

# **NRC Preparations to License Accident Tolerant Fuel**

Andrew Proffitt

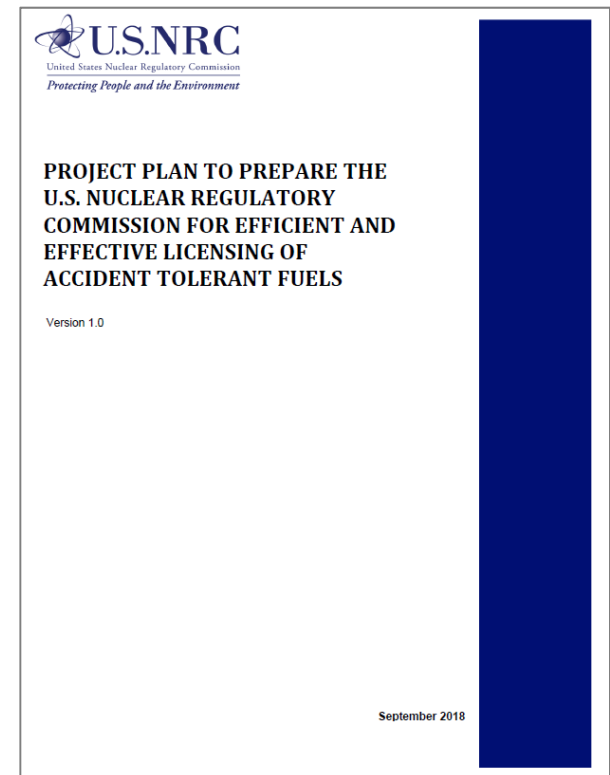
February, 2019

# Agenda

- I. ATF Project Plan implementation
- II. Cr-coated cladding PIRT/ISG
- III. Upcoming NRC meetings on ATF

# I. ATF Project Plan Implementation

- NRC's ATF Project Plan issued in September 2018 ([ML18261A414](#))
- Heightened stakeholder engagement
  - Fuel vendors
  - Public
  - DOE
  - Industry
- Actively modifying NRC analysis capability to model near-term ATF concepts

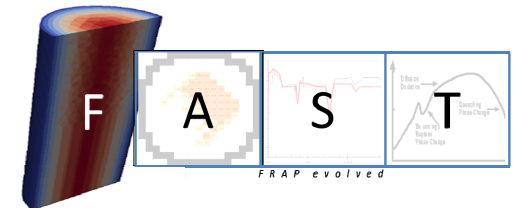


# Draft ATF Regulatory Issue Summary Issued

- “Pre-application Communication and Scheduling for Accident Tolerant Fuel Submittals” ([ML18270A019](#))
- Inform budget and resource planning
  - Scheduling
  - Necessary knowledge and skillsets
- Begin addressing questions with NRC staff today
- Responses are voluntary

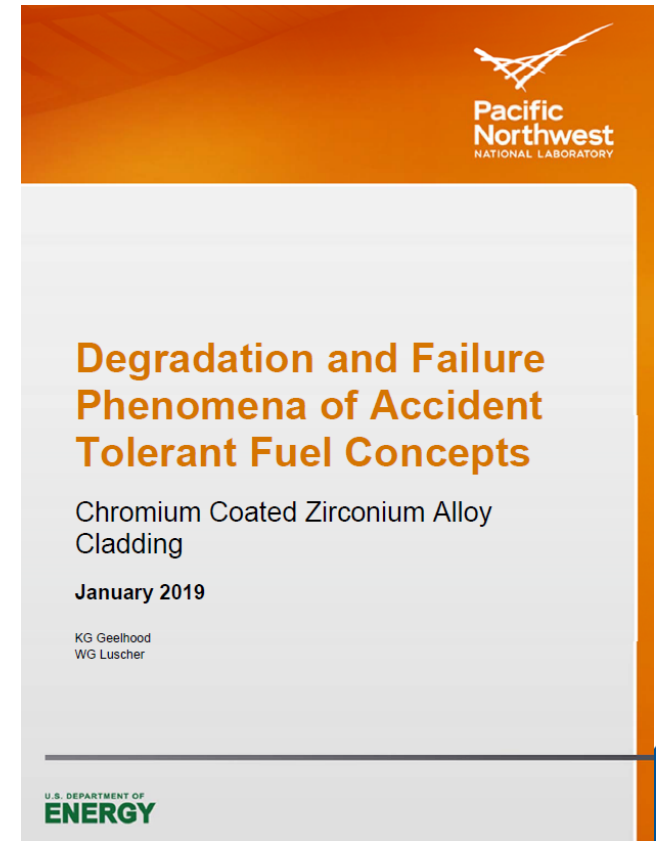
# Confirmatory Tool Updates

- Identifying data gaps / code updates needed to support near-term ATF concepts
- Near-term focus:
  - Doped fuels
  - Coated claddings
  - FeCrAl
  - Phase 1 (~67 GWd/mtU) burnup extension
- Completed activities:
  - Material library updates (available data)
  - Oxidation kinetics for FeCrAl
  - Assessment on doped fuel behavior
- Engaged with fuel vendors and DOE/CASL on ATF modeling efforts and plans



## II. Chrome Coated Cladding

- Initiated phenomena identification and ranking (PIRT) exercise for chrome coated zirconium alloy cladding
- Preliminary report available in ADAMS ([ML19036A716](#))
- Provided to experts in advance of panel discussions
- PIRT panel to be held at PNNL April 23-25, 2019



# Preliminary Cr-Coated PIRT Report

- Overview of coating concepts and techniques
- Cr-Zr Phase Diagram
- Potential changes to Safety Analysis Codes, Methods and Safety Limits
  - Cladding base material property correlations + impacts
  - Impact of coating on SAFDLs
  - Changes to existing codes and methodologies
- Current publicly available data
  - In-reactor
  - Ex-reactor
  - Data gaps and performance concerns

# Developing Interim Staff Guidance for Predictable and Efficient Reviews

- NRR Office Instruction on Interim Staff Guidance (ISG):  
Purpose: Provide temporary guidance to staff until more durable guidance is incorporated into established NRC regulatory processes
  - Useful in facilitating expedited resolution of emerging technical or licensing issues
  - Provide staff guidance concerning issues not currently addressed within established NRC regulatory processes
- PIRT results will be used to develop ISG that supplements standard review plan (SRP) chapters 4.2 and 15 (as necessary)
- Provide guidance to both staff and industry:
  - Industry: Understand staff expectations for submittals
  - Staff: Supplement the standard review plan with concept specific review criteria



# Cr-Coated Cladding PIRT/ISG Timeline

- **April 2019:** PIRT panel
- **July 2019:** Final PIRT report
- **July 2019:** Initial draft ISG publicly available
- **August 2019:** Public meeting on initial draft ISG
- **September 2019:** Potential ACRS subcommittee meeting on draft ISG
- **September 2019:** ISG published in Federal Register for public comment
- **December 2019:** Public meeting to discuss resolution of comments
- **December 2019:** Final issuance of ISG

# III. Upcoming NRC ATF Meetings

- Public portion at beginning of all vendor meetings
  - February 27, 2019: GNF
  - February 27-28, 2019: Framatome
  - February 28, 2019: Westinghouse
- March 14, 2019 – RIC Session
  - “Accident Tolerant Fuels: Preparations to License”
  - Panelists: DOE, NEA, NEI, & NRC
- April 23-25, 2019 – Cr-coated PIRT Panel
  - Richland, WA (PNNL)
  - [meeting notice](#)
- July 2019 – Public meeting on Cr-coated interim staff guidance
  - Initial draft to be made available prior to meeting