safety. Furthermore, the staff finds that the alternative approach proposed by the licensee (the test required by 10 CFR Part 50, Appendix J together with VT-1 visual examination to verify the leak-tight integrity of bolted connections for containment vessel leak-tight integrity) will provide reasonable assurance of the containment pressure boundary integrity. On this basis, the staff concludes that the alternative proposed by the licensee is authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

2.7 Relief Request RR-E7:

2.7.1 Code Requirements:

Paragraph IWA-2210, Table IWA-2210-1 provides requirements for distance and illumination requirements for performing VT-3 visual examinations.

2.7.2 Requirements from Which Relief is Requested:

Relief is requested from the provisions of Table IWA-2210-1, "Visual Examinations," when performing VT-3 examinations required by IWE. Table IWA-2210-1 requires direct visual VT-3 examinations be performed with a minimum illumination of 50 foot-candles, and a maximum direct examination distance of 4 feet. The procedure must be demonstrated to resolve a lower case character height of 0.105 inches.

2.7.3 Basis for Relief:

IWA-2210 requires visual examinations be performed in accordance with Article 9 of ASME Section V. Direct visual examination is defined in Article 9 of the 1995 Edition, 1996 Addenda of ASME Section V as a visual examination technique performed by eye and without any visual aids (excluding light source, mirrors, and/or corrective lenses). Table IWA-2210-1 requires the VT-3 examination be performed with a minimum illumination of 50 fc and a maximum direct examination distance of 4 feet.

IWA-2216 states that when remote visual examination is substituted for direct visual examination, the remote visual examination system shall have the capability of distinguishing and differentiating between colors in addition to the requirements of ASME Section V, Article 9. Remote visual examination is defined in Article 9 of the 1995 Edition, 1996 Addenda of ASME Section V as a visual examination technique used with visual aids for conditions where the area is inaccessible for direct visual examination. Remote visual examination may use visual aids such as mirrors, telescopes, borescopes, fiber optics, cameras, or other suitable instruments. Article 9 requires remote visual examination systems have a resolution capability at least equivalent to that obtainable by direct visual observation.

Considering the size of the containment structures (as compared to Class 1, 2, and 3 components), and recognizing the varied lighting conditions, the NRC provided latitude from the requirement of IWA-2216 for VT-3 remote visual examination in 10 CFR 50.55a(b)(2)(ix)(B). 10 CFR 50.55a(b)(2)(ix)(B) states that when performing remotely the visual examinations required by Subsection IWE, the maximum direct examination distance specified in Table IWA-2210-1 may be extended and the minimum illumination requirements specified in Table IWA-2210-1 may be decreased provided that the conditions or indications for which visual examination is performed can be detected at the chosen distance and illumination. 10 CFR 50.55a(b)(2)(ix)(B) applies to remote visual examinations, but does not apply to direct visual examinations.

The Davis-Besse containment vessel is a free standing, large volume steel vessel. Access to the surfaces of the containment vessel is provided at the Elevations 565 feet, 585 feet, 603 feet, and 653 feet. Approximately 15 percent of the containment surface is within the maximum 4-foot examination distance necessary to perform a direct visual VT-3 examination. The remainder must be either examined from scaffold or by remote visual examination.

Installation of scaffold is not considered practical. Installation of scaffold would require nearly 1,600 linear feet of scaffold ranging in height of 10 feet to 40 feet. Many areas of containment do not contain sufficient room to erect scaffold within 4 feet of the containment vessel. In other areas, scaffold would restrict normal access and egress routes for personnel working in containment.

Remote visual examination may be used in lieu of building scaffold. When using remote visual examination, the maximum direct examination distance and the minimum illumination requirements of Table IWA-2210-1 may be extended or decreased respectively in accordance with 10 CFR 50.55a(b)(2)(ix)(B) provided conditions for which the visual examination is being performed can be identified. However, this relaxation in Table IWA-2210-1 applies only to remote visual examinations and does not apply to direct visual examinations. The direct visual examination distance and illumination requirements of Table IWA-2210-1 are impractical when performing containment examinations. Conditions for which the containment visual examinations are being performed can be seen at distances much greater than the maximum direct visual VT-3 examination distance specified in Table IWA-2210-1.

Remote visual examinations are qualified at a specific distance and illumination in accordance with 10 CFR 50.55a(b)(2)(ix)(B) using a chipped paint specimen or an 18 percent neutral gray card. This same chipped paint specimen or 18 percent neutral gray card will be used to qualify the maximum examination distance and minimum illumination for performing direct visual VT-3 examination. This qualification process will ensure that the direct visual and remote visual examination processes are equivalent.

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(i). Performance of direct visual VT-3 examinations qualified to the same standards as remote visual VT-3 examinations will provide an acceptable level of quality and safety.

Subsection IWE of the 1998 Edition of ASME Section XI no longer requires a VT-3 examination of the containment surfaces. Therefore, the requirements of Table IWA-2210-1 are no longer applicable to IWE containment examinations.

2.7.4 Alternative Examination:

Direct visual VT-3 examinations will be qualified at distances exceeding the requirements of Table IWA-2210-1 and illumination less than Table IWA-2210-1 requirements. The direct visual VT-3 examinations will be qualified on the same specimen as used to qualify the remote visual examinations.

2.7.5 Justification for Granting Relief:

Considering the size of the containment structures and recognizing the varied lighting conditions in containments, the NRC provided latitude in 10 CFR 50.55a(b)(2)(ix)(B) from the requirement of IWA-2216 for VT-3 remote visual examination. The IWA-2216 requirements are contained in Table IWA-2210-1. However, this relaxation in Table IWA-2210-1 applies only to remote visual examinations and does not apply to direct visual examinations. Conditions for which the containment visual examinations are being performed can be seen at distances much greater than the maximum direct visual VT-3 examination distance specified in Table IWA-2210-1. Qualification of direct visual VT-3 examinations to the same specimens used to qualify remote examinations will ensure that the examinations throughout the containment are consistent and will identify any conditions which may be detrimental to the leak-tight integrity of the containment vessel. Performance of direct visual VT-3 examinations qualified to the same standards as remote visual VT-3 examinations will provide an acceptable level of quality and safety.

2.7.6 Staff Evaluation of RR-E7:

The licensee described, in the "Basis for Relief" and "Justification for Granting Relief" sections, that the Davis-Besse containment vessel is a free standing, large volume steel containment. Only 15 percent of the containment surface is within the maximum 4-foot examination distance necessary to perform a direct visual VT-3 examination. It would be necessary to install and use extensive temporary scaffold systems to access the remaining portions of the containment. Even though these scaffolds can only provide limited access due to containment geometry restrictions as well as structural and equipment interferences. Because the accessibility to the major portions of the containment vessel will make it a hardship to obtain the maximum direct examination distance and minimum illumination requirements, the licensee proposed an alternative to the requirements for the measurement of illumination and direct examination distance for visual examinations specified in ASME Section XI, 1992 Edition, 1992 Addendum, Table IWA-2210-1. The licensee quoted the 10 CFR 50.55a(b)(2)(ix)(B) requirement that the code required maximum direct examination distance may be increased and the minimum illumination may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination.

The staff finds that visual examinations on the containment are performed to determine if damage or degradation warrant additional evaluation or repair of the structure. In order for the visual examinations to be performed in such a way as to detect damage or degradation, proper lighting is essential. Also, the installation and removal of these scaffolds would increase both worker radiation exposure and challenge personnel safety in order to meet Paragraph Table IWA-2210-1 requirements. IWA-2210 allows for remote examination as long as the remote examination procedure is demonstrated to resolve the selected test chart characters. When the proposed alternative examination is performed, the licensee also committed, in Reference 4, that the criteria to be used to qualify the direct visual VT-3 examination procedure will be established by a Responsible Professional Engineer or other responsible individual,

knowledgeable in the requirements for design, inservice inspection, and testing of Class MC components.

On the basis discussed above, the staff concludes that the examination requirements proposed by the licensee will provide reasonable assurance of the functionality and integrity of the concrete containment. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) on the basis that compliance with the specific requirements of the Code would result in hardship without a compensating increase in the level of quality and safety.

2.8 Relief Request RR-E8:

2.8.1 Code Requirements:

ASME Section XI, 1995 Edition, 1996 Addenda, Subarticle IWE-2500(c)(3) requires one foot square grids be used when ultrasonic thickness measurements are performed on augmented examination surface areas. The number and location of the grids are determined by the owner. Subarticle IWE-2500(c)(4) requires the minimum wall thickness within each grid be determined.

2.8.2 Requirements from Which Relief is Requested:

Relief is requested from using one foot square grids for augmented examination areas and the requirement to determine the minimum wall thickness within each grid. Code Case N-605 will be used as an alternative to the requirements of IWE-2500(c).

2.8.3 Basis for Relief:

Subarticles IWE-2500(c)(3) and IWE-2500(c)(4) of the 1995 Edition, 1996 Addenda of ASME Section XI, require that the minimum thickness within each one foot square grid of surface areas requiring augmented examination be marked such that periodic reexamination of that location can be performed. Thickness readings are point readings. Numerous readings are necessary to identify the minimum thickness within each grid. This only identifies the thinnest area. Periodic examination of the minimum thickness point only monitors that point. It may not be the area that is the most susceptible to accelerated degradation.

Code Case N-605 provides an alternative to the one foot square grid area required by IWE-2500(c)(3). Code Case N-605 requires examination at the grid line intersections. The grid intersections may not exceed 12 inches and may be as small as 2 inches.

For a sample area of 50 square feet, Code Case N-605 requires a minimum 100 locations be monitored. For a sample area of 50 square feet, IWE-2500(c)(3) would require only 50 locations be monitored. In this instance, utilizing Code Case N-605 monitors more locations than required by IWE-2500(c)(3).

For sample areas greater than 100 square feet, Code Case N-605 requires that sufficient points be monitored to ensure at least a 95 percent confidence level that the thickness of the base metal is reduced by more than 10 percent of the normal plate thickness at 95 percent of the grid line intersections. Code Case N-605 also requires additional examinations when any measurements reveal wall thickness reduced by more than 10 percent of the nominal plate thickness.

For all examination areas, should the measurements at a grid line intersection reveal that the base material is reduced by more than 10 percent of the nominal plate thickness, Code Case N-605 requires the minimum wall thickness within each adjoining grid be determined. This is similar to the examination requirements of IWE-2500(c)(4) except that Code Case N-605 focuses resources on areas that have exhibited degradation rather than areas that have not exhibited degradation.

The Flow Accelerated Corrosion programs presently in place have proven that taking thickness readings taken at grid intersections are effective in monitoring wall thinning of piping.

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(ii). Taking numerous ultrasonic thickness readings within a grid that had not exhibited degradation results in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.8.4 Alternative Examination:

Code Case N-605 will be used to perform augmented examination of containment surface areas.

2.8.5 Justification for Granting Relief:

Code Case N-605 requires examinations be conducted at grid line intersections and only within grid sections when the grid intersection examinations reveal evidence that the base material wall thickness is being reduced. Code requirements would require numerous readings be taken within a grid that had not exhibited degradation. Compliance with the Code requirements in which examinations will be taken in areas not exhibiting degradation would result in undue hardship and unusual difficulty without a compensating increase in the level of quality and safety.

2.8.6 Staff Evaluation of RR-E8:

In lieu of meeting ASME Section XI, 1992 Edition through 1992 Addenda, Subarticles IWE-2500(c)(3) and (4) that require one-foot square grids be used when ultrasonic thickness measurements are performed on augmented examination surface areas, and the minimum wall thickness within each grid be determined, the licensee proposed to use Code Case N-605 to determine examination requirements for ultrasonic thickness measurements on areas requiring augmented examination.

Under the application of Code Case N-605 rules (as described in the request), Table IWE-2500-2 requires a minimum 100 locations be monitored for a sample area of 50 square feet. According to the licensee, utilizing Table IWE-2500-2 monitors more locations than that determined by the owner (required by the IWE-2500(c)(3) rule). For sample areas greater than 100 square feet, Table IWE-2500-2 requires: (a) sufficient locations be monitored to ensure at least a 95 percent confidence level that the thickness of the base material is reduced no more than 10 percent of the nominal plate thickness at 95 percent of the grid line intersections, and (b) additional examinations be taken when any measurement reveals that the wall thickness is reduced by more than 10 percent of the nominal plate thickness. For all examination areas, Table IWE-2500-2 requires that the minimum wall thickness within each adjoining grid be determined, if the measurements at a grid line intersection reveal that the base material is reduced by more than 10 percent of the nominal plate thickness.

On the basis discussed above, the staff finds that the alternative proposed by the licensee will provide reasonable assurance of the containment (plate) integrity. Therefore, the request for relief is authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that the alternative provides an acceptable level of quality and safety.

3.0 CONCLUSION:

Based on our review of the information provided in the requests for relief (Relief Requests RR-E1 through RR-E8), the staff concludes that for Relief Requests RR-E2, RR-E4, and RR-E8, the licensee's proposed alternatives will provide an acceptable level of quality and safety. On this basis, the proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(i) for Davis-Besse's first 10-year containment ISI interval. For Relief Requests RR-E1, RR-E3, RR-E5, RR-E6, and RR-E7, the staff concludes that compliance with the code requirements would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety, and that licensee's proposed alternatives will provide reasonable assurance of containment pressure integrity. Therefore, these proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for Davis-Besse's first 10-year ISI interval.

RR-E6 implements Code Case N-604 and RR-E8 implements Code Case N-605. Therefore, the licensee's proposed alternatives to use Code Cases N-604 and N-605 are authorized for the third 10-year interval or until such time Code Cases N-604 and N-605 are referenced in a future revision of Regulatory Guide (RG) 1.147. At that time, if the licensee intends to continue to implement either Code Case N-604 or N-605, the licensee should follow all provisions in the subject code case with the limitations (if any) listed in RG 1.147.

4.0 REFERENCES:

1. Letter from Guy G. Campbell, FENOC to NRC, "Third 10-Year Interval Inservice Inspection Program for Davis-Besse Nuclear Power Station, Unit 1," dated September 19, 2000.
2. Letter from J. K. Wood, FENOC to NRC, "Response to NRC Generic Letter 98-04: Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System After a Loss-of-Coolant-Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment," dated November 11, 1998.
3. Letter from NRC to G. G. Campbell, FENOC, "Completion of Licensing Action for Generic Letter 98-04: Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System After a Loss-of-Coolant-Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment - Davis-Besse Nuclear Power Station, Unit 1," dated December 2, 1999.
4. Letter from Guy G. Campbell, FENOC to NRC, "Revision to Request for Relief from an American Society of Mechanical Engineers Boiler and Pressure Vessel Code Inservice Inspection Requirement at Davis-Besse Nuclear Power Station," dated September 7, 2001.

Principal Contributor: T. Cheng, NRR

Date: September 27, 2002