

Performance Demonstration Program Turns 20 Years Old

Administered by EPRI since its formation in 1991, the Performance Demonstration Initiative has successfully qualified more than 100 procedures and conducted thousands of personnel qualification tests.

Concerns about the reliability of ultrasonic in-service inspections conducted at nuclear power plants led the U.S. Nuclear Regulatory Commission (NRC) to draft a proposed qualification document in October 1984. Representatives from industry, the American Society of Mechanical Engineers (ASME), and NRC agreed that major improvements in the quality of in-service inspection were needed and that qualification of nondestructive evaluation (NDE) systems might be the answer. Such qualification requirements could be used instead of formal rules established through a regulatory guide. Efforts by the ASME Section XI Subgroup on Nondestructive Examination resulted in the creation of Appendix VIII, which contains the requirements for qualification of ultrasonic procedures, equipment, and personnel. These requirements were approved by the ASME Boiler and Pressure Vessel Standards Committee in early 1989 and by the Board on Nuclear Codes and Standards in mid-1989. Appendix VIII was published as part of the 1989 Addenda to the ASME Code Section XI.

To implement the demonstration requirements in an efficient, cost-effective, technically sound manner, the U.S. nuclear industry formed the Performance Demonstration Initiative in 1991, and EPRI became the administrator for the program. For the past 20 years, EPRI has provided technical and management support for the program, and has administered the hands-on demonstrations in accordance with a written program. This written program includes specimen design, sample fabrication, qualification testing, and personnel registry maintenance.

While the performance demonstration requirements were not mandated by federal law until 1999, EPRI started administering performance demonstrations in accordance with Appendix VIII in 1994. Since its inception, EPRI has successfully qualified more than 100 different procedures through the program. EPRI has also administered thousands of personnel qualification tests for a wide variety of applications.

Over the years, the concept of performance demonstration has spread throughout the world and many countries have developed various approaches to satisfy specific requirements. To date, 11 countries have elected to use the Performance Demonstration Initiative approach either in whole or in part to satisfy these requirements. Other industry groups also have begun using the EPRI infrastructure and expertise in this area. The Materials Reliability Program, for example, has adopted the performance demonstration practices for reactor upper head penetration qualifications.

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