

Fluence Calculations

Acronyms



- RG – Regulatory Guide
- RV – Reactor Vessel
- RVI – Reactor Vessel Internals
- AMP – Aging Management Program
- GALL – Generic Aging Lessons Learned
- SLR – Subsequent License Renewal



Overview



- Fluence at the RV, RV components, and RVI
- Gaps within RG 1.190
- Issues NRC Pursuing
- Future Work



Fluence Outside Beltline



- Aging Management for License Renewal for 60 and 80 years
- Reactor vessel locations above or below the core
 - RV nozzles and RVI components



Gaps within RG 1.190



- RG 1.190 provides guidance for evaluating fluence in the RV beltline area
- Not up-to-date with advances in nuclear data and numerical techniques
- Does not identify acceptable numerical techniques or qualification data for areas outside RV beltline



Issues NRC Pursuing



- Important phenomena in calculating fluence at locations above or below reactor core and RVI components
- Guidance for evaluating fluence at the RV components and RVI components:
 - Transport method
 - Numerical approximations
 - Qualification data



Current Work



- NRC User Need to develop a technical basis for improving guidance regarding neutron fluence evaluation methodologies
- New AMP for Neutron Fluence Monitoring for GALL SLR Report



Questions?



Reference



- Regulatory Guide (RG) 1.190, “Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence”
- Title 10 of the Code of Federal Regulations (10 CFR), Part 54, Requirements for Renewal of Operating License for Nuclear Power Plants