Advanced Fuel Technologies for LWRs

EPRI Perspectives and Research Activities

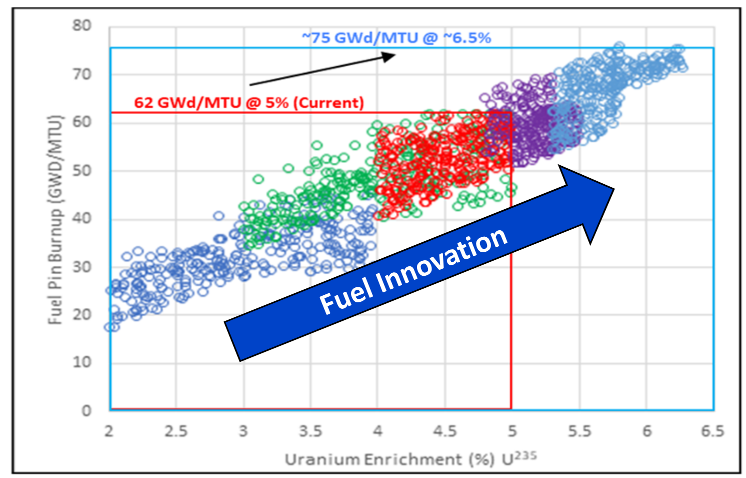
Rob Daum, Ph.D.
Senior Technical Executive

U.S. NRC Regulatory Information Conference
Accident Tolerant Fuel Technical Session
March 9, 2021

Understanding the Benefits and Risks

- Safety, performance, and economic analyses of LWR advanced fuel technologies across the entire fuel cycle
  - Accident Tolerant Fuel (ATF)
  - Higher Burnup
  - Increased Enrichment

- Gap analyses leading to collaborative and timely research to inform technical and licensing bases



Source: U.S. DOE GC-859 "Nuclear Fuel Data Survey" database converted to peak pin burnup using typical peaking factors and extrapolated to higher burnups and enrichments

Research Needs

- High priority generic Issues
  - Severe accident behavior
  - Fuel fragmentation, relocation, and dispersal
  - Criticality
  - Fuel reliability
  - Spent fuel storage, transportation, and disposal

- Opportunities for acceleration
  - Collaboration, cooperation, and resource sharing
  - Development of risk-informed methodologies
  - Coupling experimentation with advanced modeling and simulation

Together…Shaping the Future of Electricity