



**ENTERGY**

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Director  
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July 12, 1996

U.S. Nuclear Regulatory Commission  
Mail Station P1-37  
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Supplementary Information Concerning the Update of  
Inservice Inspection (ISI) for Arkansas Nuclear One,  
Grand Gulf Nuclear Station, River Bend Station and  
Waterford 3 Steam Electric Station

Arkansas Nuclear One  
Units 1 & 2  
Docket Nos. 50-313 & 50-368  
License Nos. DPR-51 & NPF-6

Grand Gulf Nuclear Station  
Docket No. 50-416  
License No. NPF-29

River Bend Station  
Docket No. 50-458  
License No. NPF-47

Waterford 3 Steam Electric  
Station  
Docket No. 50-382  
License No. NPF-38

GNRO-96/00066  
RBG-43070

Gentlemen:

Entergy Operations, Inc. is submitting this letter in response to a telephone discussion on April 8, 1996 between Entergy and the NRC staff concerning Entergy's inservice inspection (ISI) update request.

By letter dated January 5, 1996, Entergy proposed to update the ISI programs at each plant to the 1992 Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Section XI Code with portions of the 1993 Addenda at the end of the current intervals. In addition, Entergy did not propose to implement the requirements of Subsection IWE, "Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Plants;" Subsection IWL, "Requirements for Class CC Concrete Components of Light-Water Cooled Plants;" Appendix VII, "Qualification of Nondestructive Examination Personnel for Ultrasonic Examination;" and Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems." In response to Entergy's request, the NRC staff requested that Entergy prepare definitive information to support the use of the requested codes for ISI because these codes have not yet been endorsed by the NRC.

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By letter dated April 15, 1996, the NRC provided the input from a contractor review of the 1992 Edition through the 1995 Edition of the ASME Section XI Code which was prepared for a proposed rule change currently in progress.

As requested, Entergy has reviewed the 1989 Edition of the ASME Section XI Code against changes that have occurred through the 1992 Edition, including certain portions through the 1993 Addenda. As in our January 5, 1996 request, Entergy proposes to implement the requirements of the 1992 Edition with portions of the 1993 Addenda, excluding the requirements of Appendix VIII. We have however revised our original request on several issues.

- Entergy is aware that the provisions of Subsections IWE and IWL are to be required in a change to 10 CFR 50.55a in the near future. By our request to use the 1992 Edition of the ASME Code, Entergy does not propose an advance implementation of IWE and IWL prior to completion of rulemaking.
- We now propose to implement the Appendix VII requirements of the 1992 Edition of the ASME Section XI Code.
- In lieu of the 1992 Edition requirements, we propose to implement the 1989 Edition requirements for Appendix I, "Ultrasonic Examinations."
- We propose to implement alternatives to the snubber requirements given in the ASME Code.
- ANO-1 intends to use the provisions allowed in 10 CFR 50.55a(b)(2)(ii) for pressure-retaining welds in ASME Code Class 1 piping (B-J welds).

Attachment 1 gives detailed information on Entergy's request. The specific changes between the 1989 Edition of the ASME Section XI Code and the sections requested to be implemented are summarized and assessed in Attachments 2 and 3. Our evaluation concludes that no reduction in safety results from the use of the requested code sections and that the use of the requested codes provides an acceptable level of quality and safety.

Due to the past uncertainty for acceptability of the desired 1992 Code Edition applicability for Entergy, Arkansas Nuclear One, Unit 1 (ANO-1) and Grand Gulf Nuclear Station (GGNS) will not be able to effectively complete the update to the 1992 Edition of the ASME Section XI Code by the end of their intervals with extensions. The ANO-1 ISI program interval including extension will conclude in December 1996 and the GGNS interval will conclude in January 1997. For ANO-1, the interval inspections will culminate with the thirteenth refueling outage (1R13) to be conducted in the fall of 1996 and, for GGNS, the inspections will culminate with Refueling Outage 8 to be conducted also in the fall of

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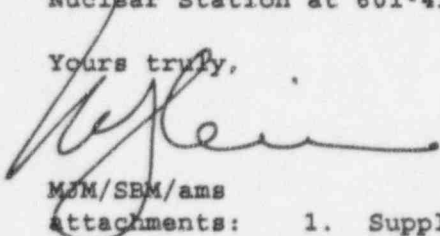
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1996. All current interval ISI activities will be completed for these plants, to the extent practical, at the conclusion of these outages. The next ANO-1 and GGNS outages for the upcoming intervals are not scheduled to begin until the spring of 1998. ANO-1 and GGNS will achieve implementation of the updated ISI programs as soon as practical, but in any case, no later than June 1, 1997. Any repair and replacement activities that may be required until the update is in effect will be conducted to the currently committed ASME Section XI Code Edition including approved code cases and relief requests. Our comparison of the ASME Code Editions currently in use at ANO-1 and GGNS against the 1992 Edition for repair and replacement activities do not reveal any changes that significantly affect safety. In addition, ANO-1 and GGNS will not perform any ISI inspections until the update to the 1992 Edition of the ASME Section XI Code is implemented. Therefore, Entergy proposes alternatives in accordance with 10 CFR 50.55a(a)(3) and requests schedule deferral on updating to the 1992 ASME Section XI Code for ANO-1 and GGNS until June 1, 1997. Entergy believes that this schedule deferral will not result in any reduced ISI capability and will not change the interval timeframe. Therefore, the requested deferral is considered administrative in nature and provides an acceptable level of quality and safety. The original extensions granted to Entergy were independent of any period extensions allowed under the ASME Code. As in our original extension, the ASME Code extension is not the basis for this request. The proposed alternatives are to allow a reasonable length of time for an orderly update.

This letter addresses only the ISI update. The inservice testing update will be addressed in a separate letter.

If you have any questions, please contact Sheri Mahoney at Grand Gulf Nuclear Station at 601-437-6552.

Yours truly,



MJM/SBM/ams

attachments:

1. Supplementary Information Concerning the Update of Inservice Inspection Programs for Arkansas Nuclear One, Grand Gulf Nuclear Station, River Bend Station and Waterford 3 Steam Electric Station
2. Assessment of ASME Section XI Changes Between the 1989 Edition and the 1992 Edition With Portions Through the 93 Addenda
3. Assessment of the Changes that Reduced Requirements (See Next Page)

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Attachment 1 to GNRO-96/00066

Supplementary Information Concerning the  
Update of Inservice Inspection Programs for  
Arkansas Nuclear One,  
Grand Gulf Nuclear Station,  
River Bend Station, and  
Waterford 3 Steam Electric Station

## INTRODUCTION

On October 21, 1993, Entergy Operations, Inc. submitted a Cost Beneficial Licensing Action (CBLA) to request an alternative pursuant to 10 CFR 50.55a(a)(3) that would allow Entergy to continue implementation of the then current Inservice Inspection (ISI) and Inservice Testing (IST) programs and to update the programs to incorporate only those portions of later Editions of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code that are of substantial safety benefit for each of the Entergy plants. As a result of the request, the NRC decided that the request involved generic considerations that would permit the NRC to reduce regulatory burden on itself and licensees without a significant impact on safety. The NRC initiated internal actions intended to culminate in proposed rulemaking similar to our proposed changes.

Recognizing that the delay associated with the rulemaking in lieu of the CBLA approval would adversely affect Entergy's facilities, the NRC proposed to approve an Entergy request to extend the current intervals for our plants.

By letter dated April 14, 1994, Entergy requested an extension of the current intervals for Arkansas Nuclear One, Unit 1, for Grand Gulf Nuclear Station, and for Waterford 3 Steam Electric Station to avoid an unnecessary update of the ISI/IST programs during the interim period while the NRC proceeded with the rulemaking effort.<sup>1</sup> Consequently, the NRC issued a Safety Evaluation Report (SER) and authorized an extension of the current intervals for a period to include an additional refueling outage. A similar interval extension was granted for the River Bend Station in November, 1995.

The NRC stated in the SER that granted the original extensions:

"Based on the low impact on the overall effect of the requested extensions, it would be a hardship without a compensating increase in the level of quality and safety to require the licensee to update the ISI and IST programs for the three plants prior to the issuance of the final rule change to 10 CFR 50.55a which addresses the CBLA issues. Such an imposition could result in the licensee being required to update the programs twice, thereby doubling the efforts necessary to accomplish the program development and implementation and negating any potential savings that might have been achieved by the CBLA."

The NRC-approved extensions of the current intervals for the Entergy plants are shown below.

<u>Plant</u>	<u>End Date for Current Interval</u>
Arkansas Nuclear One, Unit 1	12/01/96
Arkansas Nuclear One, Unit 2	03/01/00
Grand Gulf Nuclear Station	01/01/97
River Bend Station	12/01/97
Waterford 3	07/01/97

<sup>1</sup> The interval end date for the current interval for Arkansas Nuclear One, Unit 2 is March, 2000 and did not need to be extended. River Bend Station was not part of the original request but later submitted a similar request.

By letter dated November 13, 1995, the NRC requested additional information regarding Entergy's plans for updating the ISI and IST programs for our facilities since our interval extensions were soon to expire.

Entergy responded to the request by letter dated January 5, 1996. Entergy proposed to update the ISI programs to the 1992 Edition of the ASME Section XI Code with portions of the 1993 Addenda, excepting Subsection IWE, "Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Plants;" Subsection IWL, "Requirements for Class CC Concrete Components of Light-Water Cooled Plants;" Appendix VII, "Qualification of Nondestructive Examination Personnel for Ultrasonic Examination;" and Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems."

The NRC has not yet endorsed an edition or addenda of the ASME Section XI Code past the 1989 Edition. Therefore, during a telephone discussion on April 8, 1996, the NRC requested more definitive information to support the use of the requested codes for ISI. The NRC also provided a summary of the code changes used, in part, in preparing proposed rulemaking. Additionally, the NRC requested information on the standards that would be used for nondestructive examination qualification in lieu of the provisions of Appendix VII.

#### DISCUSSION OF REQUEST

For ISI, Entergy<sup>2</sup> proposes to adopt the 1992 Edition of the ASME Section XI Code including Appendix VII but excluding Appendix VIII.<sup>3</sup> Entergy is aware that the provisions of Subsections IWE and IWL are to be required in a change to 10 CFR 50.55a in the near future. By our request to use the 1992 Edition of the ASME Code, Entergy does not propose an advance implementation of IWE and IWL prior to completion of rulemaking. For Appendix I, "Ultrasonic Examinations," we propose to implement the requirements of the 1989 Edition currently endorsed in 10 CFR 50.55a. This request is related to the exception to Appendix VIII and is discussed in greater detail later. We propose alternatives to the snubber requirements given in the ASME Code. The details for this request are discussed in greater detail later. In addition, we propose to adopt portions of the 1993 Addenda in lieu of the 1992 Edition for certain requirements:

- I. General Pressure Test Requirements (IWA-5000)
  - A. Table IWA-5210-1,
  - B. IWA-5250(a)(2), and
  - C. IWA-5265(b)
- II. Class 1 Pressure Test Requirements
  - A. Table IWB-2500-1, Examination Categories B-E and B-P, and
  - B. Article IWB-5000 in its entirety

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<sup>2</sup> The Arkansas Nuclear One, Unit 2 (ANO-2) interval ends in March of 2000. ANO-2 intends to update at that time to a Code edition and addenda that will be consistent with all the other Entergy Plants. This will preclude an additional submittal when ANO-2 is required to update.

<sup>3</sup> As a clarification, ANO-1 intends to use the provisions allowed in 10 CFR 50.55a(b)(2)(ii) for pressure-retaining welds in ASME Code Class 1 piping (B-J welds).

- III. Class 2 Pressure Test Requirements
  - A. Table IWC-2500-1, Examination Category C-H, and
  - B. Article IWC-5000 in its entirety
- IV. Class 3 Pressure Test Requirements
  - A. Article IWD-5000 in its entirety

EVALUATION OF THE 1992 EDITION OF THE ASME SECTION XI CODE AND 1993 ADDENDA

Entergy has reviewed the applicable editions and addenda of the ASME Section XI Code and the NRC contractor's report and has evaluated the changes between the 1989 Edition of the ASME Section XI Code endorsed in 10 CFR 50.55a and the ISI requirements that we have proposed to use.<sup>4</sup>

Entergy has divided the changes into five main categories - editorial, errata, increased requirements, reduced requirements or no change in requirements. The terms used in the classification are defined as:

- Editorial     A change made by ASME providing clarification of original requirements and understood by Entergy to be editorial only and is of such a simple nature that it could not be confused as a technical change.
- Errata        The change was issued by ASME as an errata to correct a publication error. The errata corrects the ASME Section XI Code to reflect the change as approved by the ASME Main Committee.
- Increased     Based on Entergy's understanding of the 1989 Edition of the ASME Section XI Code and the change, an increase in requirements has occurred.
- Reduced       Based on Entergy's understanding of the 1989 Edition of the ASME Section XI Code and the change, a decrease in requirements has occurred.
- No Change     Changes made by ASME for the purpose of offering clarification, but based on how the original requirement was understood, a technical change could be assumed. This reflects Entergy's understanding of the original requirements compared to the change and, in Entergy's opinion, no change has occurred.

Entergy did not evaluate Appendix VIII since we are not proposing to implement that section. Entergy believes that the implementation of the requirements of the 1992 Edition with portions of the 1993 Addenda are not contingent on the implementation of Appendix VIII; therefore, not implementing this section will not adversely affect the requirements in the 1992 Edition.

Subsections IWE and IWL have not been evaluated since implementation is being determined by rulemaking.

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<sup>4</sup> Entergy's review did not include review of the nonmandatory appendices since their use is not required and are only offered as guidance.

Additionally, Entergy did not evaluate Appendix I of the 1992 Edition of the ASME Section XI Code since we are proposing to implement the 1989 Edition Code requirements.

TABLE 1 below is a tabulation of this evaluation. The detailed evaluation is given in Attachments 2 and 3.

TABLE 1

Code Section	Total # changes	Total # editorial	Total # errata	Increase Reg	Reduce Reg	No change to Reg
IWA-1000	11	5	0	2	0	4
IWA-2000	23	9	1	8	0	5
IWA-3000	0	0	0	0	0	0
IWA-4000	13	3	0	3	3	4
IWA-5000	22	5	1	3	3	10
IWA-6000	4	4	0	0	0	0
IWA-7000	4	2	1	0	0	1
IWA-8000	0	0	0	0	0	0
IWA-9000	4	4	0	0	0	0
IWA,B,C, &D-all	1	0	0	0	1	0
IWA,B,C, D,&F-all	1	1	0	0	0	0
IWB-all	37	20	3	0	4	10
IWB&C- various	2	2	0	0	0	0
IWB,C,&D -various	2	0	0	1	1	0
IWC-all	22	9	2	2	4	5
IWD-all	14	6	0	2	2	4
IWF-all	19	6	0	2	4	7
App. IV	1	0	0	1	0	0
App. VII	4	1	0	2	0	1
SUM	184	77	8	26	22	51

As shown from the above data, 42% of the changes are editorial only (77 of 184) and 4% of the changes are errata changes (8 of 184). These editorial and errata changes have no impact on safety and serve to clarify requirements, make reference changes or to correct typographical errors. No new requirements are added nor existing requirements deleted from the original intent with these changes. Entergy believes that no further justification is necessary to implement these changes; therefore, these changes are explained in no greater detail.

Increased requirements account for 14% of the changes (26 of 184). Changes that resulted in no change to technical requirements contribute 28% of the total changes (51 of 184). Entergy does not believe that these increased requirements lead to an overall reduction in safety; therefore, no further justification is necessary to implement these changes.

Reduced requirements account for only 12% of the changes (22 of 184). Attachment 3 provides an assessment of the safety impact for each of these changes that result in reduced requirements.

In the determination of the safety impact of each reduced requirement change in Attachment 3, some changes are assessed as an increase in safety. In making this determination, Entergy considered whether the change was an overall enhancement to safety, without regard to the cost to implement the change. For those changes that are categorized as an increase in safety, none are safety significant changes that would result in a substantial increase in the overall protection of the public health and safety. Also, Entergy identified no changes that result in a decrease in the overall protection of the public health and safety. Therefore, the use of the requested codes provides an acceptable level of quality and safety.

#### ALTERNATIVES TO ASME SNUBBER REQUIREMENTS

Historically, Technical Specifications (TS) have imposed surveillance requirements for inspection and testing of all safety-related snubbers. Since then however, several changes have occurred that have led to differences between the location and control of plant's snubber programs. In December 1990, Generic Letter (GL) 90-09 was issued that allowed an alternative inspection schedule. Additionally, the improved Technical Specifications allowed snubber programs to be relocated to licensee-controlled documents and controlled by the provisions of 10 CFR 50.59. ASME Section XI also publishes snubber requirements. Because of these changes, the current snubber programs at the Entergy plants are quite different. Details on Entergy's current programs are summarized below.

ANO-1&2 -	Program controlled by TS which complies with ASME Section XI 1980 Winter 81 Addenda with approved relief, and GL 90-09 incorporated into the TS.
GGNS -	Program with GL 90-09 incorporated relocated to licensee-controlled document with changes justified under 10 CFR 50.59.
RB -	Program complies with ASME Section XI 1980 Winter 81 Addenda with deviations as approved by Amendment #49 Safety Evaluation and incorporation of GL 90-09.
W3 -	Program controlled by TS which complies with ASME Section XI 1980 Winter 81 Addenda.

Since these programs and the related details have been approved by the NRC, Entergy proposes to continue to implement our currently approved snubber programs as alternatives to the snubber requirements specified in the ASME Code. Any previously granted relief or deviations would apply during our next intervals, as well.

We have evaluated the ASME Code snubber requirements and have identified no changes that significantly affect safety. ASME Section XI references standard ASME/ANSI OM (Part 4) - 1987 with OMA - 1988, which does not include GL 90-09 and we believe is outdated. Our current programs have been found to be acceptable by the NRC for our current intervals. Additionally, any substantial safety improvements would be separately addressed by rulemaking. Therefore, the use of our current snubber programs for our next intervals provide an acceptable level of quality and safety.

It is Entergy's intent to create consistent programs at our plants when safety, operational or financial benefit can be gained. We believe that consistency among our snubber programs would provide an operational and financial benefit. Therefore, in the future, we intend to evaluate the

snubber programs at each of our plants with the aim of creating consistent programs. We expect that changes would be accomplished during our conversions to Improved Technical Specifications, through other regulatory actions or through the 10 CFR 50.59 process, as applicable.

#### NONDESTRUCTIVE EXAMINATION (NDE) QUALIFICATIONS AND CERTIFICATIONS

Entergy has reviewed its original proposal concerning Appendices VII and VIII. Entergy now proposes to implement the requirements specified in the 1992 Edition of the ASME Section XI Code, including Appendix VII but excluding Appendix VIII for ultrasonic examinations at this time.

Entergy also proposes to implement the 1989 Edition requirements for Appendix I in lieu of the 1992 Edition. The significant change between the two editions is the endorsement of Appendix VIII in the 1992 Edition. Since we do not propose to implement Appendix VIII at this time, we believe it will be administratively simpler to comply with the requirements of the 1989 Edition of the ASME Section XI Code for Appendix I instead of taking exception to the 1992 Edition.

As part of the upcoming rulemaking for 10 CFR 50.55a, it is our understanding that the NRC intends to require, by way of a backfit evaluation, the implementation of Appendix VIII on an accelerated schedule. The NRC has been aware of Entergy's opposition to the mandatory implementation of Appendix VIII for some time. We do not believe that these requirements provide a substantial safety benefit, much less a benefit commensurate with the cost of implementation. Entergy intends to participate fully in the review of the draft rule when it is published for public comment.

Instead of mandatory implementation, Entergy does support voluntary use of the provisions of Appendix VIII for selected applications. For several years, Entergy has participated in the industry initiative to develop a program to support the use of Appendix VIII.

However, we do not believe it is appropriate or necessary for us to commit to Appendix VIII at this time since Entergy is not aware of any changes in the 1992 Edition of the ASME Section XI Code that rely on compliance with Appendix VIII as the basis for the change. Of course, Entergy will comply with the resolution of the rulemaking when completed.

#### CODE CASES AND RELIEF REQUESTS FOR FUTURE INTERVALS

Several code cases have been approved for use at the Entergy plants for their current intervals. Some of the code cases have been incorporated into the sections of the code that Entergy is proposing to implement or into the most recent revision of Regulatory Guide 1.147 (Revision 11, October 1994). Those included in Regulatory Guide 1.147 have received generic approval for use. By granting the update request, the NRC allows Entergy to use any of the code cases that have been incorporated into the section of the ASME Section XI Code requested to be implemented. Therefore, we conclude that specific approval is not required for those provisions for subsequent intervals.

Some of the code cases approved for use at the Entergy plants have not been incorporated into the code section to be implemented (for example, the 1992 Edition or the 1993 Addenda) or into Regulatory Guide 1.147. For those code

cases, we propose to continue the use of these code cases for future intervals at the plants for which the use of the code case has been approved. These code cases have been approved for the current intervals. We believe that continued use of these code cases is acceptable.

Additionally, as the programs at each of the plants are being developed, relief requests and desired code cases may be required. Any relief requests and code case requests will be submitted separately in accordance with 10 CFR 50.55a and the ASME Section XI Code.

#### SUBMITTAL OF THE UPDATED PROGRAMS

Entergy has not identified a requirement for the NRC to review and approve the actual programs; therefore, we will implement the programs at the end of the current intervals including any extension or schedule deferral that might be allowed by the ASME Section XI Code or granted by the NRC. However, we intend to provide a copy of an updated ISI program to the NRC after it becomes effective.

REFERENCES

1. NRC letter concerning Update of Inservice Inspection (ISI) Programs for Arkansas Nuclear One, Grand Gulf Nuclear Station, River Bend Station, and Waterford Steam Electric Station, Unit 3 (TAC Nos. M94472, M94471, M94454, M94488, M94473), dated 4/15/96 (GNRI-96/00087)
2. Entergy letter concerning Response to Request for Additional Information Re Update of ISI/IST Programs (TAC No. M89274), dated 1/5/96 (CNRO-96/00001)
3. NRC letter concerning Request for Additional Information - Update of Inservice Inspection (ISI) and Inservice Testing (IST) Program (TAC No. M89274), dated 11/13/95 (GNRI-95/00203)
4. NRC letter concerning Interim Extension of 120-Month Interval for Inservice Inspection and Inservice Testing Programs for River Bend Station, Unit 1 (TAC No. M93235), dated 11/13/95
5. Entergy letter (River Bend Station) concerning 10-Year ISI/IST Inspection Interval Extension Request, dated 7/28/95
6. NRC letters concerning Interim Extension of 120-month Interval for Inservice Inspection and Inservice Testing (ISI/IST) Programs for Arkansas Nuclear One, Unit 1 (TAC No. M89337), dated 8/2/94; for Grand Gulf Nuclear Station (TAC No. M89274), dated 8/1/94; for Waterford Steam Electric Station, Unit 3 (TAC No. M89544), dated 8/2/94
7. Entergy letter concerning Proposed Alternative to 10 CFR 50.55a(f) and (g), Extension of 120-Month Periods, dated 4/14/94 (GNRO-94/00061)
8. Entergy letter concerning 10 Year ASME Code Meeting, dated 3/24/94 (GNRO-94/00047)
9. NRC letter concerning Summary of December 6, 1993, Meeting Regarding Entergy's Proposed Alternative to the Requirements of 10 CFR 50.55(f) and (g), "10-Year Inservice Inspection and Inservice Testing Update", dated 12/15/93 (GNRI-93/00222)
10. Entergy letter concerning Proposed Alternatives to 10 CFR 50.55a(f) and (g), 10-Year Inservice Inspection and Inservice Testing Update, Supplementary Information, dated 12/9/93 (GNRO-93/00159)
11. NRC letter concerning Request for Additional Information Related to Alternatives to 10 CFR 50.55a(f) and (g), 10-Year Inservice Inspection and Inservice Testing Update - Grand Gulf Nuclear Station (TAC No. M88076), dated 12/3/93 (GNRI-93/00205)
12. Entergy letter concerning Proposed Alternative to 10 CFR 50.55a(f) and (g), 10-Year Inservice Inspection and Inservice Testing Update, dated 10/21/93 (CNRO-93/00032)

Attachment 2 to GNRO-96/00066

Assessment of ASME Section XI Changes  
Between the 1989 Edition and the 1992 Edition  
With Portions Through the 93 Addenda

## Assessment of ASME Section XI Changes Between the 1989 Edition and the 1992 Edition With Portions Through the 93 Addenda

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
SUBSECTION IWA					
1.	1400(c)	89A	Clarified plans by adding the term "inspection".	Editorial	
2.	1400(j)	89A	Added "in accordance with written programs and plans"	No Change in Requirements	This change to the Owner's Responsibilities only reiterates what is required by IWA-4000 and IWA-7000
3.	1400	90	Changes subparagraphs (c), (k), and (l) and adds subparagraph to clarify the Owner's responsibilities regarding flaw evaluation.	Editorial	
4.	1400(p)	90A	Added to require the Owner to record areas in components where flaws exceeded the acceptance criteria and evaluations by analysis were performed to allow continued operation. Also, the time cycle or component life determined by the evaluation is required to be recorded.	Increased Requirement	Although it is inherent that such evaluations be recorded and available for use in later Owner's activities, the Code has never specifically stated. This change implements the assumed obvious.
5.	1400, 2420	90A	Clarification of 1400(c) and 2420 regarding inspection plans and schedules.	Editorial	
6.	1400(c)	89A	Changes "plans and schedules" to "inspection plans and schedules."	Editorial	
7.	1400(j)	89A	Adds "in accordance with written programs and plans" to the Owner responsibility "performance of repairs and installation of replacements."	Editorial	
8.	1600-1 TBL	89A	Updates the table to reference the latest edition of N626, ANSI/ASME N626b-1988, which covers qualification and duties for Authorized Nuclear Inspection Agencies and personnel.	No Change in Requirements	There are no significant changes in the updated referenced N626, thus all factors are "no-change."
9.	1600-1 TBL	90A	NQA-1 is updated to the 1989 Edition.	No Change in Requirements	NQA-1 is not mandatory as Section XI allows 10 CFR 50 Appendix B as an alternate.
10.	1600-1 TBL	90A	Added ASTM E 1065	No Change in Requirements	ASME's reference to E 1065 is from Appendix VIII. Since Entergy is not implementing Appendix VIII, this additional reference would not be applicable.
11.	1600-1 TBL, 2120(c)	91A	References the 1990 Edition and 1991 Addenda (N626a-1991) of ASME N626 which requires that Authorized Inspection Agencies be accredited by ASME. Other changes to the Table are an errata correction to the OM-6 and OM-10 references and an editorial reorganization of the references.	Increased Requirements	This is an increase from the 1989 Edition because AIAs now require accreditation by ASME.

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
12.	2110,2200,2430	91A	Updates the affected IWA paragraphs to include reference to the published Subsection IWL, which includes inservice inspection requirements for concrete containments.	Editorial	No effect on Entergy since Entergy is not implementing the IWE or IWL requirements at this time.
13.	2110(d)	89A	Deletes reference to the "Inspection Specialist" because the "Inspection Specialist" designation has been deleted from ANSI/ASME N626.	Editorial	
14.	2110(d)	91A	Although 2110(d) is indicated in the 91 Addenda as being changed, no noted change could be identified.	No Change in Requirements	
15.	2120(c)	91A	By the addition of this paragraph, the Authorized Inspection Agency is required to be accredited by ASME in accordance with ASME N626.	Increased Requirements	Accreditation by ASME of the Inspection Agency has not been required in the past.
16.	2200(b)	89A	Adds reference to nonmandatory Appendix D for surface preparation for nondestructive examination.	Editorial	
17.	2210	90	Added general requirements applicable to VT-1, VT-2 and VT-3 visual examinations. ASME Section V, Article 9 is invoked, with new technical requirements and procedure demonstration.	Increased Requirements	The change invokes ASME Section V, Article 9 for additional controls on visual inspections and now requires procedure demonstration. Additional controls have been placed on lighting requirements, especially when using battery operated portable lights.
18.	2210-1 TBL	90A	Table added to impose controls on: minimum illumination, Maximum Direct Examination Distance, and maximum Procedure Demonstration Lower Case character Height, mils for each visual method.	Increased Requirements	These controls provide additional requirements that define direct verses remote examinations. This combined with procedure demonstration results in more inspections being performed using the remote method that may have been previously classified as direct.
19.	2210-1 TBL	92	Change of height unit from "mils" to the standard Code inch unit. This also includes changing "nondestructive testing personnel" to "nondestructive examination personnel" in the References part of the Organization of Section XI on Page xdv.	Editorial	
20.	2211	90A	All inspection methodology for the VT-1 has been deleted and is contained in the new 2210. 2211 only states the purpose of the VT-1.	Increased Requirements	More technical controls on procedure qualification, examination distance, and lighting has been added.
21.	2212	90A	The reference to functional test has been eliminated and the generic term "system pressure test" is used. Additionally, performance of the VT-2 examination in accordance with IWA-5240 has been replaced with a generic reference to 5000. And the examination distance and illumination requirements contained in IWA 2210-1 are imposed.	Increased Requirements	More technical controls on procedure qualification, examination distance, and lighting has been added.
22.	2213	90A	Revised to identify the function and purpose of the VT-3 examination. The additional controls that were added with the change to 2210 impose the additional requirements for VT-3 that were previously not required.	Increased Requirements	More technical controls on procedure qualification, examination distance, and lighting has been added.

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
23.	2215	90A	Clarifies that replication can only be used on VT-1 and VT-3 methods.	No Change in Requirements	Although the Code has never prohibited the use of replication with a VT-2, it is not likely that detection of leakage would have been attempted with replication.
24.	2321, 2322	91A	Revises the specification of minimum vision acuity for NDE personnel. The non-quantitative Jaeger J-1 is replaced with the quantitative Snellen 20/25 (6.25 minute included angle). This is related to any parts of Section XI where nondestructive examinations are required.	Increased Requirements	Provides for a more specific quantitative method for determining visual acuity. This is the current method used by most medical facilities.
25.	2322(c)	91A	Adds "Alternatively," to the second sentence in the paragraph which provides an alternative for Level III NDE personnel recertification examinations.	Editorial	The alternative was included but not previously labeled as such.
26.	2322, 2323, APP VII	90A	Deletes the requirement for Level III NDE personnel to repeat the Basic examination for recertification. This is compatible with current ASNT practice. This change also adds the Practical (hands-on) examination for certification of Level III's. It includes revisions to both IWA-2300 and Appendix VII. It also includes minor editorial cleanup of Appendix VII. This is related to any parts of Section XI where nondestructive examinations are required.	Increased Requirements	Although this change deletes the requirement to repeat the Basic portion of the examination during recertification, it is still an increase in requirements due to the addition of the practical examination during initial examinations. Repeated demonstration of basic NDE skills are inappropriate for individuals that are re-demonstrating their knowledge and skills at an upper technical level.
27.	2340	89A	Changes from "Level III candidates shall be a graduate of an accredited high school or shall have passed a standardized high school equivalency test" to "Level III candidates shall have high school or equivalent education."	Editorial	
28.	2410 through 2413	91A	Deletes IWA-2411, -2412, and -2413 that contained requirements for Code Editions/Addenda for PSI and ISI that conflicted with 10 CFR 50.55a. It revises IWA-2410 to reference 10 CFR 50.55a.	No Change in Requirements	The change deleted Code requirements that were in conflict with 10 CFR 50.55a, and replaced them with reference to 50.55a. The Licensee follows the requirements of 50.55a when in conflict with the Code.
29.	2420	90A	Added "and schedules" in the first line of the paragraph.	Editorial	
30.	2430	89A	Provides clarification of "commercial service." Footnote 5 (paragraph IWA-2430) is deleted and the IWA-9000 definition of "commercial service" is revised.	Editorial	
31.	2430	90	This is related to the technical changes to Subsection IWF which provide a sampling plan for support examinations. The referencing words in IWA regarding IWF are changed. This change did not appear in the 1990 Addenda but was published as Errata in the 1991 Addenda.	Editorial	
32.	2431 & 2432	89A	This is an administrative change that provides for operation after 40 years. It starts with Paragraph IWA-2431, and includes IWA-2432, IWB-2411, IWC-2411, and IWD-2411 and Tables IWB-2412-1, IWB-2500-1, IWC-2412-1, IWD-2412-1, and IWE-2500-1.	No Change in Requirements	This change provides guidance on how to establish inspection intervals after exceeding the first 40 years of commercial operation. The change invokes the interval requirements of program B which is the current program followed by all Entergy plants.

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
33.	2440	90A	Adds requirements governing use of Section XI Code Cases.	No Change in Requirements	Although the changes impose new requirements, they are consistent with regulatory guidance in 50.55a and Reg. Guide 1.147 on use of Code Cases.
34.	2641.2(c)	92	This corrects an error in a paragraph reference.	Errata	
35.	4000	91A	This major editorial change combines the repair and replacement rules into one subarticle that were previously scattered through twelve subarticles. It clarifies the Code requirements.	Editorial	This action was passed by ASME Section XI as an editorial action which precluded any technical changes associated with the change.
36.	4110,7110	91	References nonmandatory Appendix J, Guide to Plant Maintenance Activities and Section XI Repairs/Replacements.	Editorial	
37.	4130	89A	This change introduces the Repair Plan and recognizes the difference between the Repair Program and Repair Plan. Amount of information required to contained in the Repair Program and Repair Plan has increased, but the Code recognizes that the Repair Program may be comprised of a set of documents (procedures) that contain the required information.	Increased Requirements	Repair Plans are now required in addition to the Repair Program. The Repair Program may be the generic document that controls repair/replacement activities, but the Repair Plan is specific to the activity being performed.
38.	4310	91A	Clarifies the rules for evaluation of defect removal areas and adds reference to "appropriate flaw evaluation rules of Section XI" in addition to the reference of the Construction Code.	No Change in Requirements	IWA-4310 was in error as written in the 89 Edition, it seemed to require flaw evaluation for acceptance by only using the Construction Code, or Section III. In fact, Section XI has always emphasized the use of Section XI flaw evaluation criteria and only permitted the use of the Construction Code, if Section XI did not provide evaluation criteria. This change recognizes the use of Section XI as an acceptable method for evaluating remaining conditions for acceptance.
39.	4322	89A	Clarifies the Code intent that material must be <u>mechanically</u> removed from a thermally processed repair area. This action also moves requirements from Subsection IWB to Subsection IWA.	No Change in Requirements	After metal removal by thermal processes, the Code has always required an additional 1/16 in. be removed. The change that occurred in 1991 clarified the intent to show that the 1/16 in. material removal has to be by mechanical methods. Regardless of the Code change, Entergy has always interpreted the Code to require <u>mechanical</u> removal of that last 1/16 in.
40.	4331	91A	Eliminates the requirement for surface examination of the removal cavity when the full thickness of the weld is removed and the backside of the joint is inaccessible. This makes IWA-4331 consistent with Section III, Division 1, NB-4453.1.	Reduced Requirements	Prior to the 91 Addenda, all defect removal areas required a surface examination (PT or MT) before welding (even if removal resulted in a hole through the item being repaired). The revised Code has eliminated the surface examination requirement if removal results in a hole through the item to be repaired and the backside is inaccessible for cleaning.
41.	4500	90A	This total rewrite updates the Section XI welding requirements for exempting welds from PWHT when PWHT is required by the Construction Code. It deletes confusing terms and makes the Section XI repair welding requirements compatible with the Section III welding requirements.	Increased Requirements	Added controls have been placed on activities such as size of preheated area, baking of electrodes, and specific requirements have been established for repair without postweld heat treatment of Class MC and CC components. Regardless of the changes made, proof of acceptance is through qualification of the process. Methods and requirements of qualification have not been reduced.

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
42.	4500	91A	Incorporates the GTAW process (Code Case N-432).	No Change in Requirements	This is a newly permitted process that was not addressed in the 89 Edition of Section XI. Acceptance of the process is through qualification. Methods and requirements for qualification are similar to those used in qualification of the SMAW process.
43.	4513.1-1 FIG.	91A	Re-identified Figure 4513-1 to 4513.1.1 and clarified how halfbead is used in conjunction with the temperbead, and placed a limitation on the depth of the prepared cavity to 1/2 T max.	Increased Requirements	The clarification of how to combine the halfbead and temperbead techniques is editorial, but the limitation on cavity depth is a more stringent change.
44.	4710(a)	92	Expanded the pressure test requirements from just repair welds to include installation welds.	Editorial	Part of the 4000/7000 combination
45.	4700(b)(7)	89A	(b)(7) was added to exempt seal welds from the hydrostatic test requirements following a repair by welding.	Reduced Requirements	This change eliminates seal welds from hydrostatic testing when the seal weld is installed as part of a repair or replacement.
46.	4700(c)	89A	Deletes Subparagraph (c) which excluded repair welds that were made without required postweld heat treatment from the hydrostatic exemption.	Reduced Requirements	Repair welds that were made to Code provisions that exempted postweld heat treatment when it was required by the Construction Code always required hydrostatic testing and the normal exemptions from hydrostatic testing were not applied. By the change that occurred in the 89 Addenda, this requirement has been removed and if the repair meets the exemption criteria, it is now also exempt from hydrostatic testing.
47.	4710(c)	91A	Added a new subparagraph (c) to indicate that mechanical joints made in the installation of replacements require pressure testing in accordance with IWA-5211(a)	No Change in Requirements	This was added for clarification of the old IWA-5214(e) that permitted mechanical connections associated with replacement to be leakage tested in lieu of a hydrostatic test.
48.	5100	91A	IWA-5110 and 5120 revised to recognize the difference between periodic testing and repair/replacement testing, respectively. Also, IWE and IWL have been included.	Editorial	
49.	5211	91A	Changed from 5 pressure test methods (system leakage, system functional, system inservice, system hydrostatic, and system pneumatic) to 3 pressure test methods (system leakage, system hydrostatic, and system pneumatic)	No Change in Requirements	When there were 5 pressure test, the system leakage test had no hold time, when the 5 test were combined into 3 tests, the system leakage test was revised to require hold times consistent with the deleted functional and inservice test. No changes were made in the hydrostatic and pneumatic test requirements.
50.	5210-1 TBL	93	First changed in 91 Addenda to recognize the reduction in types of pressure tests from 5 to 3 and the change in 93 Addenda to recognize changes to paragraph references in IWB, IWC, and IWD - 5000.	Editorial	
51.	5212(e)	91A	This addition permits portions of systems that operate with two different system functions to be tested to the pressure conditions of the function requiring the higher of the two pressures.	No Change in Requirements	This was not addressed by the earlier Code, but is an assumed and practical approach.
52.	5212(g)	91A	This change permits the use of any means to obtain required test conditions within the limits of plant Technical Specifications.	No Change in Requirements	This was not addressed by the earlier Code, but is an assumed and practical approach.

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
53.	5213(a)	91A	Revised to establish test condition hold time for system leakage tests. The 89 Edition had no hold times for the system leakage test, but the system leakage test was only performed on Class 1 boundaries during each refueling outage. The 91 Addenda now requires no hold time provided the system has been in operation for at least four hours, or requires a 10 min. hold time for noninsulated systems and 4 hours for insulated; and now the system leakage test is used on Class 1, 2, and 3, where for Class 2 and 3 the older Code required an inservice test or a functional which had hold times comparable to the new hold times for the new system leakage test.	Increased Requirements for Class 1  Increased Requirements for Class 2 and 3	Prior to the 91A change, the Class 1 leakage test did not have a specified hold time. The Class 2 and 3 system functional tests only required a 10 minute hold time and the system inservice tests had no hold time if the system was in operation for four hours. Therefore, the new requirements could result in additional hold times based on the condition of the system when tested.  With the 91A change the system is required to be in operation for at least four hours, or a hold time of 10 min. for noninsulated and four hours for insulated systems is required. For Class 2 and 3 systems, the 89 Edition required periodic inservice and/or functional pressure tests which were not as restrictive as is now in the 1992 Edition.
54.	5213(b)	91A	Although this paragraph is annotated with "A91", no changes were identified.	No Change in Requirements	
55.	5213(c)	91A	Although this paragraph is annotated with "A91", no changes were identified.	No Change in Requirements	
56.	5214(a)	90A	Corrects designation of referenced paragraphs regarding pressure testing of repairs and replacements.	Errata	
57.	5214	91A	Revised to address preservice pressure testing. It clarifies that preservice pressure test is not required except when required for repairs and replacements.	No Change in Requirements	Section XI has always required some level of pressure testing subsequent to repairs and replacements, but has never been referred to as a preservice test.
58.	5221	91A	Revised to encompass boundary descriptions for all Class components instead of just Class 1.	No Change in Requirements	The actual test boundaries are unchanged, they include all components that are pressurized under normal system service.
59.	5224(b)	91A	Revised to require hydrostatic tests of systems that have multiple safety functions to be tested in separate tests combining the components based on minimum required design pressure ratings. Previous Codes required test boundaries to be based on component classifications.	Increased Requirements	This results in more individual tests and prevents testing components rated for higher pressures at conditions equal to the rating of the lowest pressure component within the test boundary.
60.	5241(a), (b), 5242, 5243, and 5244	91A	An editorial change that relocates "VT-2" in the sentence structure to improve sentence clarity.	Editorial	
61.	5246	91A	The 91 Edition deleted 5246 which limited the pressure test of repairs and replacements to only the affected item.	No Change in Requirements	Although this appears to be an increase in requirements because a complete system hydrostatic test is now specified, IWA-5120 in the 91A indicates that if the repaired or replaced item is isolable, then only that portion needs testing.
62.	5250(a)(2)	90A	Revised to eliminate the requirement to remove all bolting from the leaking connection. The revised Code only requires one bolt nearest the leak to be removed, and remaining bolts removed if the initially	Reduced Requirements	Because the 89 Edition requires all bolts to be removed when leakage is detected at mechanical connections, and the revised Code only requires one bolt to be removed, this is a reduction in requirements.

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
63.	5250(a)	91A	Although this paragraph is annotated with "A91", no changes were identified.	No Change in Requirements	
64.	5250(a)(3)	91A	Editorially changed to correct reference changes that resulted from the combining of IWA-4000 and IWA-7000.	Editorial	
65.	5250(a)(2)	93	Restrictions were added to exclude gaseous systems from the requirements to remove bolting when leakage is detected at mechanical connections.	Reduced Requirements	The change has eliminated bolt removal and inspection when leakage is detected in gaseous systems.
66.	5260	91A	Title changed from "Instruments for Pressure Tests" to "Instruments for System Hydrostatic Tests"	Reduced Requirements	Before the change, the requirements of 5261 through 5265 applied to all type pressure testing, now they only apply to the system hydrostatic test. No requirements are specified for instruments used in the system leakage tests.
67.	5265(b)	92A	Added clarification that due to existing limits for not exceeding 106% of the specified test pressure, the higher elevations of the test boundary may not achieve the specified test pressure. The clarification helped to indicate that this condition is acceptable.	No Change in Requirements	This revision incorporated an intent inquiry and only clarified the original intent of the Code. The Code has always limited the maximum pressure to 106% of the specified test pressure. If the test column is of sufficient height, the top of the test column would have never reached test pressure and still complied with the 106% limitation at the bottom of the test column.
68.	5300	91A	The revision removed reference to specific types of pressure tests and replaced them with a general term of "system pressure test" in association with test records.	Editorial	
69.	6000, 1400	90A	This extensive editorial action clarifies the requirements for records and reports.	Editorial	All changes resulting from this action are administrative and only affect record generation, record keeping, and record maintenance.
70.	6000	91A	Two changes occurred in the 91 addenda regarding record keeping, these changes are not evaluated because these are administrative requirements that have no direct impact on plant safety.		
71.	6220(c)	89	Changes "shall be prepared" to "shall be required."	Editorial	All changes resulting from this action are administrative and only affect record generation, record keeping, and record maintenance.
72.	6220(e)	89A	Changes "Plans" to "Inspection plans."	Editorial	All changes resulting from this action are administrative and only affect record generation, record keeping, and record maintenance.
73.	6240	90	Clarifies the ISI Summary Report submittal requirement.	Editorial	All changes resulting from this action are administrative and only affect record generation, record keeping, and record maintenance.
74.	7000	91A	IWA-7000 was combined with IWA-4000 to eliminate redundancy in Code Requirements for Repair and Replacement rules.	Editorial	This action was passed by ASME as an editorial change with no technical substance. Also, in Entergy's review, no technical changes were noted.
75.	7210(c)(1)	90A	Adds missing word. "Owner's" to "Owner's Specification."	Errata	

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
76.	7320	89A	Adds provisions for the pressure testing of mechanical joints of replacements attached to systems or components by mechanical methods. The title changes from "WELDING" to "INSTALLATION," and the addition of a definition of "installation" to the IWA-9000 Glossary is part of this action.	No change in Requirements	No changes took place with existing requirements for welding. However, the paragraph has been expanded to address pressure testing of mechanical connections used in the installation of replacements. The testing requirements specified are the same as those contained in previous Code editions under IWA-5214(e), therefore, there is no change in the Code, only relocation of existing requirements.
77.	Old 7400(a)(4), IWA-4120 in the 91A rewrite	91	Clarifies the NPS 1 and smaller exemption. It states, "The term piping includes tubing. However, the NPS 1 exemption does not apply to heat exchanger tubing, or sleeves or plugs used for heat exchanger tubing."	Editorial	The change clarifies the original intent to include tubing in the 1 in. and under exemption as piping, and to exclude heat exchanger tubing.
78.	9000	89A	Definitions are added for "overpressure protection" and "safety function." Other actions revised the definition for "commercial service" and added a definition for "installation" in this 1989 Addenda.	Editorial	
79.	9000	90A	Adds definitions of "text information," "unit of data storage," and "bobbin coil." These terms are used in Appendix IV which covers eddy current examination of steam generator tubing.	Editorial	
80.	9000	90A	Revises and adds 28 definitions related to flaw evaluation to the Glossary. It also includes changes to nonmandatory Appendix A. Definitions from A-9000 that have been moved to IWA 9000 are deleted and "crack" is changed to "flaw."	Editorial	
81.	9000	91A	Deletes "inservice life" from the Glossary and adds definitions for "design life" and "design lifetime."	Editorial	
SUBSECTIONS IWA-D					
82.	See Description	93	IWA, B, C, & D-5000 and the corresponding 2500-1 Tables for Class 1, 2, and 3 have been revised to replace the hydrostatic test with the leakage test.	Reduced Requirements	This change eliminates the requirements for performing hydrostatic testing of Class 1, 2, and 3 systems on a periodic basis and replaces the test with a leakage test performed at nominal operating pressures. The leakage test is performed with less severe conditions than the hydrostatic.
SUBSECTIONS IWA-F					
83.	see description	91A	Several different terms have been in Section XI for "power plants" (e.g., "power plant" and power unit). This changes all these to simply "plant." Also changes "light-water cooled power plants" to "light-water cooled plants" in titles and text of the subsections. Many locations within Section XI are changed by this action as shown by a Table included in BNCS letter ballot 424.	Editorial	

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
SUBSECTION IWB					
84.	2411(c)	89A	Added to give guidance for actions after completing the first 40 years of Inspection Program A.	No Change in Requirements	All Entergy plants use Inspection Program B.
85.	2412-1 TBL	89A	Revised to clarify requirements for the 1st 120 month interval and the successive 120 month intervals by deleting reference to only 4 intervals.	No Change in Requirements	This change only recognized that plant life may be extended beyond four 120 month intervals.
86.	2411,2412	91A	Corrects "inspection period" to "inspection interval" in two places.	Editorial	
87.	2412(a)	91A	Provides clarification for the items that are not required to be examined during the interval to meet the percentages specified for each period.	Editorial	
88.	2412(a)	91A	Added provisions that permitted items of the same Examination Category when the quantity is less than three to be examined in any two periods, and for one item, in any one period.	No Change in Requirements	This change offered clarification to prevent owners from taking one item (a weld) and dividing it into three segments with three separate examinations to meet the percentage requirements of 2412-1
89.	2420(b)	91A	Completely rewritten for improved clarification. No changes in requirements have occurred.	Editorial	
90.	2430(a)	91A	The 89 Edition required additional examinations to equal the remaining number of welds, areas, or parts remaining for the current inspection period and the subsequent period. If none were scheduled for the immediate subsequent period, it shall be extended to include the next period that contained examinations for the same category. In the 91 Addenda, the additional examinations were limited to a number equal to those scheduled for the period for which the initial examination was performed. But, the selection shall be from welds, areas, or parts of the same material and service and may require expanding into additional systems	Reduced Requirements	Although the total number of items examined may be less than required by the 89 Edition, the later Code requires an engineered approach in selecting the items for additional examinations.
91.	2430(b)	91A	If the additional examination of 2430(a) identified new flaws, the remainder of all like items shall be examined. The 91 Addenda clarified that only those areas subject to the same type of flaw required examination.	Reduced Requirements	Although the total number of items examined may be less than required by the 89 Edition, the later Code requires an engineered approach in selecting the items for additional examinations.
92.	2500(b)	89A	Clarifies that examination category B-F is "Pressure Retaining Dissimilar Metal Welds in Vessel Nozzles." This also includes changes to Table IWB-2500-1 (Exam Categories B-F and B-J) Figure IWB-2500-8, Table IWB-3410-1, and Paragraph IWB-3514.	Editorial	This clarifies Code requirements. Previously it was unclear as to which examination category, B-F or B-J, applied to dissimilar metal welds.

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
93.	2500-1 (B-A)	91A	An editorial change was made in the "Deferral of Inspection to End of Interval" column for Items B1.30 and B1.40 for clarification. The change still refers to note 3 which was not changed, the provisions for deferral are the same.	Editorial	
94.	2500-1 (B-E)	93	Deleted	No Change in Requirements	Examination Category B-E applied to partial penetration nozzles and required them to be pressure tested each interval. In reality, each nozzle is being pressure tested each refuel outage as part of the overall reactor pressure boundary under Category B-P.
95.	2500-1 (B-F)	89A 91A 92E	Added "In Vessel Nozzles" to the title of the table and it appears that the 89 Addenda deleted Item Numbers B5.130, B5.140, and B5.150 which pertained to piping. This deletion would be appropriate since the Table had been re-titled for Vessel Nozzles. But, in the 91A, these item numbers appear to be reinstated, but the title was not changed on the page. This resulted in page 69 (issued in the 89A) for Category B-F being titled for Vessel Nozzles, and page 70 (issued in the 91A as the continuation page for B-F) retaining the old title for all dissimilar metal welds. When the 92 Edition was published, it appears that this error was corrected, because item No. B5.130, B5.140, and B5.150 and the continuation page for Category B-F were not included.	Editorial	Provided clarification to ensure that Category B-F requirements were not imposed on piping dissimilar welds. Piping dissimilar welds are addressed by Category B-J.
96.	2500-1 (B-F)	89A	Deleted Note 1, which used to indicate that examinations are required of each safe end weld in each loop and connecting branch of the reactor coolant system.	No Change in Requirements	The note was confusing in that the table has always required all welds to be examined. By deleting the note, no reduction in examinations has occurred, and clarification has been provided.
97.	2500-1 (B-G-1)	89A	Changes the required examination from surface to visual (VT-1) for reactor vessel closure head nuts (Examination Category B-G-1, Item No. B6.10.). Additionally, where acceptance criteria was in course of preparation, IWB-3517 has now been specified because of use of the visual criteria.	Reduced Requirements	Prior to the 89 Addenda, the RPV Head nuts require either an MT or PT examination, but without a specified acceptance criteria. With this change, a visual VT-1 is now required with a controlled acceptance criteria. This change now treats RPV head nuts comparable with pressurizer and steam generator nuts.
98.	2500-1 (B-J)	89A	This change and the same change to Table IWC-2500-1 clarifies the in-service examination exemption is only applicable to <u>ultrasonic</u> examinations for reflectors transverse to the weld length direction for ferritic piping.	Editorial	
99.	2500-1 (B-P)	91A	Notes 1, 2, 3, and 7 have been deleted from the table, and Notes 4, 5, and 6 have been renumbered accordingly. The deleted notes provided test descriptions and test boundaries. This information has been relocated into IWB-5000.	No Change in Requirements	This was a change to reorganize the Code into the original intent. The 2500-1 Table describes when the test is required, and other sections are supposed to describe how the test are to be performed. This change relocated some "how-to" information from the Table into IWB-5000.
100.	2500-1 (B-Q)	89A	Under the "Successive Inspection Intervals" column, reference to 2nd, 3rd, and 4th has been deleted.	No Change in Requirements	This change is consistent with other changes that were made to remove limitations to 4 intervals.
101.	Fig. 2500-8	89A	Added "Nozzles" to the title.	Editorial	

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
102.	3113, 3123, 3133, & 3143	91A	Deleted reference to IWB-4000.	Editorial	
103.	3410-1 TBL	89A	Added "vessel nozzles" to the description for Category B-F.	Editorial	
104.	3512	89A	Changed the title to "Standards for Examination Category B-D, Full Penetration Welded Nozzles in Vessels".	Editorial	
105.	3514	89A	Added "in Vessel Nozzles" to the title	Editorial	
106.	3610-1 FIG	90	Removes an erroneous "S" dimension in this figure which covers flaws for analytical evaluation of clad components. Note that this was not identified as errata on the ASME Code Summary of Changes.	Errata	
107.	3641.3	89A	Corrects an error in the 1989 Code. In four places, "greater than" signs (>) are change to "less than" signs (<).	Errata	
108.	3650	89A	Provides methods for evaluating flaws in ferritic piping.	No Change in Requirements	The addition of IWB -3650 provides new methods for evaluating ferritic piping for acceptance when flaws exceed the criteria of IWB-3514.2. Because there were no previous methods provided, this is not considered an increase or decrease to existing requirements.
109.	4000	91A	IWB-4000 has been incorporated into IWA-4000 and IWB-4000 now only references back to IWA-4000.	Editorial	
110.	4241,4242	90A	Corrects errors in referenced paragraph identification.	Errata	
111.	4300	89A	Provides methods for repair of heat exchanger tubes by sleeving.	No Change in Requirements	The addition of IWB-4300 provides new methods for repair of heat exchanger tubes by a sleeving process. Because this is a new process and not a change to existing processes, this is not considered an increase or decrease to existing requirements.
112.	4332.1(a)1	90A	Clarifies the essential variable "ligament thickness" for tube repair using tube sleeving by fusion welding.	Editorial	
113.	5210(a)	91A	Grammatical changes to enhance sentence structure. No technical changes are included	Editorial	
114.	5210(a)(2)	91A	Changes a reference from IWA-5211(d) to IWA-5211(b), this is required due to the reduction from 5 tests to 3 tests.	Editorial	
115.	5210(b)	91A	Changed to permit the contained fluid in the system to be used as the pressurizing medium, previous Code required the reactor coolant to be used as the pressurizing medium.	Reduced Requirement	This change permits the use of other than reactor coolant for the pressurizing medium, including the addition of outside water sources.

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
116.	5240	91A	The test boundaries for the system leakage test and the system hydrostatic test have been moved to this location from Table 2500-1, Category B-P.	Editorial	
117.	7000	89A	This is a major editorial change which moves common replacement requirements from individual Subsections to the IWA General Requirements Subsection. It includes editorial changes to IWB-7100, -7300, -7320, -7400, -7600; IWC-7200, -7300, -7400; IWD-7200, -7300, 7400; IWF-7100, -7300, -7310, -7400, and -7600.	Editorial	
118.	7000	91A	Relocated all IWB-7000 into IWA-4000, new IWB-7000 only provides reference to IWA-4000.	Editorial	
119.	7100	89A	Revised to clarify that the requirements of IWB-7000 are in addition to the requirements of IWA-7000.	No Change in Requirements	Although IWB-7000 has never stated that the contained requirements are in addition to the requirements of IWA-7000, there was enough direction in IWA that Entergy has always understood that both IWA and IWB were combined for a complete set of requirements.
120.	7300	89A	Title revised to read "Mechanical Joints and Connections" rather than "Installation not Requiring Welding".	Editorial	
SUBSECTIONS IWB-C					
121.	1220, 1221, & 1222	91A	Removed the parenthesis from "or parts of components" in IWB and IWC 1220 and from "or Portions of Systems" in IWC 1221 & 1222.	Editorial	
122.	3112, 3122	91	Corrects the reference from IWA-6220 to IWA-6230 since in the 1990 addenda the paragraph numbering was changed.	Editorial	
SUBSECTIONS IWB-D					
123.	1220 & IWD-2500-1 TBL	91A	Adds to the exemptions for Classes 1, 2 and 3, "Integral attachments of supports and restraints that are inaccessible due to being encased in concrete, buried underground, or encapsulated by guard pipe." The changes are located in IWB-1220(b), IWC-1223, and IWD-1220. This action also clarifies the Table IWD-2500-1 examination category D-A integral attachment examination requirements.	Reduced Requirements	This change provides automatic elimination of in accessible integral attachments, where as relief requests were required prior to the change
124.	2420	91A	The changes made in IWB and IWC-2420 are editorial and only offered clarification. The addition of IWD-2420 provides new requirements for successive examinations that are similar to Class 2.	Increased Requirements	The changes to Class 1 and Class 2 are editorial, but the addition of requirements for successive examinations for Class 3 are new requirements that impose successive examinations for subsequent periods. The Class 3 portion of the change is considered an increase in requirements.

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
SUBSECTION IWC					
125.	1221,1222	89A	Provides clarification of the Section XI exemptions applicable to Class 2 examinations and adds restrictions that require the exemption size be determined based on cumulative sizes for components with multiple connections. A new foot note 2 has been added and old foot note 2 has been renumbered to 3.	Increased Requirements	Most of the change is editorial in nature except for the use of cumulative sizes for determining the exemption size for components with multiple connections. This change may take components like accumulators that were once exempt and now include them into the inspection program because their cumulative inlet or outlet size may exceed the size exemption of NPS 4.
126.	1221,1222	91A	Clarifies the exemptions from volumetric and surface examinations for components within specific systems.	Editorial	
127.	2412	91A	Clarifies examination schedule requirements. The same change was made to IWB-2412.	Editorial	
128.	2430(a)	91A	Prior to the change, the Code required additional examinations be performed if flaws are found that do not meet the acceptance criteria. The number of additional exams shall equal the number of examinations initially required during the inspection, with no guidance on how to select the additional items. The 91A requires the number of additional examinations to equal 20% of the total number of welds, areas, or parts included in the inspection item that are scheduled for the interval. Additionally, the selected items are required to be of similar material and service, and may require inclusion of systems other than the one containing the flaw.	<p>The number of additional examinations is a Reduced Requirement</p> <p>The method of selecting the items for examination is an Increased Requirement</p>	<p>The old requirement required the number to equal that chosen for inspection, this has always been interpreted to be a number equal to the quantity specified for the period of the inspection (33% of the interval). The change reduces this total number of items for reinspection to 20% of the interval population.</p> <p>Previously, an engineered approach to selecting additional examination areas was not required. With the change, some knowledge of the failure mechanism, materials and service is necessary in selecting the areas for additional examinations.</p>
129.	2430(b)	91A	Prior to the change, if the additional exams performed by 2430(a) found unacceptable flaws, the items remaining in the Examination Category required examination to the extent specified by IWC-2500-1. The change requires the Owner to identify the remaining items that that are of the same material, service, and subject to the same type of flaws and perform the additional examinations.	Reduced Requirement	Because flaws are not typically generic in nature, the ability to use an engineered approach to selecting the examination areas should reduce the total number of additional examinations performed on the second level of additional exams.
130.	2430(c)	91A	The addition of (c) emphasizes that the additional examinations performed by 2430(b) & (c) do not count for the examinations required in the next period.	No Change in Requirements	Entergy has never interpreted the Code to permit additional examinations performed because of detected flaws to also be credited towards the examinations that are required in the next examination period.
131.	2500-1 (C-F-1)	91A	Although this table is enunciated with an "A91" indicating a change has been made, no change was detected.	No Change in Requirements	
132.	2500-1 (C-F-2)	89A	This change and the same change to Table IWB-2500-1 clarifies inservice examination exemption for ultrasonic testing for reflectors transverse to the weld length direction for ferritic piping.	Editorial	

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
133.	2500-1 (C-F-2)	90A	Changes the note references of the sixth and seventh column heads of Examination Category C-F-2 to match the notes at the bottom of the table.	Errata	
134.	2500-1 (C-H)	91A	Notes 1, 2, and 4 through 7 have been deleted. Notes 3 and 8 have been renumbered appropriately. The information provided by these notes has been relocated into IWC-5000 because it provided requirements for test methods and boundaries.	Editorial	
135.	3113, 3124, & 3133	91A	Deleted reference to IWC-4000.	Editorial	
136.	3500	90A	Corrects errors in column heading of tables IWC-3510-1 and IWC-3511-1 which cover allowable planar flaws, surface and subsurface.	Errata	
137.	3513.1(c)	90A	Provides clarification that when the conformational surface examination is performed and a surface flaw is not detected that the requirements of 3513.1 (a) and (b) still apply. If a surface flaw is detected, then the criteria of 3513.2 applies. There is no change between the 89 Edition and the 90 Addenda other than this editorial clarification.	Editorial	
138.	5210 & 5221	91A	Rewritten to delete the system functional test and the system inservice test. This change is in conjunction with the change to IWA-5211 that reduces the types of pressure tests from 5 to 3.	No Change in Requirements	See Item No. 49
139.	5222(b)	91A	The requirements for 0-15 psi storage tanks have been relocated to 5222(c)	Editorial	
140.	5210	93	See Item No. 049, IWA-5211 change above. The change implements the new pressure test requirements for 3 tests in lieu of 5 tests. Clarification is also provided in that 5210 now refers to IWC-2500 and IWA-5000 for test requirements in lieu of providing test descriptions.	No Change in Requirements	The change in 5210 implements the changes that took place in IWA-5000 that reduced the type of pressure tests from 5 to 3. Also, the change recognizes the format of the Code and now references the user to IWC-2500 and IWA-5000 for test requirements and test methods.
141.	5222(d)	91A	Incorporates Code Case N-479 and permits the Class 2 portion of the BWR main steam system to be hydro tested with the Class 1 test provided the Class 2 portion is not capable of being isolated from the Class 1 portion by the boundary valve.	Reduced Requirements	The Class 1 hydrostatic test can be performed at pressures less than that required for the Class 2 test. This test is as a severe as test as originally required. This change is non-significant because the 93 Addenda has eliminated the requirements for hydrostatic testing of Class 1, 2, and 3 systems.
142.	5222(g)	91A	Adds IWC-5222(g) to exempt open-ended vent and drain lines and open-ended safety and relief valve discharge lines from hydrostatic testing.	Reduced Requirements	Although this change has eliminated portions of Class 2 piping from the hydrostatic test, the change is of little consequence since the 93 Addenda has replaced the hydrostatic test with the system leakage test. The boundary for the leakage test would also exclude this piping from the test.

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
143.	5240	91A	Added to provide test boundary requirements, this information was relocated from IWC-2500-1.	Editorial	
144.	7000	89A	IWC 7200, 7300, and 7600 has been deleted and reference is now made to IWA-7000 for Class 2 replacement requirements.	No Change in Requirements	The small amount of information that was contained in IWC-7000 was either a repeat of IWA-7000, or it was relocated into IWA-7000.
145.	7000	91A	Relocated all IWC-7000 into IWA-4000, new IWC-7000 only provides reference to IWA-4000.	Editorial	
SUBSECTION IWD					
146.	1210,1220,2200 2500,2500-1 TBL	91	Clarifies the examination requirements for Class 3 systems. It simplifies Table IWD-2500-1 by combining 3 examination categories into 2 new examination categories.	Editorial	
147.	1220.1, 1220.2	89A	Provides clarification of the Section XI exemptions applicable to Class 3 examinations and requires the cumulative size for components with multiple connections be used for application of the exemption. Added new Foot Note 1 that provides the definition of "in piping" same as Item No. 125 change above.	Increased Requirements	This change provides some clarification with additional restriction to require the use of the cumulative size for components (this has most impact on vessels) with multiple connections in application of the exemption criteria.
148.	2411	89A	Added paragraph (b) to address interval requirements after the initial 40 years of service for Inspection Program A	No Change in Requirements	All Entergy Plants use Inspection Program B
149.	2430	91A	Prior to the change, the Code for Class 3 did not address additional examinations if flaws are found that do not meet the acceptance criteria. The 91A requires additional examinations to equal 20% of the total number or welds, areas, or parts included in the inspection item that are scheduled for the interval. Additionally, the selected items are required to be of similar material and service, and may require inclusion of systems other than the one containing the flaw.	Increased Requirements	Prior to the 91A, there were no requirements to perform additional examinations if a flaw was detected that exceeded the acceptance criteria. The change is consistent with the 91A requirements for Class 2.
150.	2412-1 TBL	89A	Eliminated reference to 2nd, 3rd, and 4th interval and replaced them with "successive intervals". This provides inspection requirements for plants that operate beyond the first 40 years.	No Change in Requirements	All Entergy Plants use Inspection Program B, and if plant life extension is accomplished and operation beyond the 4th interval is obtained, Entergy would continue using Inspection Program B.
151.	2500-1 TBL	90A	Corrects the reference to IWF-2510 in note 3 of Examination Categories D-A, D-B, and D-C to accommodate recent changes to IWF-2510.	Editorial	
152.	2500-1 TBL	91A	The table was revised to reflect the changes in categorization of Class 3 systems. The table now has two categories D-A for integral attachments, and D-B for pressure testing.	Editorial	

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
153.	2500-1 (D-A)	91A	Note added to clarify which integral attachments require examination.	Reduced Requirement	Prior to the change, all integral attachments associated with supports or snubbers were included into the examination population. The changes made in the 91A may exclude a small population of integral attachments that have been inspected previously, primarily those that are internal to the component, if any.
154.	2500-1 (D-C)	91A	Deleted	No Change in Requirements	The requirements from D-C have been incorporated into D-A and D-B.
155.	5210 & 5221	91A	Rewritten to delete the system functional test and the system inservice test. This change is conjunction with the to IWA-5211 that reduces the types of pressure tests from 5 to 3.	No Change in Requirements	See Item No. 49.
156.	5222(b)	91A	The requirements for 0-15 psi storage tanks has been relocated to 5222(c)	Editorial	
157.	5240	91A	Added to provide test boundary requirements, this information was relocated from IWD-2500-1	Editorial	
158.	5223(f)	92	IWD 5223 (f) is revised to exclude open ended piping from safety and relief valves from pressure testing. Prior to the revision, this type piping that discharged into the suppression pool required a pressure test at 90% of the submergence head pressure to demonstrate leakage integrity.	Reduced Requirements	Prior the change, a pressure test was required, now no test is required.
159.	7000	91A	Relocated all IWD-7000 into IWA-4000, new IWD-7000 only provides reference to IWA-4000	Editorial	
SUBSECTION IWF					
160.	1210	90A	Eliminated the reference to Plate and Shell Supports, Linear Supports and Component Standard Supports, and replaced it with piping supports, and supports other than piping supports.	Editorial	
161.	1210-1 FIG	90A	Deletes the figure which displayed examples of catalog items (component standard supports) that was not relevant to any Code requirement.	Editorial	

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
162.	1230	90A	<p>Adds support exemption criteria which only restates, in the reverse of what is, and has been specified in IWF-2510. The <u>new</u> exemption criteria states that supports connected to items exempted by IWB-1220, IWC-1220, &amp; IWD-1220 are also exempt. IWF-2510 states that components supports for components that are required to be examined under IWB, IWC, and IWD shall be examined.</p> <p>Additionally, the exclusion of supports that are incased in concrete, buried or encapsulated in guard pipe has also been included in the exemption.</p>	<p>No Change in Requirements</p> <p>Reduced Requirements</p>	<p>Although an exemption criteria has been developed, it only states the reverse of what has been in the Code for years regarding which supports are selected for examination.</p> <p>This Code change presents the obvious and eliminates requirements to examine what is physically inaccessible and has been addressed by Licensees and the NRC through numerous relief requests.</p>
163.	2200(a)	90A	Clarifies which supports receive preservice examination. All supports not exempted by IWF-1230 are required to receive preservice examination.	Editorial	
164.	2220(b)	91A	<p>IWF-2200 completely rewritten to recognize the difference between initial plant startup preservice inspection requirements and preservice inspection requirements associated with, adjustments, repairs, and replacements.</p> <p>IWF-2210 added to establish initial examination preservice requirements. The change also included a provision for performing the preservice prior to heatup and cool down if the system operated at a temperature of 200°F or less.</p> <p>IWF-2220 has been added to clarify requirements for preservice examination of supports after adjustments, repairs, and replacements. Additionally, if the affected support is located on a system that operates at a temperature above 200°F, an additional preservice inspection is required subsequent to a heatup and cooldown cycle unless determined unnecessary by an evaluation.</p>	<p>No Change in Requirements</p> <p>Reduced Requirements</p> <p>Reduced Requirements</p>	<p>Because of the preservice inspection requirements contained in IWA/B/C/D/F 4000/7000, the industry has always recognized the need for performance of preservice after repairs and replacements. This change enhances that requirement and recognizes it as an inspection different from initial startup.</p> <p>Prior Code requirements required the preservice inspection to be performed after heatup and cooldown on all systems regardless of system operating temperature.</p> <p>If agreed that previous Code Editions/Addenda required a new preservice after adjustments, repairs or replacements, then this is a relaxation in that it eliminates a post heatup and cooldown preservice inspection if the system is less than or equal to 200°F.</p>
165.	2410(b)	90A	Provides clarification of the inspection schedule requirements. Examination requirements after 40 years are added as has been done for the other Section XI Subsections.	Editorial	

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
166.	2420	90A	Changes title "SUCCESSIVE INSPECTION INTERVALS" to "SUCCESSIVE INSPECTIONS."	Editorial	
167.	2430(a)	90A	Clarified that the additional number of supports required for examination is equal to the number scheduled for the inspection period that the initial inspection was performed in. Previous Code words may have been interpreted to only require the number to be equal to the number of supports scheduled for inspection during the particular outage that the initial inspection was performed in.	Increased Requirements	Because of the permissiveness of pre-existing Code Words, this clarification adds additional requirements by imposing a larger number of supports for inspection if flaws are found during the initial inspection.
168.	2430(c)	90A	This new paragraph adds additional examination requirements in the event the first level of additional examinations identifies a failed support. Because of this change, examinations are expanded to nonexempt supports in other systems that are potential for the same failure mode. And if these additional exams also identify other failures, exempt supports shall also be included that could be affected by the same observed failure mode.	Increased Requirements	The new requirements expand the number of supports that are potential for examination to an unlimited quantity until the failure mode is understood and the inspections are directed towards conditions that would promote similar failures.
169.	2500	90A	Accompanies the technical change to Table IWF-2500-1 and clarifies what is to be looked at during examinations of supports.	No Change in Requirements	Centrally locates support inspection boundaries into a single location. In the 89 Addenda, it required the use of Figure IWF 1300-1 and the IWF-2500-1 Table to determine the inspection boundaries of a support.
170.	2500-1 TBL	90A	<p>The 89 Edition basically required 100% of the supports on components required to be examined under the requirements of IWB, IWC and IWD to be inspected each interval except that for multiple components with the same design and function only required the supports for one component to be inspected.</p> <p>The 1990 Addenda reduced the number of supports requiring inspection to equal 25% for Class 1 piping, 15% for Class 2 piping, and 10% for Class 3 piping and 100% of supports for components other than piping except for multiple components, then only the supports for one component is required. Additionally, the required percentage shall be comprised of supports from each where the sample size is proportional to the number of nonexempt supports in the system. All supports are required to be categorized into one of three groups based on designed function.</p>	Reduced Requirements	<p>By the 90 Addenda change, the total number of supports examined during a 120 month interval is reduced.</p> <p>This change incorporates Code Case N-491.</p>
171.	2510	90A	Although the IWF-2510 paragraph is identified as a paragraph that was changed by the 90 Addenda, no change was detected.	No Change in Requirements	
172.	3000	90A	Change in three places, "positions" to "settings".	No Change in Requirements	
173.	5200,5300	92	Goes along with the Item No. 009 change to Table IWA-1600-1 for reference of OM, Part 4.	Editorial	

Item No.	Paragraph, Figure, Table	Year	Description	Classification of Change	Explanation
174.	5400	89A	Deletes reference to O&M-1987, Part 4 (Rev. 1) for repair and replacement of snubbers because the O&M repair/replacement requirements differ from the Section XI requirements. Reference is now made to IWA-4000 and IWF-4000 (repairs) and IWA-7000 and IWF-7000 (replacements).	No Change in Requirements	This change eliminated confusion because the 89 Edition required compliance with both the OM Code and Section XI for repair and replacement of snubbers. In some instances this could result in contradictions in requirements. With this change, repairs and replacements now shall comply with ASME Section XI, which were the original requirements before the existence of the OM Code.
175.	7000	89A	Deletes IWF 7100, 7300, 7400 and 7600 and reference is now made to IWA-7000 for support replacement requirements.	No Change in Requirements	The small amount of information that was contained in IWF-7000 was either a repeat of IWA-7000, or it was relocated into IWA-7000.
APPENDIX IV					
176.	entire Appendix	90	Deletes reference to ASME Section V, Article 8 for performance of eddy current examinations and has been re-written to include ASME Section XI's eddy current examination requirements. The new requirements are in effort to implement industry activities to enhance eddy current testing techniques.	Increased Requirements	Although this is an increase in requirements from the 89 Edition to the 90 Addenda, it is not an increase in requirements for Entergy. The Entergy PWRs perform examinations to the criteria of plant Technical Specifications and EPRI NP 6201, PWR Steam Generator Examination Guidelines, which exceeds the requirements of Appendix IV and is the bases of changes being made by Section XI in the area of eddy current testing.
APPENDIX VII					
177.	4322(b)	90A	An editorial change to eliminate the double use of the word "percent" in the same sentence.	Editorial	
178.	4330(c)	90A	Addition of requirements for initial certification of a Level III to include a practical examination using the requirements for a Level II practical examination.	Increased Requirements	Previously, Level III Certification did not require a practical examination.
179.	4330(d)	90A	Provides requirements for recertification of Level III's to also include a practical examination unless other provisions can be met.	Increased Requirements	Previously, Level III Certification did not require a practical examination.
180.	4342	90A	Changes recognize the requirement for the addition of the practical examination.	No Change in Requirements	This change only provides direction on who has to administer or approve the examinations, the impact of requiring a practical examination is stated above.

Attachment 3 to GNRO-96/00066

Assessment of the Changes that Reduced Requirements

## Assessment of Changes That Reduced Requirements

Item No.	Paragraph, Figure, Table	Year	Description	Safety Impact	Explanation
SUBSECTION IWA					
40.	4331	91A	Eliminates the requirement for surface examination of the removal cavity when the full thickness of the weld is removed and the backside of the joint is inaccessible. This makes IWA-4331 consistent with Section III, Division 1, NB-4453.1.	Increased Safety	The revised Code has eliminated the surface examination requirement if removal results in a hole through the item to be repaired and the backside is inaccessible for cleaning. Liquid Penetrant and Magnetic Particle examinations of repair areas that have completely penetrated the item allowing the examination medium to enter the part without subsequent removal is harmful to the repair weld and may interfere with system cleanliness requirements. Because the repair weld has exceeded permitted depth limitations, it will require volumetric examination. If by some chance the flaw was not completely removed, it would be detected in the final examination and additional repair required.
45.	4700(b)(7)	89A	(b)(7) was added to exempt seal welds from the hydrostatic test requirements following a repair by welding.	No Change	Seal welds, by design, are not load carrying welds and only provide a <u>second</u> sealing barrier. The threads of the mechanical connection are required to be designed for the sealing mechanism. The connection should pass appropriate testing without the seal weld. With Code Cases N-498-1 and N-416, only leak testing would be performed.
46.	4700(c)	89A	Deletes Subparagraph (c) which excluded repair welds that were made without required postweld heat treatment from the hydrostatic exemption.	No Change	Prior to the work performed to support Code Case N-416, it was believed that the hydrostatic test was a structural test to verify integrity of the repaired item. Now it is understood that the stress introduced by the Section XI hydrostatic test does not challenge the item and only served as an elevated pressure test to detect existing through wall leakage. Whether the weld was made with or without PWHT does not affect its leak tightness and these welds do not require different tests.
62.	5250(a)(2)	90A	Revised to eliminate the requirement to remove all bolting from the leaking connection. The revised Code only requires one bolt nearest the leak to be removed, and remaining bolts removed if the initially removed bolt shows evidence of degradation.	No Change	The intent of the original Code was to identify degraded bolting. The change still accomplishes this and directs the Owner to look in the most likely locations to identify the degradation rather than completely disassemble the connection. If the bolting that is being wetted from the leak is not degraded, then obviously, bolting that is not wetted would not be degraded from the leak.
65.	5250(a)(2)	93A	Restrictions were added to exclude gaseous systems from the requirements to remove bolting when leakage is detected at mechanical connections.	No Change	Because of Entergy's involvement with this Code change, we are aware that when "gaseous" was used by the Code, they did not intend to include steam systems. Its purpose is to exclude systems such as air, nitrogen, etc. from requirements that would result in bolting removal to inspect bolting degradation caused by leakage. By applying the Code with this understanding, a reduction in safety has not occurred, because leakage of pure gas (those used in safety related BWR and PWR systems) will not cause degradation in bolting.

Item No.	Paragraph, Figure, Table	Year	Description	Safety Impact	Explanation
66.	5260	91A	Title changed from "Instruments for Pressure Tests" to "Instruments for System hydrostatic Tests"	No Change	Prior to the 1986 Addenda, these requirements only applied to instruments used for pneumatic and hydrostatic tests. In the 86A, the title was revised to imply that the requirements now applied to instruments used for <u>ALL</u> pressure tests. The change in the 91A returned the Code back to the requirements as they existed prior to the 86A change. In addition to any requirements of the Code, instruments used in performing safety related tests, such as a system leakage test, would be controlled by the Owner's QA program meeting 10 CFR 50 Appendix B, Criterion 12.
82.	See Description	93A	IWA, B, C, & D-5000 and the corresponding 2500-1 Tables for Class 1, 2, and 3 have been revised to replace the hydrostatic test with the leakage test.	No Change	Prior to the work performed to support Code Cases N-416 and N-498, it was believed that the hydrostatic test was a structural test to verify integrity of repaired/replaced items and the system. Now it is understood that the stress introduced by the Section XI hydrostatic test does not challenge the item or the system and only served as an elevated pressure test to detect existing through wall leakage. Detection of through wall leakage is not diminished by the reduction in test pressure that occurs from the old Section XI hydrostatic test and the newly permitted system leakage test. Several SE's have been issued by the NRC approving a system leakage test as an alternative to the hydrostatic test in accordance with Code Cases N-416 for repairs/replacements and N-498-1 for periodic tests.
90.	2430(a)	91A	The 89 Edition required additional examinations to equal the remaining number of welds, areas, or parts remaining for the current inspection period and the subsequent period. If none were scheduled for the immediate subsequent period, it shall be extended to include the next period that contained examinations for the same category. In the 91 Addenda, the additional examinations were limited to a number equal to those scheduled for the period for which the initial examination was performed. But, the selection shall be from welds, areas, or parts, of the same material and service and may require expanding into additional systems	Increased Safety	Safety is not obtained in quantities or increased by blindly increasing quantities. Although the total number of items included for additional examinations may be less than required by the 89 Edition, the later Code requires an engineered approach in selecting the items for additional examinations. The basis for selection requires the Owner to have some level of understanding of conditions that caused the flaw and to select additional areas that may be subject to the same conditions even if it means looking outside of the system that the flaw was found in. The 89 Edition allows for a blind expansion of examinations that depends on a hit-and-miss approach to finding other similar failures.
91.	2430(b)	91A	If the additional examination of 2430(a) identified new flaws, the remainder of all like items shall be examined. The 91 Addenda clarified that only those areas subject to the same type of flaw required examination.	Increased Safety	Although the 89 Edition may result in a complete inspection of all like piping welds, it is evident that some large portion of those examinations would be in areas not subject to the same failure. The clarification made by the Code change limited the scope expansion to only those areas/conditions that would be subject to the same degradation mechanism. This change provides increased assurance that if additional degradation is occurring that is similar to the initially detected flaw, it will be detected appropriately.
97.	2500-1 (B-G-1)	89A	Changes the required examination from surface to visual (VT-1) for reactor vessel closure head nuts (Examination Category B-G-1, Item No. B6.10.). Additionally, where acceptance criteria was in course of preparation, RWB-3517 has now been specified because of use of the visual criteria.	No Change	Industry history has demonstrated a high level of confidence in the RPV nuts. Significant flaws in these items have not been a source of concern since the requirements to perform surface examinations have been implemented. The VT-1 method is a proven examination that is capable of detecting conditions that may lead to a nut failure. Changing the inspection of the RPV nuts from a surface examination to a visual examination is a change that brings consistency to the examination requirements for like items (nuts on pressurizers and steam generators.) This change provides adequate assurance that degradation of RPV nuts will still be detected in a timely manner to prevent undetected failures.

Item No.	Paragraph, Figure, Table	Year	Description	Safety Impact	Explanation
115.	5210(b)	91A	Changed to permit the contained fluid in the system to be used as the pressurizing medium, previous Code required the Reactor Coolant to be used as the pressurizing medium.	No Change	The safety function of the test is to detect leaks. The detectability of leaks is not based on whether or not the test medium is reactor coolant, or an outside water source. Although this permissiveness may cause concerns with water chemistry requirements, there is no adverse effect on the Code pressure test.
SUBSECTIONS IWB-D					
123.	1220 & IWD-2500-1 TBL	91A	Adds to the exemptions for Classes 1, 2 and 3, "Integral attachments of supports and restraints that are inaccessible due to being encased in concrete, buried underground, or encapsulated by guard pipe." The changes are located in IWB-1220(b), IWC-1223, and IWD-1220. This action also clarifies the Table IWD-2500-1 examination category D-A integral attachment examination requirements.	No Change	Integral attachments that are inaccessible due to being encased in concrete, buried underground or encapsulated in guard pipes have been the subject of numerous relief requests. Historically, examination of these integral attachments has been considered a Code requirement determined to be impractical. Relief has been granted on numerous occasions and to Entergy's knowledge, none of the integral attachments involved with these reliefs have failed as a result of not performing the inservice examination. This Code change is an effort to recognize the inability to perform these examinations and eliminate the unnecessary burden of obtaining site specific relief for each of these situations.
SUBSECTION IWC					
128.	2430(a)	91A	Prior to the change, the Code required additional examinations be performed if flaws are found that do not meet the acceptance criteria. The number of additional exams shall equal the number of examinations initially required during the inspection, with no guidance on how to select the additional items. The 91A requires the number of additional examinations to equal 20% of the total number or welds, areas, or parts included in the inspection item that are scheduled for the interval. Additionally, the selected items are required to be of similar material and service, and may require inclusion of systems other than the one containing the flaw.	Increased Safety	Safety is not obtained in quantities or increased by blindly increasing quantities. Although the total number of items included for additional examinations may be less than required by the 89 Edition, the later Code requires an engineered approach in selecting the items for additional examinations. The basis for selection requires the Owner to have some level of understanding of conditions that caused the flaw and to select additional areas that may be subject to the same conditions even if it means looking outside of the system that the flaw was found in. The 89 Edition allows for a blind expansion of examinations that depends on a hit-and-miss approach to finding other similar failures.
129.	2430(b)	91A	Prior to the change, if the additional exams performed by 2430(a) found unacceptable flaws, the items remaining in the Examination Category required examination to the extent specified by IWC-2500-1. The change requires the Owner to identify the remaining items that are of the same material, service, and subject to the same type of flaws and perform the additional examinations.	Increased Safety	Because flaws are not typically generic in nature, the ability to use an engineered approach to selecting the examination areas should reduce the total number of additional examinations performed on the second level of additional exams. However, because an engineered approach is used in selecting the additional examinations, the Owner's efforts will be concentrated in areas that are most likely to be degraded by the same mechanism that caused the initial flaw. This provides a higher level of confidence that if additional degradation is occurring due to the same mechanism, that it will be detected.

Item No.	Paragraph, Figure, Table	Year	Description	Safety Impact	Explanation
141.	5222(d)	91A	Incorporates Code Case N-479 and permits the Class 2 portion of the BWR main steam system to be hydro tested with the Class 1 test provided the Class 2 portion is not capable of being isolated from the Class 1 portion by the boundary valve.	No Change	The affect of using Class 1 verses Class 2 test pressures for conducting these tests are no longer a concern due the efforts associated with the development and issuance of Code Cases N-416 and N-498-1. Prior to the work performed to support Code Cases N-416 and N-498, it was believed that the hydrostatic test was a structural test to verify integrity of repaired/replaced items and the system. Now it's understood that the stress introduced by the Section XI hydrostatic test does not challenge the item or the system and only served as an elevated pressure test to detect existing through wall leakage. Detection of through wall leakage is not diminished by the reduction in test pressure that occurs from the old Section XI hydrostatic test and the newly permitted system leakage test. Several SE's have been issued by the NRC approving a system leakage test as an alternative to the hydrostatic test in accordance with Code Cases N-416 for repairs/replacements and N-498-1 for periodic tests.
142.	5222(g)	91A	Adds IWC-5222(g) to exempt open-ended vent and drain lines and open-ended safety and relief valve discharge lines from hydrostatic testing.	No Change	Although this change has eliminated portions of Class 2 piping from the hydrostatic test, the change is of little consequence since Code Case N-498-1 and the 93 Addenda has replaced the hydrostatic test with the system leakage test. The boundary for the leakage test would also exclude this piping from the test.
SUBSECTION IWD					
153.	2500-1 (D-A)	91A	Note added to clarify which integral attachments require examination.	No Change	Prior to the change, all integral attachments associated with supports or snubbers were included into the examination population. The changes made in the 91A may exclude a small population of integral attachments that have been inspected previously, primarily those that are internal to the component, if any. This change is consistent with the description contained in the 89 Edition for Class 1 and Class 2 integral attachments. The elimination of Class 3 integral attachments that perform a support function and are located internal to the component would have a very minimal effect on the total number of Class 3 integral attachments being inspected.
158.	5223(f)	92	IWD 5223 (f) is revised to exclude open ended piping from safety and relief valves from pressure testing. Prior to the revision, this type piping that discharged into the suppression pool required a pressure test at 90% of the submergence head pressure to demonstrate leakage integrity.	No Change	Although this change has eliminated portions of Class 3 piping from the hydrostatic test, the change is of little consequence since Code Case N-498-1 and the 93 Addenda has replaced the hydrostatic test with the system leakage test. The boundary for the leakage test would also exclude this piping from the test.

Item No.	Paragraph, Figure, Table	Year	Description	Safety Impact	Explanation
SUBSECTION IWF					
162.	1230	90A	<p>Adds support exemption criteria which only restates, in the reverse of what is, and has been specified in IWF-2510. The <u>new</u> exemption criteria states that supports connected to items exempted by IWB-1220, IWC-1220, &amp; IWD-1220 are also exempt. IWF-2510 states that components supports for components that are required to be examined under IWB, IWC, and IWD shall be examined.</p> <p>Additionally, the exclusion of supports that are encased in concrete, buried or encapsulated in guard pipe has also been included in the exemption.</p>	No Change	<p>Although an exemption criteria has been developed, it only states the reverse of what has been in the Code for years regarding which supports are selected for examination.</p> <p>This Code Change presents the obvious and eliminates requirements to examine what is physically inaccessible and has been addressed by Licensees and the NRC through numerous relief requests. Supports that are inaccessible due to being encased in concrete, buried underground or encapsulated in guard pipes have been the subject of numerous relief requests. Historically, examination of these supports has been considered a Code requirement determined to be impractical. Relief has been granted on numerous occasions and to Entergy's knowledge, none of the supports involved with these reliefs have failed as a result of not performing the inservice inspections. This Code change is an effort to recognize the inability to perform these examinations and eliminate the unnecessary burden of obtaining site specific relief for each of these situations.</p>
154.	2220(b)	91A	<p>IWF-2200 completely rewritten to recognize the difference between initial plant startup preservice inspection requirements and preservice inspection requirements associated with, adjustments, repairs, and replacements.</p> <p>IWF-2210 added to establish initial examination preservice requirements. The change also included a provision for performing the preservice prior to heatup and cool down if the system operated at a temperature of 200°F or less.</p> <p>IWF-2220 has been added to clarify requirements for preservice examination of supports after adjustments, repairs, and replacements. Additionally, if the affected support is located on a system that operates at a temperature above 200°F, an additional preservice inspection is required subsequent to a heatup and cooldown cycle unless determined unnecessary by an evaluation.</p>	No Change	<p>Prior Code requirements required the preservice inspection to be performed after heatup and cooldown on all systems regardless of system operating temperature. The change is consistent with general industry belief that for temperatures below 200°F, thermal growth is of no concern because of the minimal amount of growth that occurs and the ability of typical clearances to tolerate this minimal growth. As a result either no, or minimal, thermal loads are imposed on the supports.</p>

Item No.	Paragraph, Figure, Table	Year	Description	Safety Impact	Explanation
170.	2500-1 TBL	90A	<p>The 89 Edition basically required 100% of the supports on components required to be examined under the requirements of IWB, IWC and IWD to be inspected each interval except that for multiple components with the same design and function only the supports for one component is required to be inspected.</p> <p>The 1990 Addenda reduced the number of supports requiring inspection to equal 25% for Class 1 piping, 15% for Class 2 piping, and 10% for Class 3 piping and 100% of supports for components other than piping except for multiple components, then only the supports for one component is required. Additionally, the required percentage shall be comprised of supports from each where the sample size is proportional to the number of nonexempt supports in the system. All supports are required to be categorized into one of three groups based on designed function.</p>	No Change	<p>Although the number of supports required to be examined by the 89 Edition has been reduced by the changes in the 90A, adequate safety is maintained. Based on historical information, industry surveys, and Entergy's operating experience, generic degradation of supports to the extent that would warrant 100% inspection is not occurring in the industry. When ASME Section XI developed its inspection requirements, a historical basis was not available to demonstrate support performance. With approximately 25 years of nuclear experience, it is evident that relaxed inspection requirements for supports is appropriate based on lack of significant inservice findings. Although the number of supports requiring inspection has been reduced, the Code change requires a proportional number be selected from each system ensuring a full cross sectional assessment of safety related systems.</p> <p>The majority of support failures have been associated with unanticipated system transients that required system walk downs to determine extent of damage. The failed supports are identified during these walk downs and not as part of the ISI. Entergy believes that if component support degradation was occurring in the industry in a manner that required 100% inspection, it would have been identified during the Code activities which developed and approved the change. An acceptable level of safety is assured by performing less than 100% inspection of supports, e.g., something comparable to piping weld populations.</p> <p>Code Case N-491 is currently listed in the latest revision of Regulatory Guide 1.147 as approved without additional regulatory requirements.</p>