UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 6, 1996

The Honorable Lauch Faircloth, Chairman
Subcommittee on Clean Air, Wetlands, Private
Property and Nuclear Safety
Committee on Environment and Public Works
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

Enclosed for the information of the Subcommittee are copies of a notice of a final rulemaking to amend § 50.55a of 10 CFR Part 50 which will incorporate by reference national codes and standards for the inservice inspection of nuclear power plant components.

This section of the regulations incorporates by reference Division 1 rules of Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). The Nuclear Regulatory Commission (NRC) is amending these regulations to incorporate by reference the 1992 Edition with the 1992 Addenda of Subsection IWE, "Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Power Plants," and Subsection IWL, "Requirements for Class CC Concrete Components of Light-Water Cooled Power Plants," of Section XI, Division 1, of the ASME Code. These subsections have not been previously endorsed by the NRC. This final rule continues the NRC process of reviewing and, as appropriate, incorporating by reference ASME Code rules for the inservice inspection of components, which until now has been limited to Class 1, Class 2, and Class 3 components. Endorsement of these subsections at this time is considered necessary because significant corrosion and degradation of containments has occurred increasingly at operating nuclear power plants as evidenced by the number of reported incidents.

The final rule will:

- For the first time, incorporate by reference Subsection IWE and Subsection IWL, of Section XI, Division 1, of the ASME Boiler and Pressure Vessel Code. The NRC has reviewed the 1992 Edition with the 1992 Addenda of Subsection IWE and Subsection IWL of Section XI of the ASME Code and has found that with specified modifications these subsections of Section XI provide an acceptable method for detecting degradation of metal and concrete containments before structural integrity is compromised. Existing regulatory requirements contain general requirements applicable to containment inspection and surveillance, but these regulations do not provide sufficiently specific guidance on how to perform the necessary containment examinations. This has resulted in a large variation in licensee containment examination programs. In spite

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of present requirements, some containment structures have undergone unacceptable degradation which was not detected by the mandated tests and examinations.

- Require licensees to expedite implementation of the Subsection IWE and Subsection IWL containment examinations by completing the first examination within 5 years of the effective date of this rule. This expedited examination schedule is necessary to prevent a delay in the implementation of Subsection IWE and Subsection IWL and to establish an early baseline for future examinations.

- Include modifications to the endorsement of Subsection IWL to address four issues that are addressed in NRC Regulatory Guide 1.35, Revision 3, "Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containment Structures," but are not currently addressed in Subsection IWL. Because of the importance the NRC attributes to these issues, each issue has been addressed in the final rulemaking in a modification to the endorsement of Subsection IWL.

- Include four modifications which resulted from public comments received on the proposed rule. The four modifications are: (1) licensees will be required to evaluate the acceptability of inaccessible areas of Class MC components when conditions exist in accessible areas that could result in degradation to inaccessible areas; (2) alternative lighting and resolution requirements for remote visual examination of the containment have been added; (3) examination of pressure retaining welds and pressure retaining dissimilar metal welds of Class MC are optional; and (4) an optional sampling plan for determining the number of additional components to be examined if degradation is detected.

In view of the routine nature of the amendment, we do not consider that a public announcement is warranted.

Sincerely,

Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure:
As stated

cc: Senator Bob Graham

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 6, 1996

The Honorable Dan Schaefer, Chairman
Subcommittee on Energy and Power
Committee on Commerce
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

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undergone unacceptable degradation which was not detected by the mandated tests and examinations.

- Require licensees to expedite implementation of the Subsection IWE and Subsection IWL containment examinations by completing the first examination within 5 years of the effective date of this rule. This expedited examination schedule is necessary to prevent a delay in the implementation of Subsection IWE and Subsection IWL and to establish an early baseline for future examinations.

- Include modifications to the endorsement of Subsection IWL to address four issues that are addressed in NRC Regulatory Guide 1.35, Revision 3, "Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containment Structures," but are not currently addressed in Subsection IWL. Because of the importance the NRC attributes to these issues, each issue has been addressed in the final rulemaking in a modification to the endorsement of Subsection IWL.

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Sincerely,

Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure:
As stated

cc: Representative Frank Pallone

[7590-01-P]

NUCLEAR REGULATORY COMMISSION

10 CFR PART 50

RIN 3150-AC93

Codes and Standards for Nuclear Power Plants;

Subsection IWE and Subsection IWL

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations to incorporate by reference the 1992 Edition with the 1992 Addenda of Subsection IWE, "Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Power Plants," and Subsection IWL, "Requirements for Class CC Concrete Components of Light-Water Cooled Power Plants," of Section XI, Division 1, of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) with specified modifications and a limitation. Subsection IWE of the ASME Code provides rules for inservice inspection, repair, and replacement of Class MC pressure retaining components and their integral attachments and of metallic shell and penetration liners of Class CC pressure retaining components and their integral attachments in light-water cooled power plants. Subsection IWL of the ASME Code provides rules for inservice inspection and repair of the reinforced concrete and the post-tensioning systems of Class CC components. Licensees will be required to incorporate Subsection IWE and Subsection IWL

into their inservice inspection (ISI) program. Licensees will also be required to expedite implementation of the containment examinations and to complete the expedited examination in accordance with Subsection IWE and Subsection IWL within 5 years of the effective date of this rule. Provisions have been included that will prevent unnecessary duplication of examinations between the expedited examination and the routine 120-month ISI examinations. Subsection IWE and Subsection IWL have not been previously incorporated by reference into the NRC regulations. The final rule specifies requirements to assure that the critical areas of containments are routinely inspected to detect and take corrective action for defects that could compromise a containment's structural integrity.

EFFECTIVE DATE: (30 days after the date of publication). The incorporation by reference of certain publications listed in the regulations is approved by the Office of the Director of the Office of the Federal Register as of (30 days after the date of publication).

FOR FURTHER INFORMATION CONTACT: Mr. W. E. Norris, Division of Engineering Technology, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 415-6796.

SUPPLEMENTARY INFORMATION:

The NRC is amending its regulations to incorporate by reference the 1992 Edition with the 1992 Addenda of Subsection IWE and Subsection IWL to assure that the critical areas of containments are routinely inspected to detect and

take corrective action for defects that could compromise a containment's structural integrity. The rate of occurrence of degradation in containments is increasing. Appendix J to 10 CFR Part 50 requires a general visual inspection of the containment but does not provide specific guidance on how to perform the necessary containment examinations. This has resulted in a large variation with regard to the performance and the effectiveness of containment examinations. The rate of occurrence of corrosion and degradation of containment structures has been increasing at operating nuclear power plants. There have been 32 reported occurrences of corrosion in metal containments and the liners of concrete containments. This is one-fourth of all operating nuclear power plants. Only four of the 32 occurrences were detected by current containment inspection programs. Nine of these occurrences were first identified by the NRC through its inspections or structural audits. Eleven occurrences were detected by licensees after they were alerted to a degraded condition at another site or through activity other than containment inspection. There have been 34 reported occurrences of degradation of the concrete or of the post-tensioning systems of concrete containments. This is nearly one-half of these types of containments. It is clear that current licensee containment inspection programs have not proved to be adequate to detect the types of degradation which have been reported. Examples of degradation not found by licensees, but initially detected at plants through NRC inspections include: 1) corrosion of steel containment shells in the drywell sand cushion region, resulting in wall thickness reduction to below the minimum design thickness; 2) corrosion of the torus of the steel containment shell (wall thickness below minimum design thickness); 3) corrosion of the liner of a concrete containment to approximately half-depth;

4) grease leakage from the tendons of prestressed concrete containments; and

5) leaching as well as excessive cracking in concrete containments.

There are several General Design Criteria (GDC) and ASME Code sections which establish minimum requirements for the design, fabrication, construction, testing, and performance of structures, systems, and components important to safety in water-cooled nuclear power plants. The GDC serve as fundamental underpinnings for many of the most safety important commitments in licensee design and licensing bases. GDC 16, "Containment design," requires the provision of reactor containment and associated systems to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity into the environment and to ensure that the containment design conditions important to safety are not exceeded for as long as required for postulated accident conditions.

Criterion 53, "Provisions for containment testing and inspection," requires that the reactor containment design permit: (1) appropriate periodic inspection of all important areas, such as penetrations; (2) an appropriate surveillance program; and (3) periodic testing at containment design pressure of the leak-tightness of penetrations which have resilient seals and expansion bellows. Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," of 10 CFR Part 50 contains specific rules for leakage testing of containments. Paragraph III. A. of Appendix J requires that a general inspection of the accessible interior and exterior surfaces of the containment structures and components be performed prior to any Type A test to uncover any evidence of structural deterioration that may affect either the

containment structural integrity or leak-tightness (Type A test means tests intended to measure the primary reactor containment overall integrated leakage rate: (1) after the containment has been completed and is ready for operation, and (2) at periodic intervals thereafter).

The metal containment structure of operating nuclear power plants were designed in accordance with either Section III, Subsection NE, "Class MC Components," or Section VIII, of the ASME Code. These subsections contain provisions for the design and construction of metal containment structures, including methods for determining the minimum required wall thicknesses. The minimum wall thickness is that thickness that would ensure that the metal containment structure would continue to maintain its structural integrity under the various stressors and degradation mechanisms which could act on it.

The prestressed concrete containments of most operating nuclear reactors were designed in accordance with ACI-318 provisions taking into consideration their unique features in the design of the post-tensioning system and in determining the prestressing forces. The post-tensioning system is designed so that the concrete containment structure will continue to maintain its structural integrity under the various stressors and degradation mechanisms which act on it. The liners of concrete containments provide a leak-tight barrier.

These requirements for minimum design wall thicknesses and prestressing forces as provided in these industry standards used to design containment

structures are reflected in license conditions, technical specifications, and licensee commitments (e.g., the Final Safety Analysis Report).

None of the existing requirements, however, provide specific guidance on how to perform the necessary containment examinations This lack of guidance has resulted in a large variation with regard to the performance and the effectiveness of licensee containment examination programs. Based on the results of inspections and audits, as well as plant operational experiences, it is clear that many licensee containment examination programs have not detected degradation that could ultimately result in a compromise to the pressure-retaining capability. Some containment structures have been found to have undergone a significant level of degradation that was not detected by these programs.

The Nuclear Management and Resources Council (NUMARC) (which has since become the Nuclear Energy Institute (NEI)) developed a number of industry reports to address license renewal issues. Two of those, one for Pressurized Water Reactor (PWR) containments and the other for Boiling Water Reactor (BWR) containments, were developed for the purpose of managing age-related degradation of containments on a generic basis. The NUMARC plan for containments relies on the examinations contained in Subsection IWE and Subsection IWL to manage age-related degradation, and this plan assumes that these examinations are "in current and effective use." In the BWR Containment Industry Report, NUMARC concluded that "On account of these available and established methods and techniques to adequately manage potential degradation due to general corrosion of freestanding metal containments, no additional

measures need to be developed and, as such, general corrosion is not a license renewal concern if the containment minimum wall thickness is maintained and verified." Similarly, in the PWR Containment Industry Report, NUMARC concluded that potentially significant degradation of concrete surfaces, the post-tensioning system, and the liners of concrete containments could be managed effectively if periodically examined in accordance with the requirements contained in Subsection IWE and Subsection IWL. The NRC agrees with NEI that these ASME standards, which the industry has participated in developing, would be an effective means for managing age-related containment degradation. Thus, the NRC believes that adoption of these standards is the best approach.

Background

On January 7, 1994 (59 FR 979), the NRC published in the Federal Register a proposed amendment to its regulation, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to incorporate by reference the 1992 Edition with the 1992 Addenda of Subsection IWE, and Subsection IWL, of Section XI, Division 1, of the ASME Code with specified modifications and a limitation.

Five modifications were specified in the proposed rule to address two concerns of the NRC. The first concern is that four recommendations for tendon examinations that are included in Regulatory Guide 1.35, "Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containments," Rev. 3,

are not addressed in Subsection IWL (this involves four of the modifications, (§ 50.55a(b)(2)(ix)(A)-(D)). Regulatory Guide 1.35, Rev. 3, describes a basis acceptable to the NRC staff for developing an appropriate inservice inspection and surveillance program for ungrouted tendons in prestressed concrete containment structures. The four recommendations contained in Regulatory Guide 1.35, Rev. 3, which are not addressed by Subsection IWL, provide positions on issues such as failed wires and tendon sheathing filler grease conditions. (The ASME Code has considered the four issues involved and is in the process of adopting them into addenda of Subsection IWL). The second NRC concern is that if there is visible evidence of degradation of the concrete (e.g., leaching, surface cracking) there may also be degradation of inaccessible areas. The fifth modification (§ 50.55a(b)(2)(ix)(E)) requires that inaccessible areas be evaluated when visible conditions exist that suggest the possibility of degradation of these areas.

The limitation which was included in the proposed rule specified the 1992 Edition with the 1992 Addenda of Subsection IWE and Subsection IWL as the earliest version of the ASME Code the NRC finds acceptable. This is because this is the first edition including addenda combination acceptable to the NRC staff that incorporates the concept of base metal examinations and also provides a comprehensive set of rules for the examination of post-tensioning systems. As originally published in 1981, Subsection IWE preservice examination and inservice examination rules focused on the examination of welds. This weld-based examination philosophy was established in the 1970s as plants were being constructed. It was based on the premise that the welds in pressure vessels and piping were the areas of greatest concern. As

containments have aged, degradation of base metal, rather than welds, has been found to be the issue of concern. The 1991 Addenda to the 1989 Edition, the 1992 Edition and the 1992 Addenda to Section XI, Subsection IWE, have promoted the incorporation of base metal examinations.

The proposed rulemaking incorporated a provision for an expedited examination schedule. This expedited examination schedule is necessary to prevent the delay in implementation of Subsection IWE and Subsection IWL (the Summary of Documented Evaluation lists each plant and the delay in implementation which would be encountered if the subsections were implemented through routine updates of the ISI programs). Provisions were incorporated in the proposed rule to ensure that the expedited examination which would be completed within 5 years from the effective date of the rule and the routine 120-month examinations did not duplicate examinations.

On March 4, 1994, the NRC received a request from the Nuclear Management and Resources Council (which has since become part of the Nuclear Energy Institute (NEI)) to extend the public comment period from March 23, 1994 until April 25, 1994, to enable NEI to "provide necessary and constructive comments on the proposed rule change." This was granted, and on March 28, 1994 (59 FR 14373), the NRC published in the Federal Register a notice of extension of the public comment period.

Summary of Comments

Comments were received from 25 separate sources. These sources consisted of 15 utilities, one service organization (Entergy Operations, Inc.) representing five nuclear plants, the Nuclear Energy Institute (NEI), the Nuclear Utility Backfitting and Reform Group (NUBARG) represented by the firm of Winston & Strawn, one owner's group (BWR Owner's Group (BWROG)), one architect and engineering firm (Stone & Webster Engineering Corporation), one public citizens group (Ohio Citizens for Responsible Energy (OCRE)), three individuals, and one consulting firm (VSL Corporation).

Comments received could be divided into three groups. The first group contains those comments which address the administrative aspects of the rule (e.g., backfit considerations, effectiveness of current containment examinations), and the modifications specified by the NRC in the proposed rule. The second and third groups contain those comments which address the technical provisions of Subsection IWE, and Subsection IWL, respectively. The summary and resolution of public comments and all of the verbatim comments which were received (grouped by subject area) are contained in the Summary of Documented Evaluation.

The majority of comments generally addressed one of the following subject areas: (1) the incorporation by reference of Subsection IWE and Subsection IWL into § 50.55a; (2) the development of guidance documents instead of regulatory requirements; (3) the rationale for the proposed backfit; (4) endorsement of the BWROG comments; and (5) the 5-year expedited

implementation. These subject areas encompass the comments submitted by NEI and NUBARG, and their comments, if any, are discussed separately in each subject area.

The comments on subject area number one from those that approve of the incorporation by reference of Subsection IWE and Subsection IWL into § 50.55a, can be summarized as follows: (1) there is a need for the periodic examination of containment structures to assure the containment's pressure-retaining and leak-tight capability; (2) Section XI requirements define concise, technically sound programs to assure continuing containment integrity; and (3) input in the development of these rules was provided by all interested parties involved in containment inservice inspection - users, regulators, manufacturers, engineering organizations, and enforcement organizations.

The comments on the other four subject areas are summarized below. The resolution of public comments contains all of the comments which were received. Some of the comments resulted in modifications to the rule, and some of the comments have been transmitted to the ASME for their consideration. A discussion of the comments which led to modifications follows the summary of comments on subject area number five. The resolution of public comments package contains those comments transmitted to the ASME. Those comments asked for interpretations of the ASME Code rules.

Regarding subject area number two, eleven commenters believe that additional specific guidance in the form of a guidance document would be more appropriate than a regulation. They concur with NEI that current regulatory

requirements for containment integrity and examinations are already provided by existing regulations (GDC 16 and 53 and Appendix J) and licensee commitments. If more detail on how to perform containment examinations is needed, the commenters (including NEI) state that the details could be provided in a regulatory guide, Information Notic Generic Letter, or in an industry developed guidance document. The NRC does not believe that existing regulations and licensee commitments are adequate. Existing regulations and licensee commitments have not proved to be adequate to detect the types of problems which have been experienced in operating reactors. This is evidenced by the large number of instances of degradation that were found by the NRC through its inspections or audits of plant structures, or by licensees because they were alerted to a degraded condition at another site. Licensee containment inspection programs have generally not detected the types of degradation being reported (only four of the 32 reported instances of corrosion in Class MC containments were discovered as a result of the Appendix J general inspection). Further, the NRC does not believe that providing guidance through a regulatory guide or industry report would generally improve containment examination practices. Licensees were made aware of containment degradation through several industry notices, and yet the staff is still detecting many of occurrences of degradation. The increasing rate of occurrence of containment degradation, the number of occurrences, the extent to which some containments were degraded, the high number of instances discovered through NRC inspections or by licensees because they were alerted to a degradation condition at another site, the time-dependent mechanisms, and the results of the survey performed by the NRC Regional Offices regarding current containment inspections all point to the necessity of imposing

additional requirements to ensure that containments comply with design wall thicknesses and prestressing forces. This is a compliance backfit.

With regard to subject area number three, six general comments were received from the Nuclear Utility Backfitting and Reform Group (NUBARG) and from the Nuclear Energy Institute (NEI) (which were endorsed by other commenters) regarding the incorporation by reference of Subsection IWE and Subsection IWL which are similar in nature. The first comment is that the application of the compliance exception to this rulemaking is inappropriate, and that the proposed rule constitutes a backfit for which a cost-benefit analysis should be performed. The NRC agrees that the rulemaking is a backfit. However, as discussed under the Backfit Statement, the NRC believes that the compliance exception to the backfit rule is appropriate.

The second comment was a citation of a paragraph from the Statement of Considerations to the 1985 final backfit rule which addressed the compliance exception. That paragraph addressed "Section 50.109(a)(4) which creates exceptions for modifications necessary to bring a facility into compliance or to ensure through immediately effective regulatory action that a licensee meets a standard of no undue risk to public health and safety." Both NEI and NUBARG assert that the proposed rule is a new interpretation of how to demonstrate compliance with existing standards and therefore constitutes a backfit under 10 CFR 50.109(a)(1). The NRC does not believe that the use of the compliance exception must be confined only to the situation addressed in the Statement of Consideration to the 1985 final backfit rule - "omission or mistake of fact." In any event, the current unsatisfactory status of

containment inservice inspections can be characterized fairly as, in retrospect, a mistake about and omission from the necessary elements of a satisfactory inspection program.

The third comment is that containments must experience corrosion or degradation that is so unanticipated and excessive so as to constitute a genuine compliance concern. Another commenter expressed the idea somewhat differently believing that a broad-based concern with the operability of containment structures through the industry must be demonstrated to be a compliance issue. The NRC agrees with those criteria and concludes, in fact, that there is a broad-based concern regarding the structural integrity of containment structures. The NRC's approach focuses on two questions: (1) is the corrosion such that there is a basis for reasonably concluding that additional instances of noncompliance with the relevant GDCs, Appendix J, and/or licensee commitments at numerous plants; and (2) whether there is a basis for reasonably believing that the corrosion would have been identified and properly addressed by the licensees in the absence of additional regulatory requirements. Based on the: (1) number of occurrences of containment degradation; (2) increasing rate of containment degradation; (3) locations of the degradation; (4) two instances where containment wall thicknesses were below minimum design wall thickness; (5) number of corrosion paths which have been reported; and (6) higher than anticipated corrosion rates in many of the occurrences, the NRC believes that containments are experiencing corrosion or degradation that is unanticipated and excessive. Further, based upon factors (1) to (6) above, the NRC concludes that additional criteria are necessary to ensure that compliance with existing

requirements for minimum accepted design wall thicknesses and prestressing forces are maintained (and thereby the ability of the containment to continue to perform its intended safety function).

The fourth comment by NUBARG and NEI suggested that it is part of the anticipated process for the industry to rely upon NRC inspections and audits to identify problems and then alert the industry through NRC documents such as information notices and generic letters. During the presentation to the ACRS on February 10, 1995, NEI asserted that "[i]t really doesn't matter how the utilities identify these instances of degradation." The NRC believes that inspections conducted by licensees should be adequate to ensure that containment degradation is identified without reliance upon NRC inspections.

The fifth NEI and NUBARG comment is that to ensure compliance the NRC could take individual enforcement action rather than endorse ASME standards. The NRC believes that the best approach is to adopt the industry consensus standards (i.e., endorse ASME Section XI Subsection IWE and Subsection IWL). Containment corrosion and degradation have been reported since 1986. The patterns of degradation and the corrective actions were not immediately obvious. Given the number and the extent of the occurrences, and the variability among plants with regard to the performance and the effectiveness of containment inspections, the NRC believes that the best course of action is to endorse ISI requirements to ensure that containments comply with design wall thicknesses and prestressing forces.

The sixth comment is that GDC 16 required containments to be designed and constructed with an allowance for corrosion or degradation of the containment wall over the projected design life of the plant. NEI and NUBARG assert that "[i]t is therefore hardly surprising that, as noted in the Statement of Considerations, '[o]ver one-third of the containments have experienced corrosion or other degradation. Therefore, they believe there is not a broad-based concern with operability of containment structures. The NRC rejects the argument that because containments have corrosion allowances and corrosion was expected to occur that, ipso facto, further inspections are not necessary and the compliance exception is inappropriate. As previously pointed out, in many cases, the corrosion rate has been found to be greater than that for which the containment was designed (in some cases the rate was twice that predicted). Some of the more extreme cases of wall thinning occurred in plants with corrosion allowances. The existence of a corrosion allowance at any given plant is, of course relevant, but only in the context of determining whether a relevant requirement or commitment is likely to be violated during the OL term. A corrosion allowance simply increases the tolerance (time period) for corrosion. However, once the allowance is eroded, then concern with compliance becomes relevant. Based upon the staff's finding of the number and extent of corrosion to date, and the lack of activities to manage the degradation by many licensees, the NRC concludes that it is likely that those licensees will be in violation of applicable requirements for containment structural integrity and leak-tightness during the OL term, absent the imposition of Subsections IWE and IWL. Because licensees have been unable to ensure compliance with current regulatory requirements, the NRC believes that more specific ISI requirements, which expand upon existing requirements

for the examination of containment structures in accordance with GDC 16, 53, Appendix A to 10 CFR Part 50, and Appendix J to 10 CFR Part 50, are needed and are justified for the purpose of ensuring that containments continue to maintain or exceed minimum accepted design wall thicknesses and prestressing forces as provided for in industry standards used to design containments (e.g., Section III and Section VIII of the ASME Code, and the American Concrete Institute Standard ACI-318), as reflected in license conditions, technical specifications, and written licensee commitments (e.g., the Final Safety Analysis Report). The NRC believes that the occurrences of corrosion and other degradation would have been detected by licensees when conducting the periodic examinations set forth in Subsection IWE and Subsection IWL.

With regard to subject area number four, six commenters believe that the Boiling Water Reactors Owner's Group (BWROG) containment inspection plan (CIP) will adequately address examinations for the primary containment when used in conjunction with other existing examination requirements such as Appendix J. The staff does not believe that the CIP is a comprehensive containment examination program. In the CIP, there is a comparison between the CIP and Subsection IWE. The CIP dismisses seven of the eighteen identified Subsection IWE examinations as not being justifiable even though some of these areas are likely to experience accelerated corrosion. The CIP enumerates the conservatisms and margins against failure in the design of Mark I and II containments and concludes that in a typical plant probabilistic risk assessment of failure, the contribution to failure of the containment steel structure is negligible. The NRC believes that the conservatisms and margins referred to are not additional tolerances which allow areas of containments to

go unexamined. These conservatisms and margins were required allowances in the design because of the uncertainties in loadings, in material properties, in analysis, and in the variation of steel thicknesses. Examination of large areas of the containment cannot be dismissed as being non-critical based on conservatisms and margins when corrosion has clearly eroded the margin of safety in some cases. In addition, given that only four of the 32 occurrences of corrosion in metal containments and the liners of concrete containments were detected during the pre-integrated leakage rate test examination, the NRC does not believe that the CIP used in conjunction with other existing examination requirements such as Appendix J will adequately address examinations for the primary containment as asserted. The industry initiative that allows a decrease in the frequency of Appendix J leakage rate testing further erodes confidence in the acceptability of the BWROG approach.

Comments were received from ten sources on proposed § 50.55a(g)(6)(ii)(B) which would require a 5-year expedited examination schedule (subject area number five). Most of these comments asked for clarifications of the NRC staff intent of this provision. Some commenters interpreted this provision as a requirement to perform all of the examinations specified for a 10-year interval in 5 years, which was not the intent. § 50.55a(g)(6)(ii)(B) has been changed to clarify that for Subsection IWE, the baseline inspection will be the inservice examinations which are to be performed during the first period of the first interval. For Subsection IWL, the baseline inspection will be the required inservice examinations which correspond to the year of operation for each unit. The result of the clarification is that § 50.55a(g)(6)(ii)(B)(1) addresses Subsection IWE and

§ 50.55a(g)(6)(ii)(B)(2) addresses Subsection IWL. § 50.55a(g)(6)(ii)(B)(2) in the proposed rule has become § 50.55a(g)(6)(ii)(B)(3) and § 50.55a(g)(6)(ii)(B)(3) has become § 50.55a(g)(6)(ii)(B)(4) in the final rule.

There was one additional comment submitted by NEI. The proposed rule discussed NEI's (then NUMARC) position on the role of Subsection IWE and Subsection IWL in license renewal. Subsections IWE and IWL were referenced many times as one acceptable approach for managing age-related degradation. The plan for managing age-related degradation assumes that these examinations are "in current and effective use." NEI commented on the above statements in the proposed rule; "Although the BWR and PWR containment IRs [Industry Reports] do reference Subsections IWE and IWL, their identification in the IRs should not be misrepresented to imply that Subsections IWE and IWL are being implemented or that they are required for operating plants during their initial licensing term." The NRC agrees that the IRs were not to be represented as a requirement for operating licensees to implement Subsection IWE and Subsection IWL or their equivalent, and that these subsections were referenced as one acceptable approach of managing age-related degradation for the license renewal period. However, present licensee containment examination programs have not proved to be effective in detecting the types of degradation which have been reported. The number of occurrences and the extent of degradation (which includes cases of noncompliance) leads to the conclusion that additional requirements are needed for managing containment degradation during the operating term. Because Subsections IWE and IWL were developed by the ASME with industry input and found to be acceptable by NEI for managing

age-related degradation for the license renewal period, the NRC believes that adoption of those programs at this time is the best approach. The NRC also believes that with implementation of Subsections IWE and IWL, the detrimental effects of containment aging will be managed during the current operating term, as well as during the license renewal term.

As a result of the comments received, there is one editorial change, two clarifications, and four modifications in the final rule. With respect to the editorial change, a commenter suggested that the wording of § 50.55a(b)(2)(ix)(D)(2) in the proposed rule be revised to be consistent with § 50.55a(b)(2)(ix)(D)(1) and § 50.55a(b)(2)(ix)(D)(3) of the same paragraph. § 50.55a(b)(2)(ix)(D) addresses the sampling of the grease contained in post-tensioning systems, and conditions, which if found, are reportable. The suggested wording has been adopted in the final rule.

One of the clarifications was to proposed § 50.55(g)(6)(ii)(B). This change was discussed previously in subject area number five. § 50.55a(g)(6)(ii)(B)(1) and § 50.55a(g)(6)(ii)(B)(2) require that licensees conduct the first containment examinations in accordance with Subsection IWE and Subsection IWL (1992 Edition with the 1992 Addenda), modified by § 50.55a(b)(2)(ix) and § 50.55a(b)(2)(x) within 5 years of the effective date of the final rule. This expedited examination schedule is necessary to prevent possible delays in the implementation of Subsection IWE by as much as 20 years and Subsection IWL by as much as 15 years. Subsection IWE, Table IWE-2500-1, permits the deferral of many of the required examinations until the end of the 10-year inspection interval. Adding the 10 years that could

pass before some utilities are required to update their ISI plans, a period of 20 years could pass before the first examinations would take place. Subsection IWL is based on a 5-year inspection interval. Adding the possible 10 years before update of existing ISI plans, a period of 15 years could pass before the examinations were performed by plants that have not voluntarily adopted the provisions of Regulatory Guide 1.35, Rev. 3. Expediting implementation of the containment examinations is considered necessary because of the problems that have been identified at various plants, the need to establish expeditiously a baseline for each facility, and the need to identify any existing degradation.

Paragraphs (g)(6)(ii)(B)(3) and (g)(6)(ii)(B)(4) each provide a mechanism for licensees to satisfy the requirements of the routine containment examinations and the expedited examination without duplication. Paragraph (g)(6)(ii)(B)(3) permits licensees to avoid duplicating examinations required by both the periodic routine and expedited examination programs. This provision is intended to be useful to those licensees that would be required to implement the expedited examination during the first periodic interval that routine containment examinations are required. Paragraph (g)(6)(ii)(B)(4) allows licensees to use a recently performed examination of the post-tensioning system to satisfy the requirements for the expedited examination of the containment post-tensioning system. This situation would occur for licensees who perform an examination of the post-tensioning system using Regulatory Guide 1.35 between the effective date of this rule and the beginning of the expedited examination.

The four modifications are: (1) § 50.55a(b)(2)(x)(A) expands the evaluation of inaccessible areas of concrete containments (Class CC) to metal containments and the liners of concrete containments (Class MC); (2) § 50.55a(b)(2)(x)(B) permits alternative lighting and resolution requirements for remote visual examination of the containment; (3) § 50.55a(b)(2)(x)(C) makes the examination of pressure retaining welds and pressure retaining dissimilar metal welds optional; and (4) § 50.55a(b)(2)(x)(D) has been added to provide an alternative sampling plan. § 50.55a(b)(2)(x)(E), a clarification, more clearly defines the frequency of the Subsection IWE general visual examination.

The first modification, § 50.55a(b)(2)(x)(A), which expands the evaluation of inaccessible areas of concrete containments (Class CC) to metal containments and the liners of concrete containments (Class MC), was the result of a comment received on § 50.55a(b)(2)(ix)(E) of the proposed rule. The commenter believed that given the number of occurrences of corrosion in Class MC containments, the proposed provision (which only addressed concrete containments) should be expanded in the final rule to include metal containments and the liners of concrete containments.

The second modification, § 50.55a(b)(2)(x)(B), was added to the final rule to permit alternative lighting and resolution requirements for remote visual examination of the containment. Subsection IWE references the lighting and resolution requirements contained in IWA-2200. The lighting and resolution requirements contained in IWA-2200 would on a practical basis preclude remote containment examination.

The third modification, § 50.55a(b)(2)(x)(C), makes the examinations of Subsection IWE, Examination Category E-B (pressure retaining welds) and Subsection IWE, Examination Category E-F (pressure retaining dissimilar metal welds) optional. The NRC staff concludes that requiring these examinations is not appropriate. There is no evidence of problems associated with welds of this type under the given operating conditions. In addition, the occupational radiation exposure that would be incurred while performing these examinations cannot be justified. It is estimated that the total occupational exposure that would be incurred yearly in the performance of the containment weld examinations in accordance with Examination Categories E-B and E-F would be 440 person-rems.

The fourth modification, § 50.55a(b)(2)(x)(D), provides an alternative to the ASME Section XI requirements for "additional examinations (note: additional examinations are required during the same outage when acceptance criteria are exceeded). The alternative would allow licensees to determine the number of additional components to be examined based on an evaluation to determine the extent and nature of the degradation. Five commenters believe that the requirements for additional examinations used in other subsections of Section XI is inappropriate for containment components. Additional examinations are incorporated into Section XI to determine the extent to which degradation found in one component exists in other similar components. In some instances, a large number of additional examinations could be required. The commenters believe that a review of the operational history of containment components shows that the degradation is limited to the area in question and is not widespread. This makes the Section XI requirements for additional

examinations burdensome and inappropriate for application to containments. The NRC agrees and revised the rule to permit the alternative to the Section XI requirements for additional examinations.

The NRC believes that these modifications improve the final rule and will improve the containment inspection program as set forth by Subsection IWE and Subsection IWL. Some of the public comments cited failure data which have been accumulated in recent years in support of various NRC staff activities and industry initiatives. Most of this data has been accumulated since the ASME committees developed these subsections. Without the benefit of this recently accumulated operational data, the ASME committees responsible for developing Subsection IWE and Subsection IWL modelled those subsections on other subsections of Section XI and the experience gained from application of those other subsections. With the additional insights drawn from analysis of this new data, it is apparent that many aspects of containments are unique compared to components of other systems. Some of the containment components which were expected to experience degradation, based on experience with other systems, have proved not to be susceptible to the same type of degradation. The ASME working groups are considering these issues. However, based on initial committee discussion, it is anticipated that similar changes will be made to Subsection IWE and Subsection IWL, but the length of the ASME consensus process precludes the possibility of the changes being adopted into the ASME Code in the near term. Hence, the NRC has determined to adopt the 1992 Edition with the 1992 Addenda of Subsection IWE and Subsection IWL with the modifications which were previously discussed.

Other Provisions Contained in the Final Rule

The following paragraph was contained in the proposed rule and has not been discussed previously. This paragraph received comments which resulted in the provision being dropped in the final rule. § 50.55a(b)(2)(x) was a provision in the proposed rule intended to provide licensees with a mechanism to merge the Subsection IWE and Subsection IWL ISI program with their routine 120-month ISI program. Those licensees who were near the end of their present 10-year ISI interval when the final rule becomes effective would have been given an additional 2 years to submit their containment ISI program. Several commenters responded that due to the time constraints of having to develop the containment ISI program and then perform the required examinations within 5 years, the additional 2 years could not be utilized. Therefore, § 50.55a(b)(2)(x) as it appeared in the proposed rule has been deleted, and § 50.55a(b)(2)(x) in the final rule contains the modifications which were added as a result of public comment on the proposed rule.

The provisions in this paragraph and the following four paragraphs were contained in the proposed rule and have not changed due to comments. § 50.55a(b)(2)(vi) incorporates a limitation specifying the 1992 Edition with 1992 Addenda of Subsection IWE and Subsection IWL as the earliest ASME Code version the NRC finds acceptable. This edition and addenda incorporate the concept of base metal examinations and also provide a comprehensive set of rules for the examination of post-tensioning systems. It should be noted that the wording of this provision has been changed in the final rule in order to make it consistent with other provisions in § 50.55a(b)

Section 50.55a(b)(2)(ix) specifies five modifications that must be implemented when using Subsection IWL. Four of these issues are identified in Regulatory Guide 1.35, Revision 3, but are not currently addressed in Subsection IWL. § 50.55a(b)(2)(ix)(A) requires that grease caps which are accessible must be visually examined to detect grease leakage or grease cap deformation. § 50.55a(b)(2)(ix)(B) requires the preparation of an Engineering Evaluation Report when consecutive surveillances indicate a trend of prestress loss to below the minimum prestress requirements. § 50.55a(b)(2)(ix)(C) requires an evaluation to be performed for instances of wire failure and slip of wires in anchorages. § 50.55a(b)(2)(ix)(D) addresses sampled sheathing filler grease and reportable conditions. A comment was received on this provision which resulted in an editorial change (this was discussed on page 12). § 50.55a(b)(2)(ix)(E) requires that licensees evaluate the acceptability of inaccessible areas of concrete containments when conditions exist in accessible areas that suggest the possibility of degradation in inaccessible areas.

Existing § 50.55a(g), "Inservice inspection requirements," specifies the requirements for preservice and inservice examinations for Class 1 (Class 1 refers to components of the reactor coolant pressure boundary), Class 2 (Class 2 quality standards are applied to water- and steam-containing pressure vessels, heat exchangers (other than turbines and condensers), storage tanks, piping, pumps, and valves that are part of the reactor coolant pressure boundary (e.g., systems designed for residual heat removal and emergency core cooling)), and Class 3 (Class 3 quality standards are applied to radioactive-waste-containing pressure vessels, heat exchangers (other than turbines and

condensers), storage tanks, piping, pumps, and valves (not part of the reactor coolant pressure boundary)) components and their supports. Subsection IWE (Class MC -- metal containments) and Subsection IWL (Class CC -- concrete containments) are incorporated by reference into the NRC regulations for the first time.

Section 50.55a(g)(4) specifies the containment components to which the ASME Code Class MC and Class CC inservice inspection classifications incorporated by reference in this rule will apply.

Section 50.55a (g)(4)(v)(A), (v)(B), and (v)(C) specify the Subsection IWE and Subsection IWL rules for inservice inspection, repair, and replacement of metal and concrete containments. This is consistent with the long-standing intent and ongoing application by NRC and licensees to utilize the rules of Section XI when performing inservice inspection, repairs, and replacements of applicable components and their supports.

Small Business Regulatory Enforcement Fairness Act

In accordance with the Small Business Regulatory Enforcement Fairness Act of 1996, the NRC has determined that this action is not a major rule and has verified this determination with the Office of Information and Regulatory Affairs of OMB.

Finding of No Significant Environmental Impact

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule is not a major Federal action that significantly affects the quality of the human environment and therefore an environmental impact statement is not required.

This final rule is one part of a regulatory framework directed to ensuring containment integrity. Therefore, in the general sense, this rule will have a positive impact on the environment. This rule incorporates by reference into the NRC regulations requirements contained in the ASME Code for the inservice inspection of the containments of nuclear power plants. The performance of containment examinations, as set forth by the provisions of this final rule, for PWRs, Ice Condensers, and BWR Mark IIs and IIIs is not expected to result in significant occupational radiation exposure (1.0 person-rems per year or 0.04 person-rems per unit averaged over 27 examinations each year). The above categories of plants, for which the occupational radiation exposure is insignificant, represent the vast majority of units (89). For BWR Mark I containments, the estimated occupational radiation exposure which would be incurred per year while performing BWR Mark I containment examination is 29.4 person-rems per year or 4.2 person-rems per unit averaged over 7 examinations per year. However, the estimated occupational radiation exposure per unit does not provide an accurate representation of the actual radiological exposure that would be incurred by any one individual. 10 CFR § 20.101, "Radiation dose standards for individuals in restricted areas" only

permits a whole body dose of 1.25 rem per calendar quarter. As a practical matter, licensees carefully manage the exposure incurred by any one individual by practicing and applying "as low as reasonably achievable" (ALARA) principles to protect the health and safety of personnel. In the performance of the examination of BWR Mark I containments, this is accomplished by having several individuals perform the examinations to "spread out" the exposure. In this manner, no one individual will suffer any significant health effects. It also must be kept in mind that these containment examinations are scheduled to occur at the interval of once every 3⅓ years. This provides licensees ample time for planning the examinations, and scheduling personnel in accord with ALARA considerations. Therefore, the occupational radiation exposure is insignificant given the relatively low exposure on a unit basis and the licensees' programs for controlling the impact of exposure for any one individual.

Actions required of applicants and licensees to implement containment examinations are of the same nature that applicants and licensees have been performing for many years in other Section XI ISI programs. Extension of these actions to additional components, therefore, should not increase the potential for a negative environmental impact.

The environmental assessment and finding of no significant impact on which this determination is based are available for inspection at the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC. Single copies of the environmental assessment and the finding of no significant impact are available from Mr. W. E. Norris, Division of Engineering

Technology, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301)415-6796.

Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget, approval number 3150-0011.

The public reporting burden for this collection of information is estimated to average 4,000 hours per response for development of an initial inservice inspection plan, and 8,000 hours per response for the update of the plan and periodic examinations, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The estimate of 8,000 hours for plan update and performing periodic examinations is a 2,000 hour reduction from the estimate given in the proposed rulemaking. This reduction results from changes made in response to public comment. A number of examinations have been modified or made optional greatly reducing the effort required to comply with the requirements contained in the final rule. Send comments on any aspect of this collection of information, including suggestions for reducing the burden, to the Information and Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet electronic mail at BJS1@NRC.GOV; and to the Desk Officer,

Office of Information and Regulatory Affairs, NEOB-10202, (3150-0011), Office of Management and Budget, Washington, DC 20503.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant economic impact on a substantial number of small entities. This rule affects only the operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set forth in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this rule does not fall within the purview of the Act.

Backfit Statement

The NRC is amending its regulations to incorporate by reference the 1992 Edition with the 1992 Addenda of Subsection IWE and Subsection IWL to assure that the critical areas of containments are routinely inspected to detect defects that could compromise a containment's structural integrity. Based on a preponderance of reliable information, the NRC concludes that this rule is a compliance backfit, and therefore a backfit analysis is not required pursuant to 10 CFR 50.109(a)(4)(i). A summary of noncompliance is set forth below. The documented evaluation required by § 50.109(a)(4) to support this conclusion is available for inspection in the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC. Single copies of the analysis may be obtained from Mr. W. E. Norris, Division of Engineering Technology, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301)415-6796.

The rate of occurrence of corrosion and degradation of containment structures has been increasing at operating nuclear power plants. There have been 32 reported occurrences of corrosion in metal containments and the liners of concrete containments. This is approximately one-fourth of all operating nuclear power plants. Only four of the 32 occurrences were detected by current licensee containment inspection programs. Nine of these occurrences were first identified by the NRC through its inspections or structural audits. Eleven occurrences were detected by licensees after they were alerted to a degraded condition at another site or through activity other than containment inspection. There have been 34 reported occurrences of degradation of the concrete or of the

post-tensioning systems of concrete containments. This is nearly one-half of these types of containments. It is clear that current licensee containment inspection programs have not proved to be adequate to detect the types of degradation which have been reported. Examples of degradation not found by licensees, but initially detected at plants through NRC inspections include: 1) corrosion of steel containment shells in the drywell sand cushion region, resulting in wall thickness reduction to below the minimum design thickness; 2) corrosion of the torus of the steel containment shell (wall thickness below minimum design thickness); 3) extensive corrosion of the liner of a concrete containment with local degradation at many locations to approximately half-depth; 4) grease leakage from the tendons of prestressed concrete containments; and 5) leaching as well as excessive cracking in concrete containments.

None of the existing requirements for containment inspection provide specific guidance on how to perform the necessary containment examinations. This lack of guidance has resulted in a large variation with regard to the performance and the effectiveness of licensee containment examination programs. Based on the results of inspections and audits, and plant operational experiences, it is clear that many licensee containment examination programs have not detected degradation that could result in a compromise of pressure-retaining capability.

Most of those occurrences were first identified by the NRC through its inspections or audits of plant structures, or by licensees while performing an unrelated activity or, after they were alerted to a degraded condition at another site. In analyzing the reported containment degradation, it is apparent that all containments are subject to certain type(s) of degradation depending on the

design. Information gathered by the staff indicates that many licensees still have not reacted to this serious safety concern and have not initiated comprehensive containment inservice inspection. As a result of the rate of occurrence of containment degradation, and the extent of containment degradation, the NRC believes that there is a basis for reasonably concluding that such degradation is widespread and affects virtually all plants. Because of the serious degradation which has occurred, the belief that additional occurrences of noncompliance with required minimum wall thicknesses and prestressing forces will be reported, and the high likelihood that some of those occurrences could result in loss of structural integrity and leak-tightness, the NRC has determined that imposition of these containment inservice inspection requirements under the compliance exception to 10 CFR 50.109(a)(4)(i) is appropriate.

The NRC believes that the final action would also result in a substantial safety increase and that the direct and indirect costs of implementation are justified in view of the significant safety benefit to be gained. The NRC believes that the inspections contained in Subsections IWE and IWL will improve significantly the ability to detect degradation and take timely action to correct degradation of containment structures. A review of early implementation of the maintenance rule (10 CFR 50.65) at nine nuclear power plants, which is documented in NUREG-1526, indicates that most licensees assigned a low priority to the monitoring of structures. Several licensees incorrectly assumed that many of their structures are inherently reliable. This is true so long as there is no degradation. However, the degradation of structures can reduce high margins of safety to a low or negligible margin of safety. As discussed earlier, such substantial containment degradations have been detected at a large number of

nuclear power plants, and their detection to date can best be characterized as happenstance. The final rule will provide for improved periodic examination of containment structures assuring that the critical areas of containment are periodically inspected to detect and take corrective action for defects that could compromise the containment's pressure-retaining and leak-tight capability. The NRC believes, therefore, that the final action can be justified as a cost-justified safety enhancement backfit, as well as a compliance backfit.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Criminal Penalties, Fire protection, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 533, the NRC is adopting the following amendments to 10 CFR Part 50.

PART 50 - DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 continues to read as follows:

AUTHORITY: Secs. 102, 103, 104, 105, 161, 182, 183, 186, 189, 68 Stat.

936, 937, 938, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2132, 2133, 2134, 2135, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 50.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 50.10 also issued under secs. 101, 185, 68 Stat. 955, as amended (42 U.S.C. 2131, 2235); sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.13, 50.54(dd) and 50.103 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138). Sections 50.23, 50.35, 50.55, and 50.56 also issued under sec. 185, 68 Stat. 955 (42 U.S.C. 2235). Sections 50.33a, 50.55a and Appendix Q also issued under sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.34 and 50.54 also issued under sec. 204, 88 Stat. 1245 (42 U.S.C. 5844). Sections 50.58, 50.91, and 50.92 also issued under Pub. L. 97-415, 96 Stat. 2073 (42 U.S.C. 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80-50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Appendix F also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

2. Section 50.55a is amended by adding paragraphs (b)(2)(vi), (b)(2)(ix), (b)(2)(x), (g)(4)(v), and (g)(6)(ii)(B), and revising the introductory text of paragraphs (b)(2) and (g)(4) to read as follows:

§ 50.55a Codes and standards.

* * * * *

(b) * * *

(2) As used in this section, references to Section XI of the ASME Boiler and Pressure Vessel Code refer to Class 1, Class 2, and Class 3 components of Section XI, Division 1, and include addenda through the 1988 Addenda and editions through the 1989 Edition, and Class MC and Class CC components of Section XI, Division 1, 1992 Edition with the 1992 Addenda, subject to the following limitations and modifications:

* * * * *

(vi) Effective edition and addenda of Subsection IWE and Subsection IWL, Section XI. The 1992 Edition with the 1992 Addenda of Subsection IWE and Subsection IWL shall be used by licensees when performing containment examinations as modified and supplemented by the requirements in § 50.55a(b)(2)(ix) and § 50.55a(b)(2)(x).

* * * * *

(ix) Examination of concrete containments.

(A) Grease caps that are accessible must be visually examined to detect grease leakage or grease cap deformations. Grease caps must be removed for this examination when there is evidence of grease cap deformation that indicates deterioration of anchorage hardware.

(B) When evaluation of consecutive surveillances of prestressing forces for the same tendon or tendons in a group indicates a trend of prestress loss such that the tendon force(s) would be less than the minimum design prestress requirements before the next inspection interval, an evaluation shall be performed and reported in the Engineering Evaluation Report as prescribed in IWL-3300.

(C) When the elongation corresponding to a specific load (adjusted for effective wires or strands) during retensioning of tendons differs by more than 10 percent from that recorded during the last measurement, an evaluation must be performed to determine whether the difference is related to wire failures or slip of wires in anchorages. A difference of more than 10 percent must be identified in the ISI Summary Report required by IWA-6000.

(D) The licensee shall report the following conditions, if they occur, in the ISI Summary Report required by IWA-6000:

(1) The sampled sheathing filler grease contains chemically combined water exceeding 10 percent by weight or the presence of free water;

(2) The absolute difference between the amount removed and the amount replaced exceeds 10 percent of the tendon net duct volume.

(3) Grease leakage is detected during general visual examination of the containment surface.

(E) For Class CC applications, the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the licensee shall provide the following in the ISI Summary Report required by IWA-6000:

(1) A description of the type and estimated extent of degradation, and the conditions that led to the degradation;

(2) An evaluation of each area, and the result of the evaluation, and;

(3) A description of necessary corrective actions.

(x) Examination of metal containments and the liners of concrete containments

(A) For Class MC applications, the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the licensee shall provide the following in the ISI Summary Report required by IWA-6000:

(1) A description of the type and estimated extent of degradation, and the conditions that led to the degradation;

(2) An evaluation of each area, and the result of the evaluation, and;

(3) A description of necessary corrective actions.

(B) When performing remotely the visual examinations required by Subsection IWE, the maximum direct examination distance specified in Table IWA-2210-1 may be extended and the minimum illumination requirements specified in Table IWA-2210-1 may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination.

(C) The examinations specified in Examination Category E-B, Pressure Retaining Welds, and Examination Category E-F, Pressure Retaining Dissimilar Metal Welds, are optional.

(D) Section 50.55a(b)(2)(x)(D) may be used as an alternative to the requirements of IWE-2430.

(1) If the examinations reveal flaws or areas of degradation exceeding the acceptance standards of Table IWE-3410-1, an evaluation shall be performed to determine whether additional component examinations are required. For each flaw or area of degradation identified which exceeds acceptance standards, the licensee shall provide the following in the ISI Summary Report required by IWA-6000:

(i) A description of each flaw or area, including the extent of degradation, and the conditions that led to the degradation;

(ii) The acceptability of each flaw or area, and the need for additional examinations to verify that similar degradation does not exist in similar components, and;

(iii) A description of necessary corrective actions.

(2) The number and type of additional examinations to ensure detection of similar degradation in similar components.

(E) A general visual examination as required by Subsection IWE shall be performed once each period.

* * * * *

(g) * * *

(4) Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements, except design and access provisions and preservice examination requirements, set forth in Section XI of editions of the ASME Boiler and Pressure Vessel Code and Addenda that become effective subsequent to editions specified in paragraphs (g)(2) and (g)(3) of this section and that are incorporated by reference in paragraph (b) of this section, to the extent practical within the limitations of design, geometry and materials of construction of the components. Components which are classified as Class MC pressure retaining components and their integral attachments, and components which are classified as Class CC pressure retaining components and their integral attachments must meet the requirements, except design and access provisions and preservice examination requirements, set forth in Section XI of the ASME Boiler and Pressure Vessel Code and Addenda that are incorporated by reference in paragraph (b) of this section, subject to the limitation listed in paragraph (b)(2)(vi) and the modifications listed in paragraphs (b)(2)(ix) and (b)(2)(x) of this section, to the extent practical within the limitations of design, geometry and materials of construction of the components.

* * * * *

(v) For a boiling or pressurized water-cooled nuclear power facility whose construction permit was issued after January 1, 1956:

(A) Metal containment pressure retaining components and their integral attachments must meet the inservice inspection, repair, and replacement requirements applicable to components which are classified as ASME Code Class MC;

(B) Metallic shell and penetration liners which are pressure retaining components and their integral attachments in concrete containments must meet the inservice inspection, repair, and replacement requirements applicable to components which are classified as ASME Code Class MC; and

(C) Concrete containment pressure retaining components and their integral attachments, and the post-tensioning systems of concrete containments must meet the inservice inspection and repair requirements applicable to components which are classified as ASME Code Class CC.

* * * * *

(6) * * *

(ii) * * *

(B) Expedited examination of containment.

(1) Licensees of all operating nuclear power plants shall implement the inservice examinations specified for the first period of the first inspection interval in Subsection IWE of the 1992 Edition with the 1992 Addenda in conjunction with the modifications specified in § 50.55a (b)(2)(ix) by (a date will be inserted that is 5 years later than the effective date of the final rule). The examination performed during the first period of the first inspection interval shall serve the same purpose for operating plants as the preservice examination specified for plants not yet in operation.

(2) Licensees of all operating nuclear power plants shall implement the inservice examinations which correspond to the number of years of operation which are specified in Subsection IWL of the 1992 Edition with the 1992 Addenda in conjunction with the modifications specified in § 50.55a (b)(2)(ix) by (a date will be inserted that is 5 years later than the effective date of the final rule). The first examination performed shall serve the same purpose for operating plants as the preservice examination specified for plants not yet in operation.

(3) The expedited examination for Class MC components may be used to satisfy the requirements of routinely scheduled examinations of Subsection IWE subject to IWA-2430(d) when the expedited examination occurs during the first containment inspection interval.

(4) The requirement for the expedited examination of the containment post-tensioning system may be satisfied by the post-tensioning system examinations performed after (insert the effective date of the final rule) as a result of licensee post-tensioning system programs accepted by the NRC prior to (insert the effective date of the final rule).

(5) Licensees do not have to submit to the NRC staff for approval their containment inservice inspection program which was developed to satisfy the requirements of Subsection IWE and Subsection IWL with specified modifications and a limitation. The program elements and the required documentation shall be maintained on site for audit.

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Dated at _____ this 12th day of June 1996

For the Nuclear Regulatory Commission.

James M. Taylor
Executive Director for Operations.

CONGRESSIONAL CORRESPONDENCE SYSTEM
DOCUMENT PREPARATION CHECKLIST

This check list is to be submitted with each document (or group of Qs/As) sent for processing into the CCS.

1. *BRIEF DESCRIPTION OF DOCUMENT(S)* Ltr. to Sen. Faircloth

2. *TYPE OF DOCUMENT* X *CORRESPONDENCE* ____ *HEARINGS (Qs/As)*

3. *DOCUMENT CONTROL* ___ *SENSITIVE (NRC ONLY)* X *NON-SENSITIVE*

4. *CONGRESSIONAL COMMITTEE AND SUBCOMMITTEE (if applicable)*
   _____ *Congressional Committee*
   _____ *Subcommittee*

5. *SUBJECT CODES*
   (A) _____
   (B) _____
   (C) _____

6. *SOURCE OF DOCUMENTS*
   (A) _____ *5520 (DOCUMENT NAME* _____*)*
   (B) _____ *SCAN (C)* _____ *ATTACHMENTS*
   (D) _____ *OTHER* _____

7. *SYSTEM LOG DATES*
   (A) 9/30/96 *DATA OCA SENT DOCUMENT TO CCS*
   (B) _____ *DATE CCS RECEIVED DOCUMENT*
   (C) _____ *DATE RETURNED TO OCA FOR ADDITIONAL INFORMATION*
   (D) _____ *DATE RESUBMITTED BY OCA TO CCS*
   (E) _____ *DATE ENTERED INTO CCS BY* _____
   (F) _____ *DATE OCA NOTIFIED THAT DOCUMENT IS IN CCS*

COMMENTS:

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