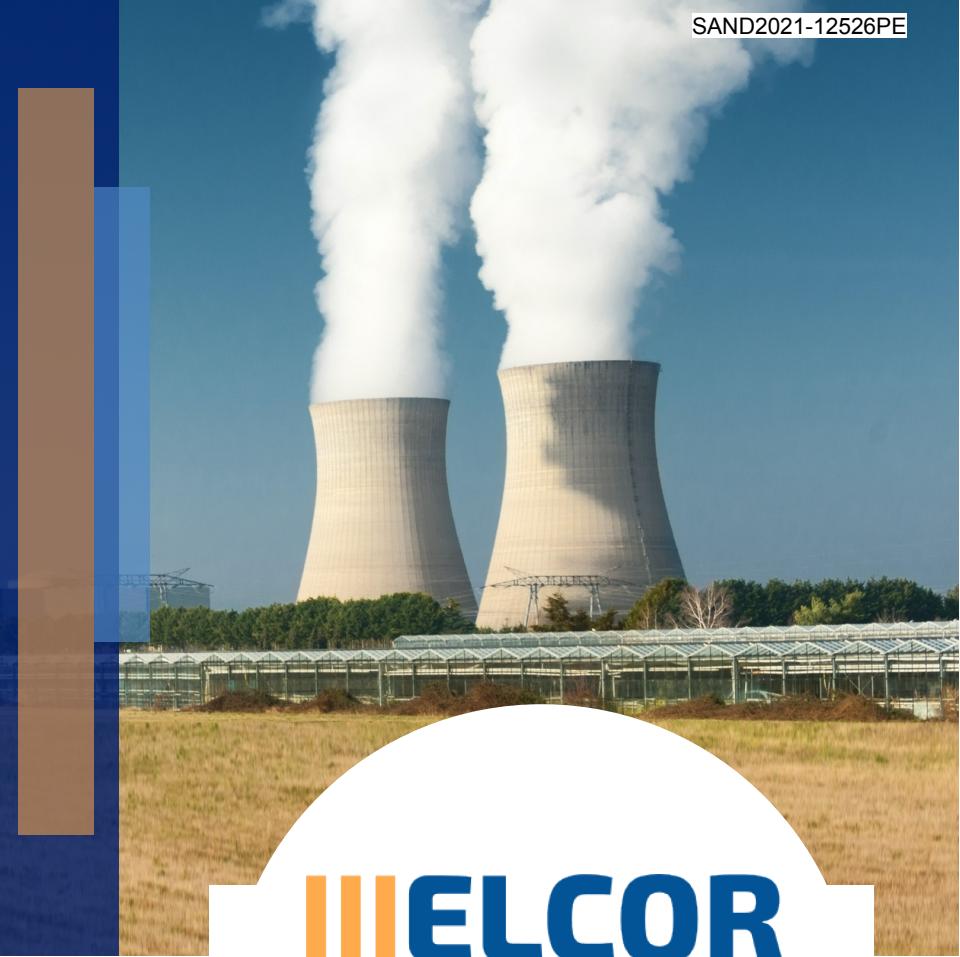




Sandia
National
Laboratories

Securing the future of Nuclear Energy



III ELCOR

Advanced Nuclear Energy Safety Research

David L. Luxat (8852)

Manager, Nuclear Safety Modeling and Analysis



SCALE (ORNL)

- Neutronics Modeling
- Criticality
- Shielding
- Depletion analysis
- Burnup credit

MELCOR (SNL)

Integrated Accident and Source Term Modeling

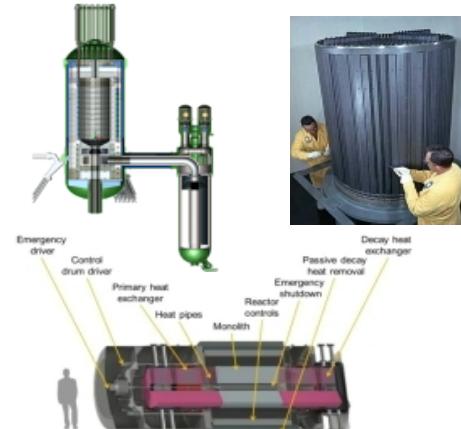
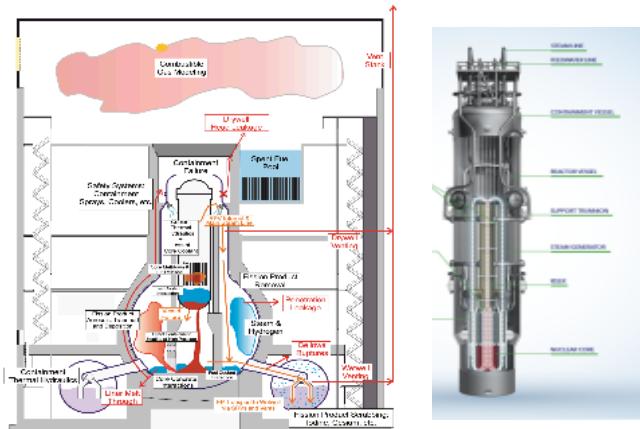
- Hydrodynamics for range of working fluids
- Accident response of plant structures, systems and components
- Generalized fission product transport modeling inside facilities

MACCS (SNL)

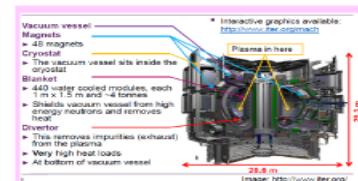
Consequence Assessment

- Near- and far-field atmospheric transport and deposition
- Assessment of health and economic impacts of radiological accidents

Nuclear Reactor System Applications



Non-Reactor Applications

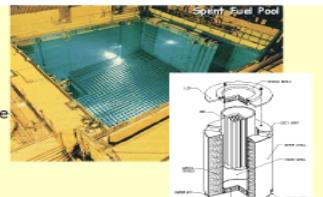


Fusion

- Neutron Beam Injectors (LOVA)
- Li Loop LOFA transient analysis
- ITER Cryostat modeling
- Helium Lithium
- Helium Cooled Pebble Bed Test Blanket (Tritium Breeding)

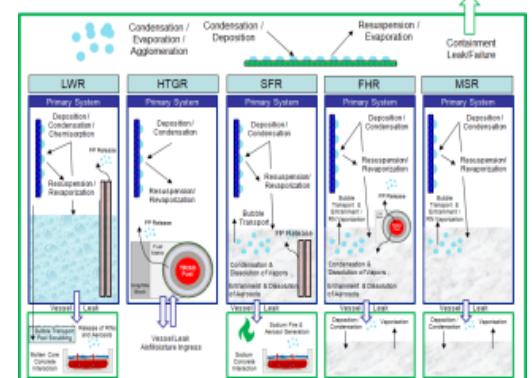
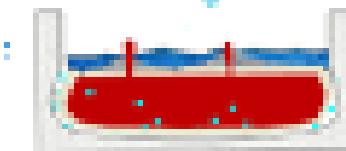
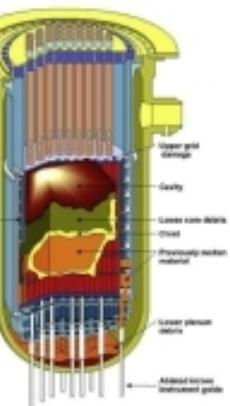
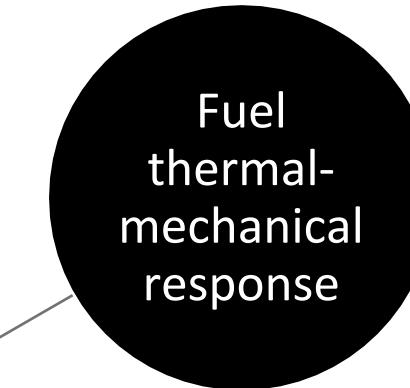
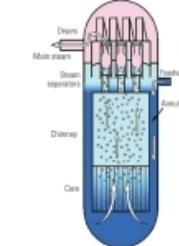
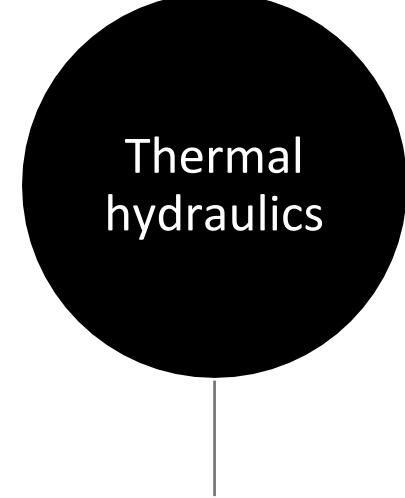
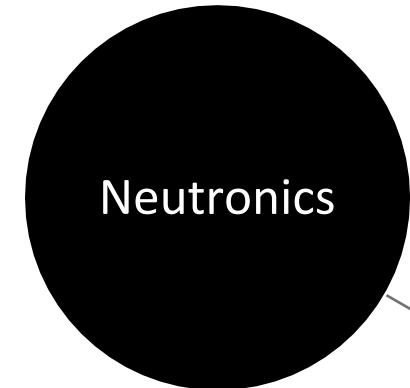
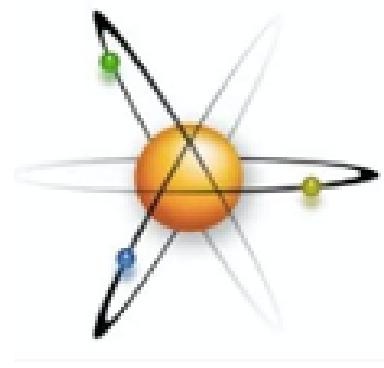
Spent Fuel

- Spent fuel pool risk studies
- Multi-unit accidents (large area destruction)
- Dry Storage



Non-Nuclear Facilities

- Leak Path Factor Calculations (LPF)
 - Release of hazardous materials from facilities, buildings, confined spaces
- DOE Safety Toolbox code
- DOE nuclear facility users
 - Pantex
 - Hanford
 - Los Alamos
 - Savannah River Site



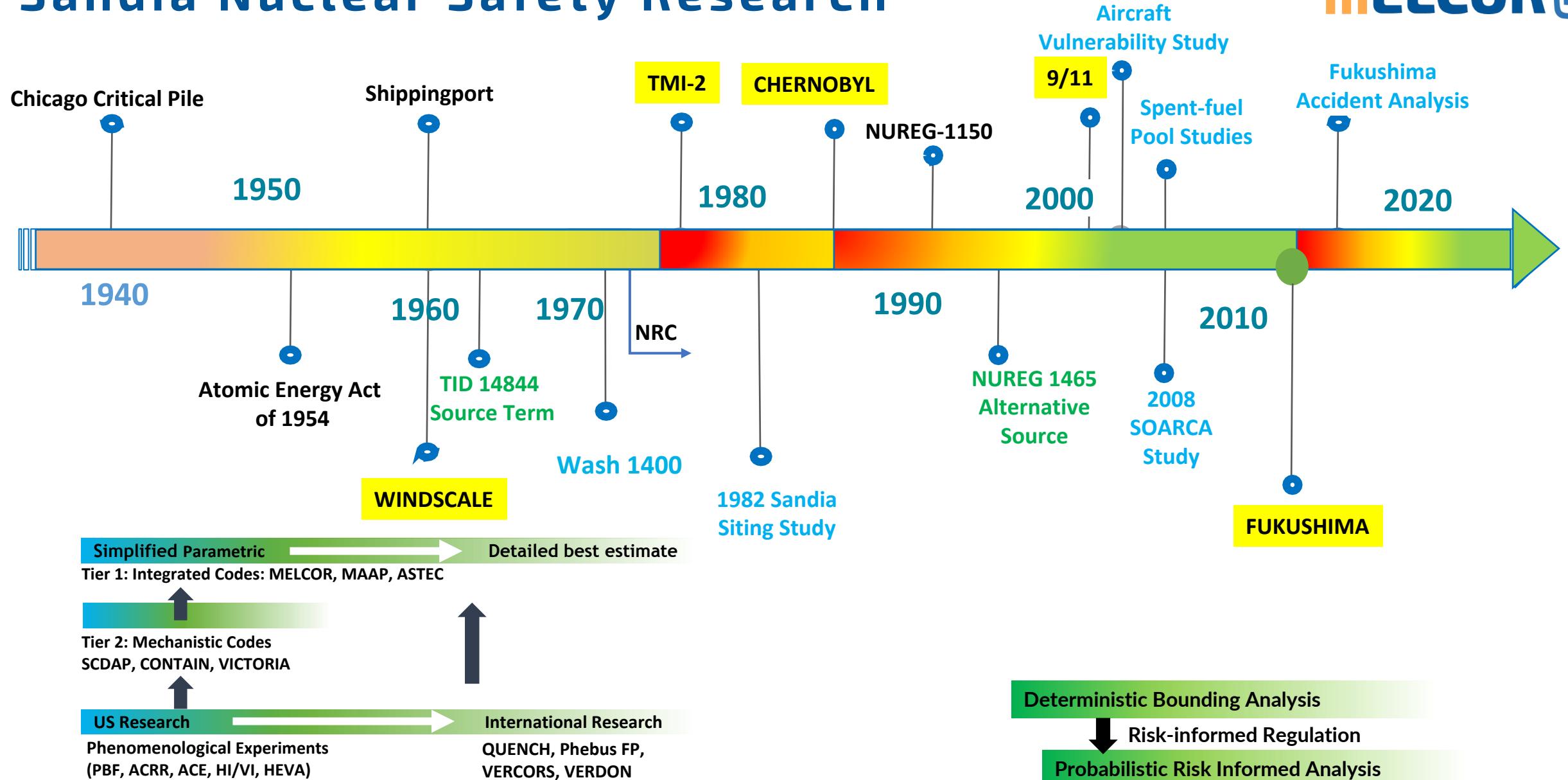
International Nuclear Safety

International Collaboration

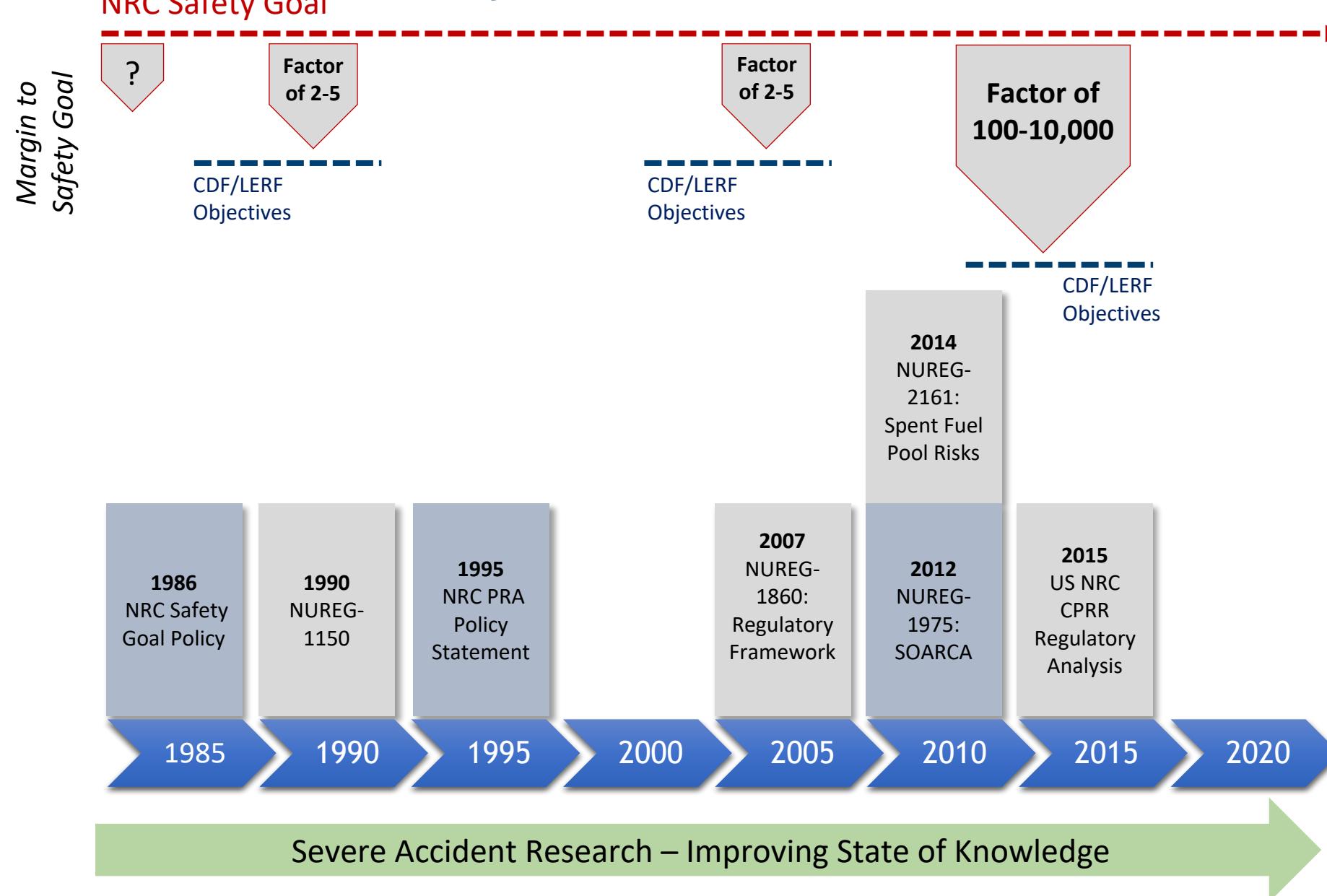
Cooperative Severe Accident Research Program (CSARP) – June/U.S.A
MELCOR Code Assessment Program (MCAP) – June/U.S.A
European MELCOR User Group (EMUG) Meeting – Spring/Europe
Asian MELCOR User Group (AMUG) Meeting – Fall/Asia



Sandia Nuclear Safety Research



Sandia Nuclear Safety Research



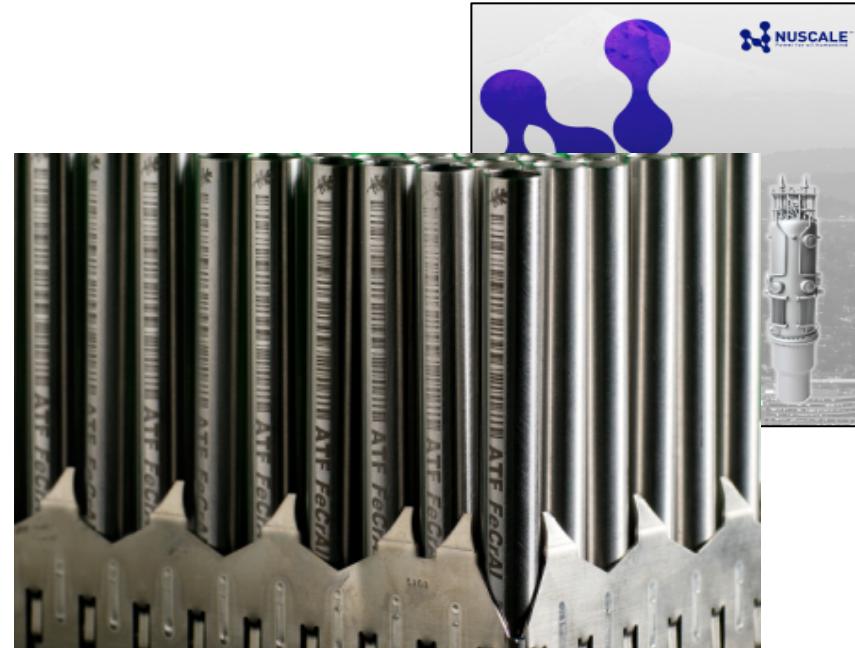
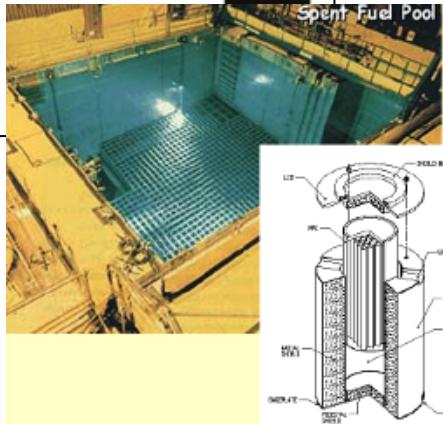
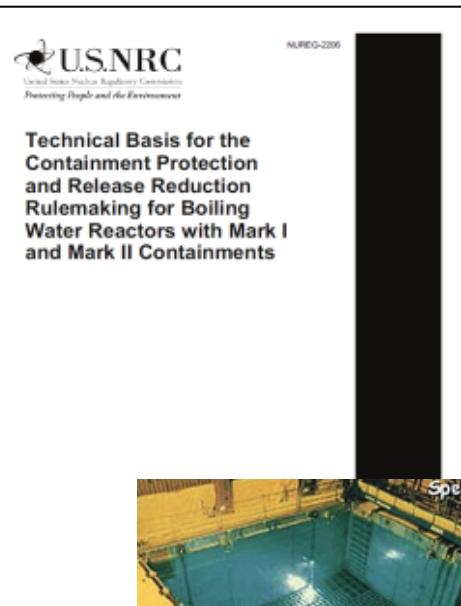
Enabling Nuclear Energy to Combat Climate Change



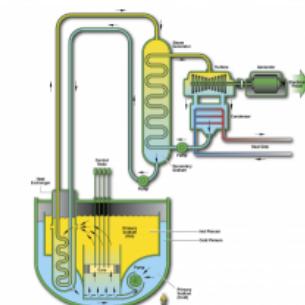
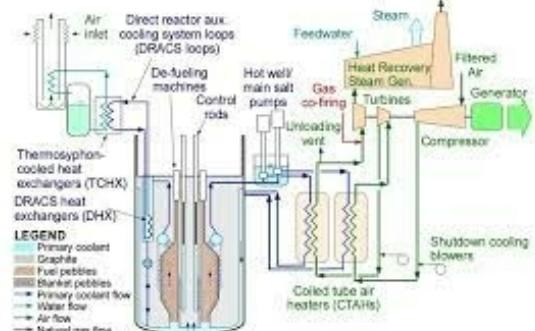
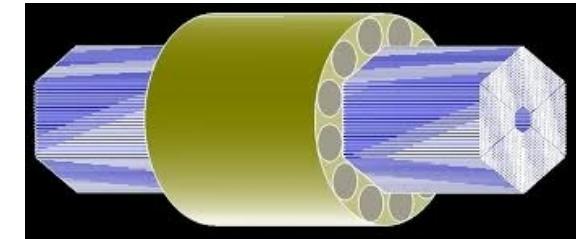
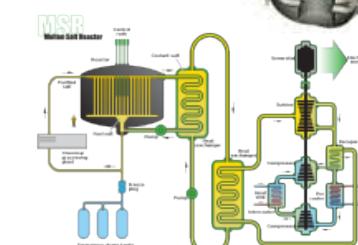
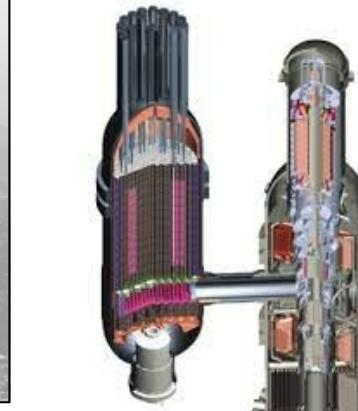
Current Light Water Reactors

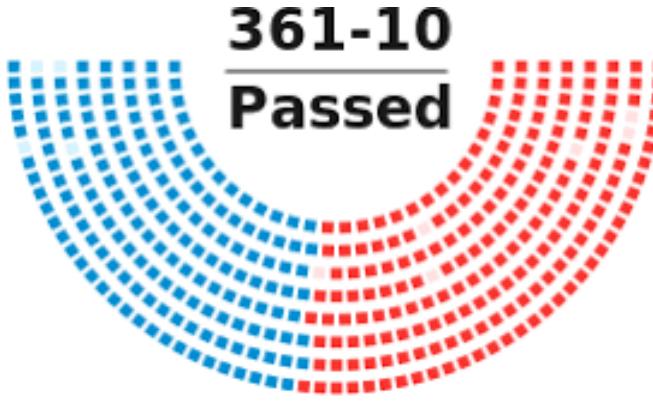
Near-term Advanced Technologies

Advanced Reactors



ELCOR





S.512

One Hundred Fifteenth Congress
of the
United States of America

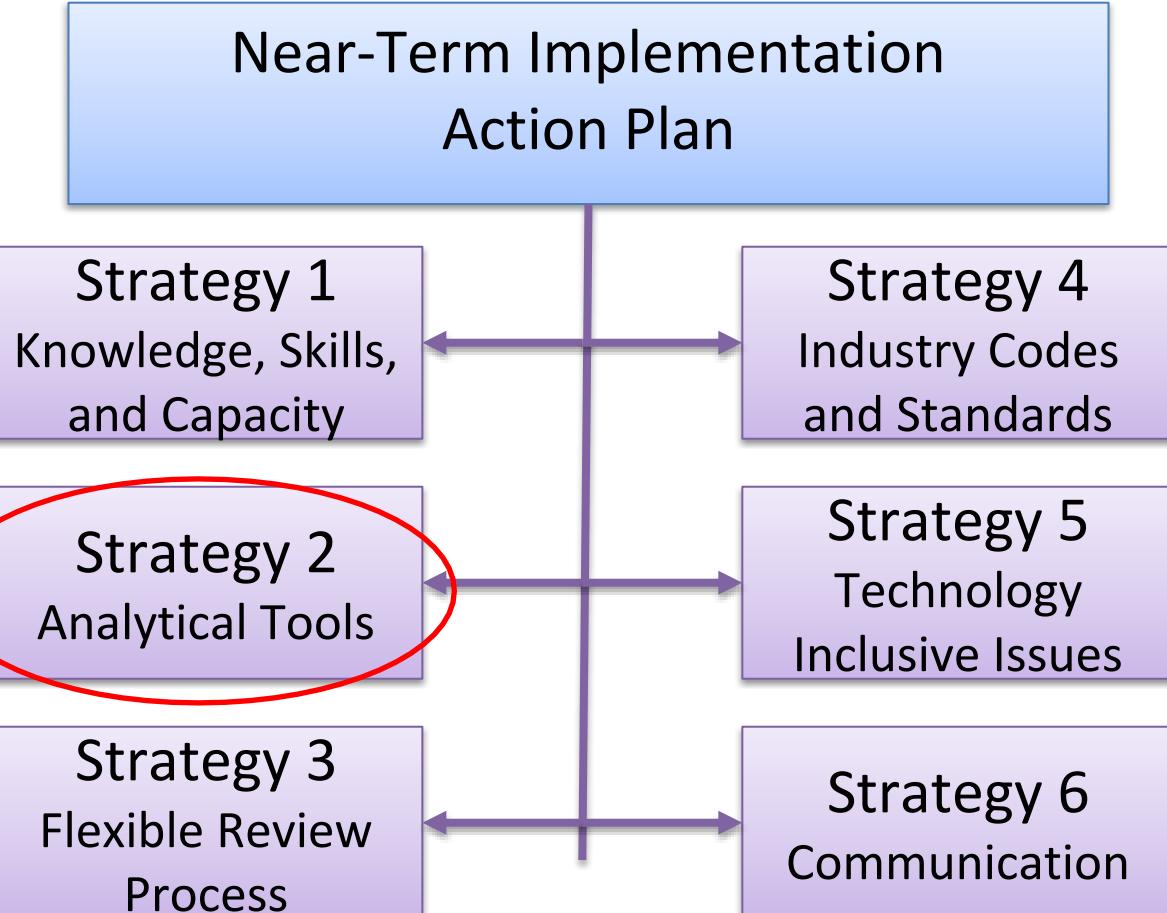
AT THE SECOND SESSION

*Begun and held at the City of Washington on Wednesday,
the third day of January, two thousand and eighteen*

An Act

To modernize the regulation of nuclear energy.

*Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,*



Safety Analysis Capability Readiness

