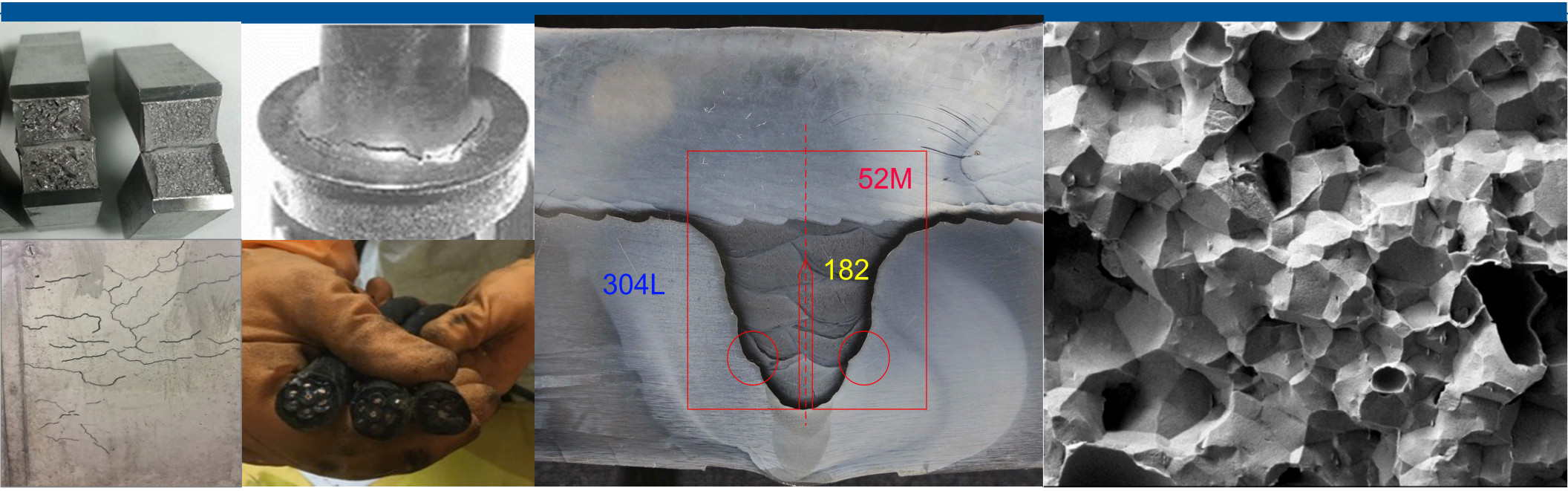

NRC Research: Readiness for Long-Term Operation

Rob Tregoning & John Wise
Nuclear Regulatory Commission

NRC Workshop on Structural Materials: Research for Beyond 80 Years
October 1 - 3, 2024

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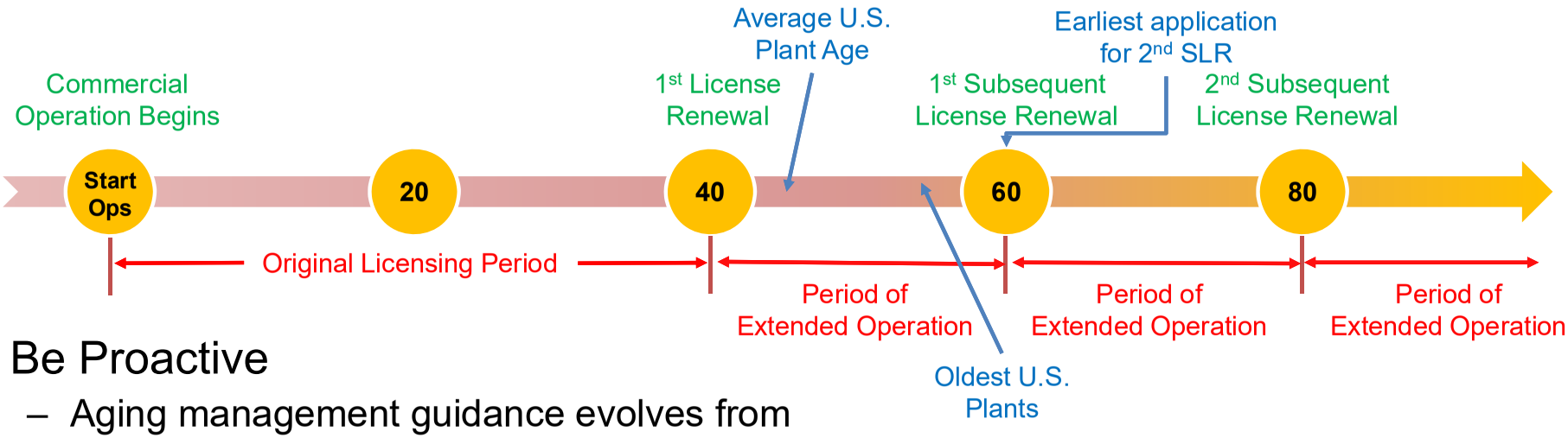
Why are We Here?

- Be Ready
  - License renewal governed by 10 CFR Part 54



- Be Proactive
  - Aging management guidance evolves from operating experience and research findings
- Start a Broader Stakeholder Conversation
  - While we continually assesses research needs, it's essential to engage nuclear community

How Did We Get Here?

- Public meetings in 2021
  - Discuss technical issues and develop guidance documents associated with life extension beyond 80 years
  - Hold public dialog on possibility of extending renewed licenses from 20 to 40 years

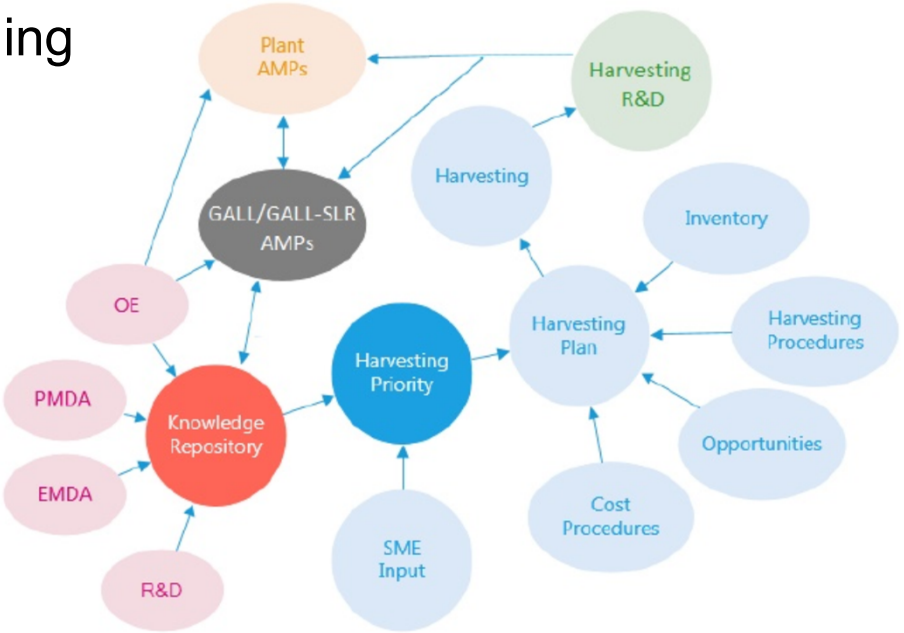
UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

MEMORANDUM TO:	Robert M. Taylor, Deputy Office Director for New Reactors Office of Nuclear Reactor Regulation
THRU:	Anna H. Bradford, Director Division of New and Renewed Licenses Office of Nuclear Reactor Regulation
FROM:	Allen L. Hiser, Jr., Senior Technical Advisor for Licensing Renewal Aging Management Division of New and Renewed Licenses Office of Nuclear Reactor Regulation
SUBJECT:	CLOSURE OF ACTIVITY TO CONSIDER LICENSE RENEWAL FOR 40 YEARS OF ADDITIONAL NUCLEAR POWER PLANT OPERATION

- Relevant outcomes
  - Consider research activities to achieve greater exposure levels to address expected conditions for greater than 80 years of operation
  - Evaluate impact of plant risk from the combined effects of multiple aged components (NUREG-1412)
  - Develop a “Research Strategy for Long-Term Operation,” which identifies knowledge gaps and provides recommendations for addressing

What Do We Hope to Achieve?

- Identify research topics to consider pursuing
  - Extension of existing activities
  - New efforts and focus areas
- Gather opinions on knowledge gaps
  - Safety significance
  - Associated uncertainties
- Explore possible research strategies
  - Aging strategies, including harvesting
  - Evaluation methods
  - Assessing significance



FAVPRO

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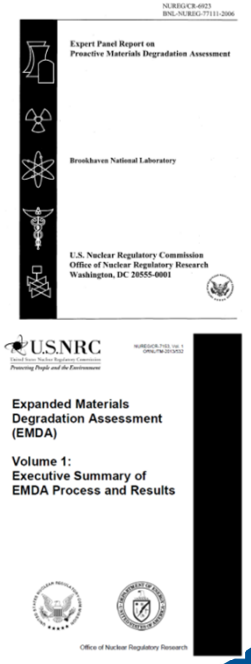
How Will We Do It?

- Previously, Phenomenon Identification and Ranking Table (PIRT)-process used to identify and prioritize knowledge gaps
  - Conducted Proactive Materials Degradation Assessment (PMDA) during initial license renewal period
  - Conducted Expanded Materials Degradation Assessment (EMDA) prior to subsequent license renewal period
  - Framework for much of NRC's research supporting LTO over the past 15 years
- Three pillars supporting NRC's future research efforts
  - PMDA and EMDA efforts and outcomes of supporting research programs
  - Operating experience and associated effectiveness of aging management programs
  - Identification and assessment of additional research gaps

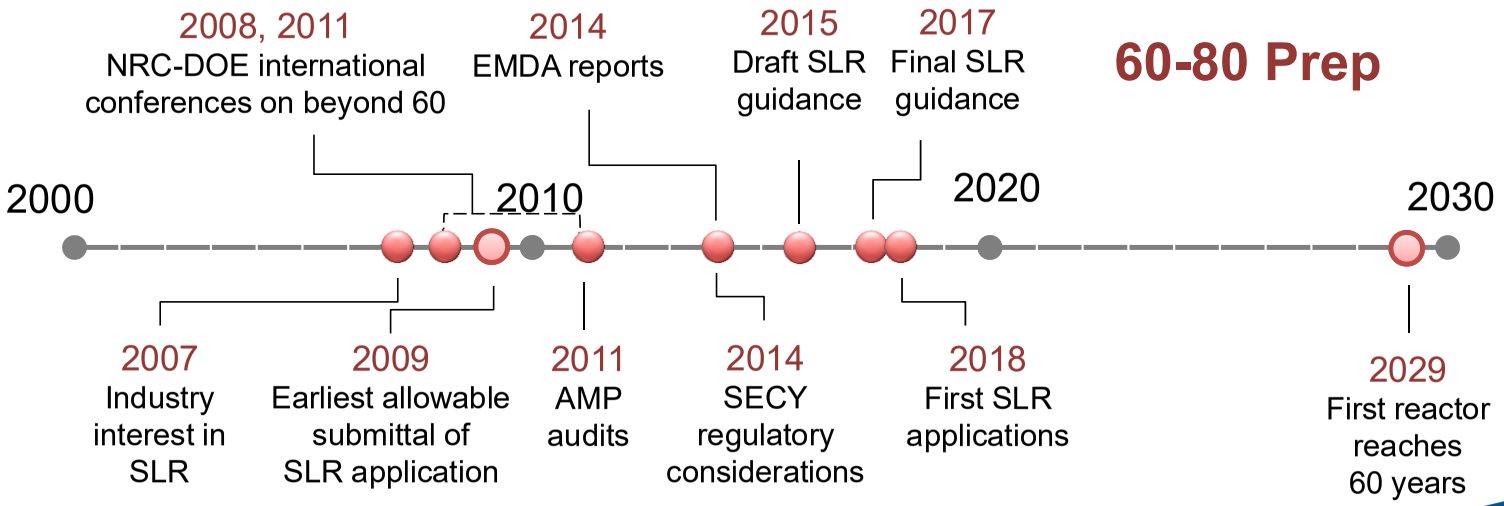


What Will Be the Next Steps?

- Assess research gaps
  - Prioritize based on potential safety-significance and current uncertainties
  - Develop research strategies
- Evaluate efficacy of ongoing research programs
  - Modify, as needed, to investigate relevant conditions
  - Continue to pursue ex-plant harvesting, as appropriate
- Coordinate with EPRI LTO and DOE LWRS
  - Align on research priorities
  - Identify organizational actors and leads
  - Pursue collaboration when warranted
- Document “Research Strategy for Long-Term Operation”

How Does This Fit into the Regulatory Framework?

- Regulatory preparations for the next renewal period
  - Timelines historically driven by industry's expressed intent to apply
  - Knowledge gaps will inform guidance and, if appropriate, the rule



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