

NRC High-Priority Data Needs for Harvesting

NRC Staff

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Metals

- RPV
 - High fluence & high shift vessel with well-established unirradiated properties (or a means to estimate them)
 - Through thickness section to validate fluence & attenuation models
 - Measure fluence, toughness, & chemistry as a function of through-thickness position
 - Samples from virtually any vessel
 - Of sufficient size to enable measurement of both the Charpy transition curve and master curve transition temperature T_0
 - This testing
 - Enables demonstration of the conservatism of regulatory approaches for transition temperature prediction
 - Provides data supporting evolution from the use of correlative (Charpy-based) to direct measurement (fracture toughness-based) approaches

Metals

- CASS and Internals
 - High fluence reactor internals
 - >50 dpa 304 SS from high core outlet temp plant
 - Bounding temperature and high fluence for void swelling
 - Thermally aged unirradiated CASS
 - >30 years at ~320°C; Validate accelerated aging data
 - Moderate fluence (1-2 dpa) CASS
 - Bolster technical basis for embrittlement in this fluence range
- Components with known flaws
 - Example: weld overlays over known flaws
 - NDE evaluations or to assess effectiveness of mitigation techniques
- Components with limiting fatigue life
 - Confirm fatigue calculations are accurate by inspecting for flaws

Electrical

- Cables
 - Low and medium voltage cables
 - Cables protected with fire retardant coating
- Electrical components
 - 1E MOVs from harsh and mild environments
 - 1E Air operated valves; 4160 1E breakers
 - 1E Molded case breakers 480V, 250V DC, 125 VDC,
 - 1E Relays from mild environment GE – HFA, Agastat timing relays, any from Westinghouse, Potter Brumfield, Stuthers Dunn etc.,
 - Electrical penetrations; Batteries
- Fire research interest
 - Electrical enclosures
 - Distribution : switchgear, MCCs, LCs | Control : Horseshoe, SSCP, ASP, etc.

Concrete

- Structures exposed to high radiation
- Post-tensioned structures
- Corrosion of reinforcing steel, tendon, liner, embedment
- Spent fuel pool and transfer canal-boric acid attack on concrete in PWRs
- Alkali Aggregate Reaction
- Large structural sections for testing