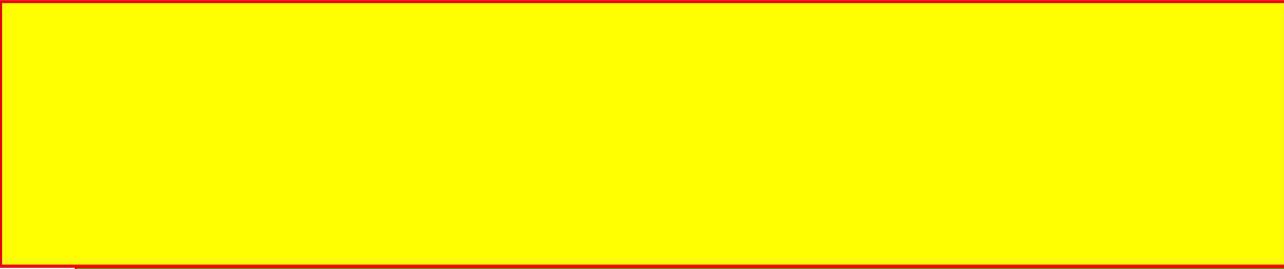


Future Thermal-Hydraulic Testing to Support Model Validation

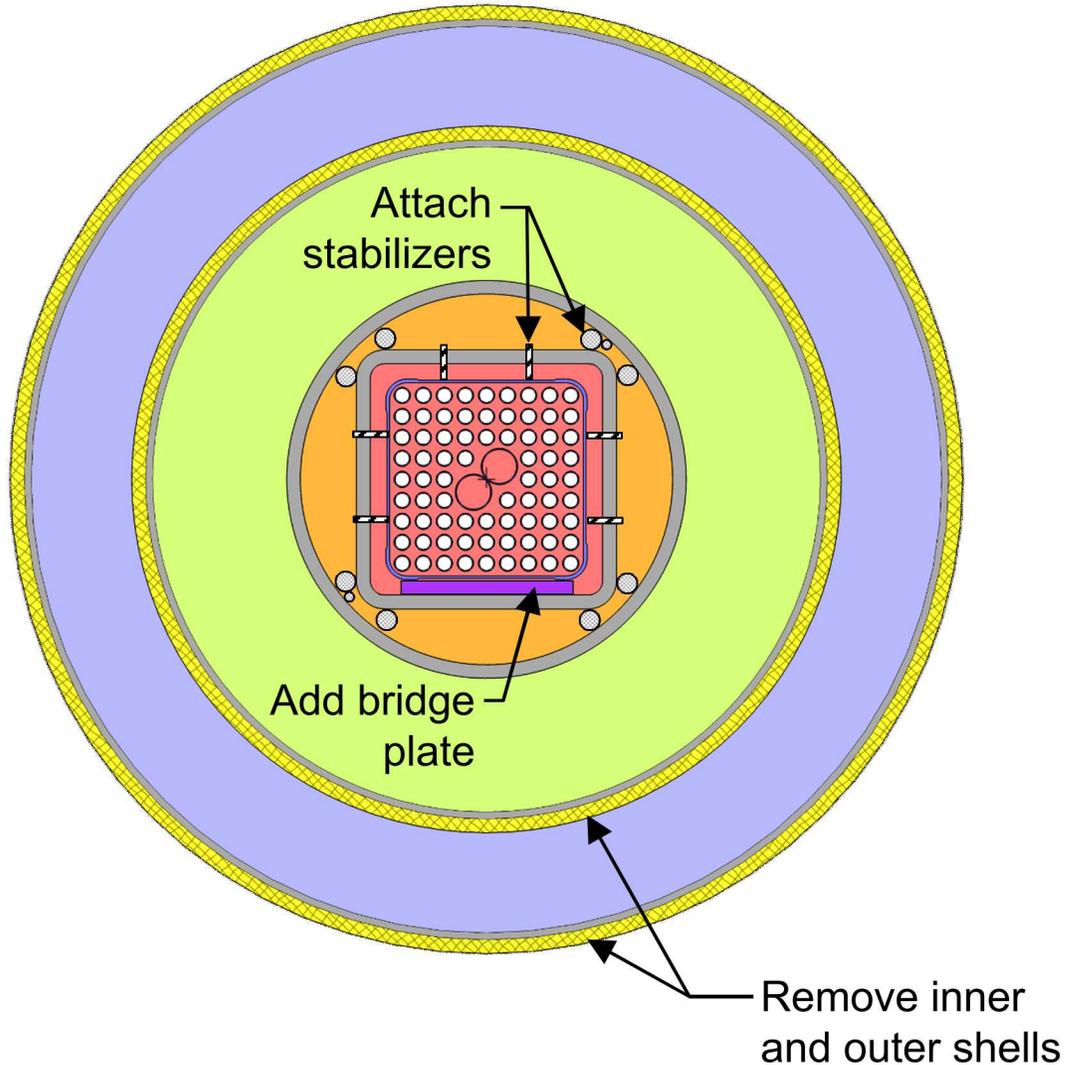
Eric Lindgren and Sam Durbin
Principal Member of the Technical Staff
Sandia National Laboratories

SFWST Annual Working Group Meeting
University of Las Vegas
May 23, 2018

Thermal-Hydraulic Testing and Modeling Activities

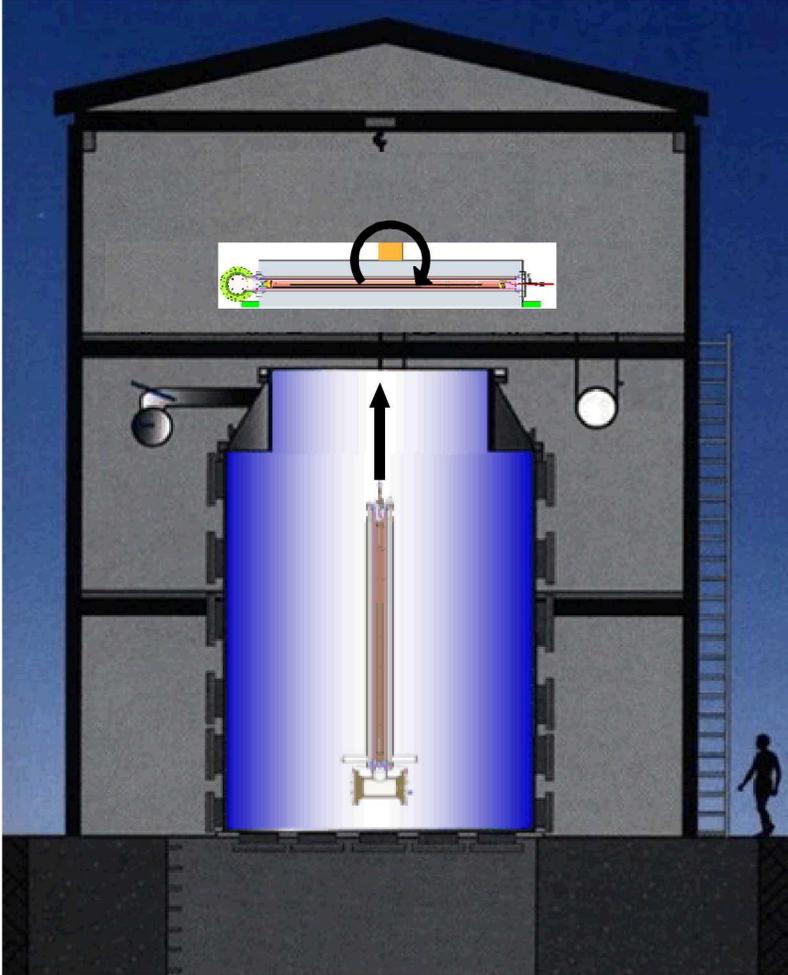
-  *Previous SNL Presentation*
 -  *Ongoing Work*
 -  *Previous PNNL Presentations*
 -  *These slides*
- Potential collaboration with South Korea under the High Level Bilateral Commission studies

Assembly Modifications



- **DCS presently in the vertical belowground configuration**
- **Convert to horizontal**
 - Remove outer shell
 - Remove inner shell
 - Open pressure vessel
- **Maintain concentricity and enhance heat conduction**
 - Add stabilizers
 - *Between channel box and basket*
 - *Between basket and canister wall*
 - Full length to limit convective cells
 - Keep from damaging existing TC's
- **Reassemble and move**

Facility Transition



- After performing in-vessel modifications
- Move DCS from inside vessel to the 3rd floor
- GENTLY rotate assembly to horizontal configuration
- Construct “vault” enclosure
 - Inlet and outlets
- Install additional instrumentation
- Reconnect to DAQ
 - Power control
 - Instrumentation
- Conduct testing

- **Explore various concepts**
 - Limited number of full-length assemblies
 - *Inter-assembly heat transfer*
 - Scaled assemblies
 - *Simplified but representative mock fuel assemblies*
 - *Better simulation of prototypic cask loadings*
- **Investigate known sources of modeling uncertainties**
 - Basket-to-canister contacts
 - Boral construction
- **Refine best practice guidelines**
 - Offer insights for selection of modeling assumptions
 - Further understanding of uncertainties