U.S. DEPARTMENT OF ENERGY | Nuclear Energy

IEA/NEA Nuclear Technology Roadmap Update
Stakeholder Engagement Workshop

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Role of U.S. Department of Energy for Sustainable and Innovative Nuclear Energy

Conduct Research, Development, and Demonstration to:

- Reduce regulatory risk
- Reduce technical risk
- Reduce financial risk and improve economics
- Manage nuclear waste
- Minimize the risks of nuclear proliferation and terrorism
- Foster international and industry collaboration

Vogtle – October 2013
Source: Southern Co.

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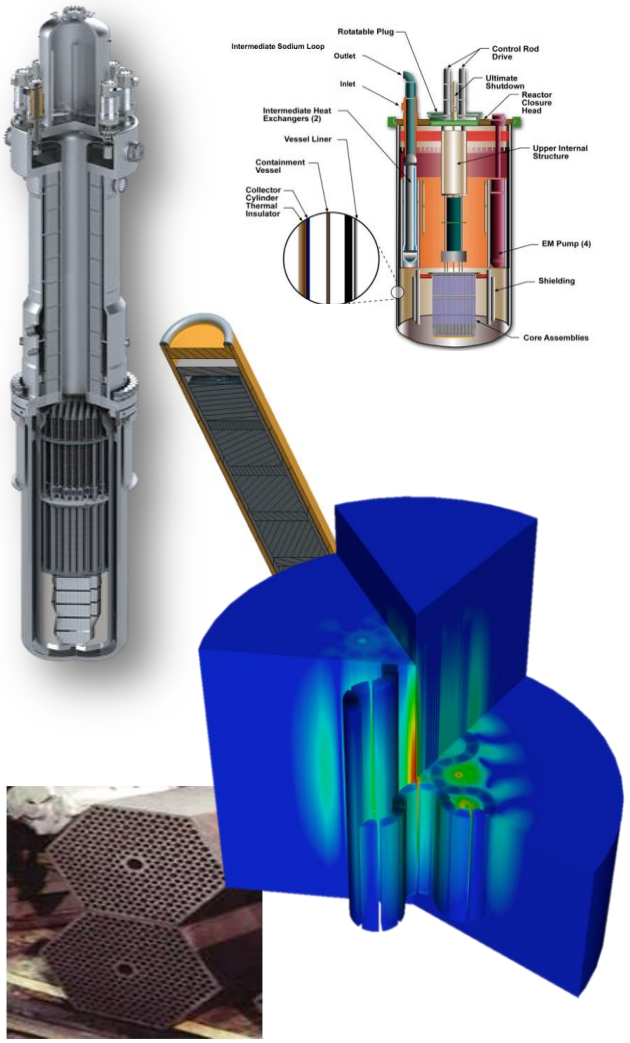
NE R&D Portfolio

- **Reactor R&D**
  - Advanced Reactors
  - Small Modular Reactors
- **Fuels R&D**
  - Advanced Fuels
  - Used Fuel Disposition
- **Crosscutting R&D**
  - Nuclear Energy University Programs (NEUP)



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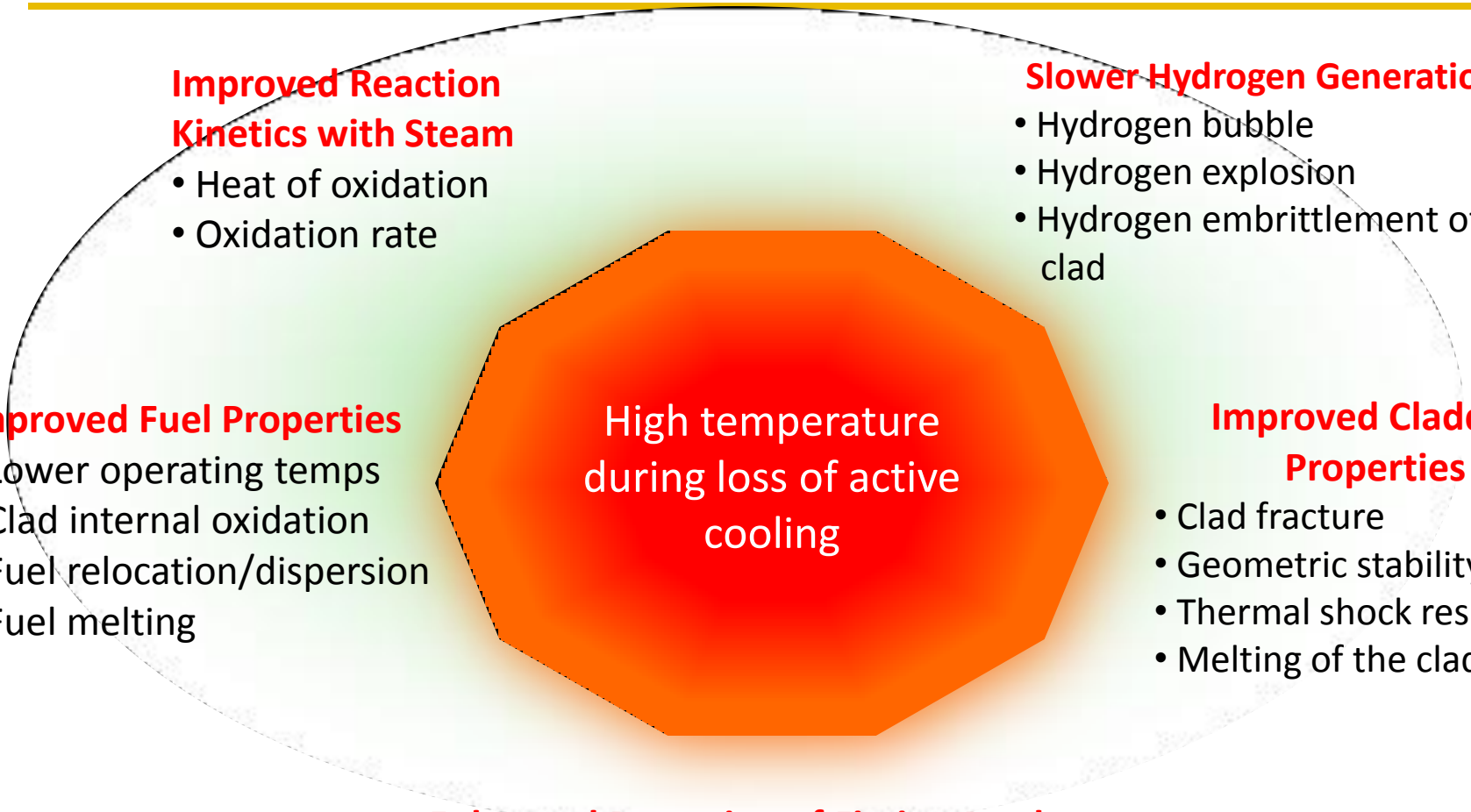
Behaviors of Accident Tolerant Fuels & Fuel and Cladding at High Temperatures



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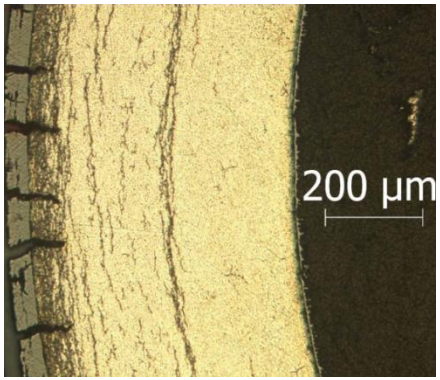
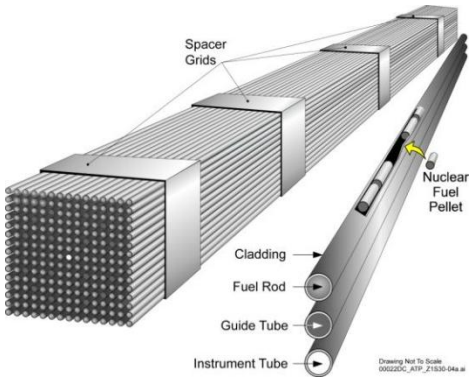
Storage and Transportation R&D

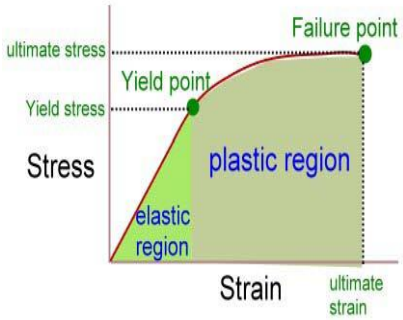
<u>Objective</u>: Prepare for the eventual large-scale transport of spent nuclear fuel and high-level waste

Develop the technical basis for:

- **Extended storage of used nuclear fuel**
- **Fuel retrievability and transportation after extended storage**







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Storage and Transportation
Extended Storage R&D

Better understand potential degradation mechanisms in long-term dry cask storage including:

- **Complete the identification of data gaps to support extended dry storage**
- **Continue material testing to support modeling and simulation of used fuel aging**
- **Participate with industry and others on full-scale cask storage demonstration of high burnup used fuel**