CHAPTER I

(August 2000)

APPLICATION OF ASME CODE

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The American Society of Mechanical Engineers (ASME) codes were developed and are revised periodically by industry code committees composed of representatives of utilities, reactor designers, architect-engineers, component manufacturers, insurance companies, the Commission, and others. In 1971, the Commission incorporated the ASME Boiler and Pressure Vessel Code into the regulations in 10 CFR 50.55a. 36 Fed. Reg. 11,423 (June 12, 1971). The Statements of Consideration (SOC) for the final rule state: "It has been generally recognized that, for boiling and pressurized water-cooled reactors, pressure vessels, piping, pumps, and valves which are part of the reactor coolant pressure boundary should, as a minimum, be designed, fabricated, inspected, and tested in accordance with the requirements of the applicable American Society of Mechanical Engineers (ASME) codes in effect at the time the equipment is purchased[.]" The SOC also states: "Because of the safety significance of uniform early compliance by the nuclear industry with the requirements of these ASME . . . codes and published code revisions, the Commission has adopted the following amendments to Part 50 and 115, which require that certain components and systems of water-cooled reactors important to safety comply with these codes and appropriate revisions to the codes at the earliest feasible time." In addition, the SOC states: "Compliance with the provisions of the amendments and the referenced codes is intended to insure a basic, sound quality level." The ASME code, based on the collective engineering judgment of the code committees, documents the conditions that must be monitored, the inspection techniques adequate to observe those conditions, the frequency of the inspections, and the acceptance criteria that the results of the inspections must meet in order to assure the integrity of the structures and components considered in the code. The NRC has adopted this engineering judgment with respect to selected portion of the ASME code, as incorporated in 10 CFR 50.55a.

The Commission has been amending 10 CFR 50.55a periodically to incorporate later editions of the ASME code into the regulations, with modifications and limitations, as appropriate. The latest such amendment was in 1999. 64 Fed. Reg. 51,370 (September 22, 1999). In 1996, the Commission also incorporated Subsections IWE and IWL of Section XI of the ASME code into the regulations for containment inservice inspection, after evaluating these code requirements and concluding that they are effective in managing aging degradation of the containment structures. 61 Fed. Reg. 41,303 (August 8, 1996).

For the purpose of license renewal, the staff has extensively evaluated the appropriate ASME Section XI programs based on the 10 program elements described in Vol. 1 of this report. Except where noted, the staff has determined that the ASME Section XI programs provide processes for identifying degradation that is attributable to applicable aging effects and, therefore, are acceptable for managing the effects of aging during the period of extended operation. Where warranted, the staff indicates that certain parts of the code programs should be augmented to satisfy aging management requirements for license renewal. When future editions of the ASME Code are incorporated into the NRC regulations through rulemakings to amend 10 CFR 50.55a, the staff will, as part of that process, perform an evaluation of these later editions of the ASME Code for their adequacy for license renewal using the 10 elements for program evaluation described in this report.