

Regulatory Guide Number: 1.90, Revision 3

Title: In-service Inspection of Prestressed Concrete Containment Structures with Grouted Tendons

Office/division/branch: RES/DE/SGSEB

Technical Lead: Ramón L. Gascot Lozada

Staff Action Decided: Reviewed with issues identified for future consideration

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

Regulatory Guide 1.90, Revision 2, "Inservice Inspection of Prestressed Concrete Structures with Grouted Tendons," issued in November 2012, describes methods that the NRC considers acceptable for use in developing an appropriate in-service inspection (ISI) program for prestressed concrete containment structures with grouted tendons.

One issue identified during the review relates to citation of an earlier version of the ASME Boiler and Pressure Vessel Code. Revision 2 of RG 1.90 refers to ASME Boiler and Pressure Vessel Code, Section III, Division 2, Code for Concrete Reactor Vessels and Containments, 2001 Edition through the 2003 Addenda, also known as American Concrete Institute (ACI) Standard 359 which is endorsed by RG 1.136. There is a new version of this code, published in 2013 but there is no significant change in the code that is pertinent to RG 1.90. Staff review concluded that RG 1.90 need not be updated until a further need arises for NRC's licensing activities.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

Only two nuclear power plants in the United States have used grouted tendons: Three Mile Island Nuclear Station, Unit 2 (which is permanently shut down), and H.B. Robinson Steam Electric Plant (vertical tendons only). However, in France, Belgium, South Korea, Canada, and China, the use of grouted tendons in nuclear power plant containment structures has been more common. In addition, at least one U.S. reactor design certification application has proposed grouted tendons, AREVA's Evolutionary Power Reactor (EPR). Currently there are no license applications requiring use of the guide. Therefore, there is no impact on internal and external stakeholders if RG 1.90 is not updated.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?

Revision of the guide is estimated to require 0.2 FTE.

4. **Based on the answers to the questions above, what is the staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?**

Reviewed with issues identified for future consideration.

5. **Provide a conceptual plan and timeframe to address the issues identified during the review.**

At this moment a conceptual plan or timeframe is not necessary, due the limited applicability and current use of RG 1.90. If NRC's licensing activities presents a need for revision in future, the NRC staff will perform a complete review analyzing the need from the user office and provide a plan and timeframe to address the issues.

REFERENCES

1. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, "Rules for Construction of Nuclear Power Plant Components," Division 2, "Code for Concrete Reactor Vessels and Containments," 2001 Edition through 2003 Addenda, American Society of Mechanical Engineers, New York, NY. Also known as ACI Standard 359-01, American Concrete Institute, Farmington Hills, MI.
2. American Society of Mechanical Engineers, Boiler & Pressure Vessel Code an International Code (ACI Standard 359-13), Section III, Division 2, "Rules for Construction of Nuclear Facility Components", July 2013, New York, N.Y.
3. American Society of Mechanical Engineers, Boiler & Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," Division I, "Rules for Inspection and Testing Components of Light-Water-Cooled Plants," Subsection IWL, "Requirements for Class CC Concrete of Light Water Cooled Plants", New York, N.Y.

NOTE: This review was conducted in May 2018 and reflects the staff's plans as of that date. These plans are tentative and are subject to change.