EPRI's Research for Long-Term Operations

Issues:

- Many nuclear power plant (NPPs) operators around the world are investing in their existing assets to ensure continued safe, reliable and economic extended operations of this low-carbon generation into the future.

- Operators who are determining if they want to make this investment must weigh a myriad of technical issues such as material degradation in the plant operating environment, inspection technologies, mitigation measures, repair and replacement strategies, and equipment obsolescence.

- There is also pressure on operating plants to maintain or reduce operating costs to remain competitive.

EPRI Key Messages:

- EPRI has completed decades of research that form the technical basis for safe, reliable and economic long-term operations of NPPs around the world. This research is conducted in coordination and collaboration with U.S. and international research partners such as the U.S. Department of Energy Light Water Reactor Sustainability (LWRS) Program, U.S. NRC Research, the Materials Aging Institute (MAI) and International Atomic Energy Agency (IAEA) among others.

- This research provides the technical basis for aging management. Nuclear plant operators around the world implement Aging Management Programs (AMPs) to inspect, mitigate and as needed repair or replace systems, structures and components to provide reasonable assurance of continued safe operations. Through the EPRI research programs operating experience, lessons learned, and research results are shared. These aging management programs are living programs, and continuous improvement is a part of the process.

- In addition to the aging management research EPRI's research supports utility members to adapt to changing market conditions, such as the need for flexible power operations, and innovations for plant modernization ensure safety while reducing plant operating costs.

EPRI Status and Next Steps:

- Continued research to support aging management and innovations to address future plant needs is a part of EPRI core business. This research is being conducted in coordination and collaboration with our global research partners.

- EPRI's plant modernization initiative is developing industry peer developed and reviewed Modernization Quick Guides of standard designs and demonstrations. The ultimate deliverable to EPRI members will be a Plant Modernization Handbook which will be a living analytical database of potential plant improvements in 2020, with case studies added in 2021.

- EPRI's flexible operations collaborative research includes evaluating the economic and technical feasibility of alternative uses such as hybrid nuclear-renewable systems for generating hydrogen; and identifying changes needed to plants for expanded ranges of flexible operations, i.e., ability to maneuver the plants deeper, faster and more frequently as renewable generation continues to increase.

Contact Information:

Aging Management: Emma Wong

ewong@epri.com

Plant Modernization: Robert Austin

rausting@epri.com

Innovation: Heather Feldman

hfeldman@epri.com

Flexible Power Operations: Sherry Bernhoft

sbernhoft@epri.com