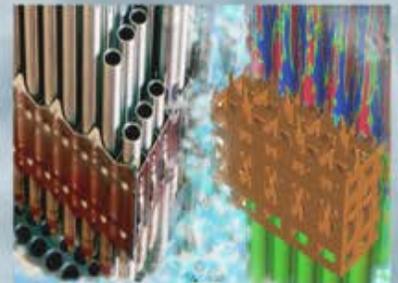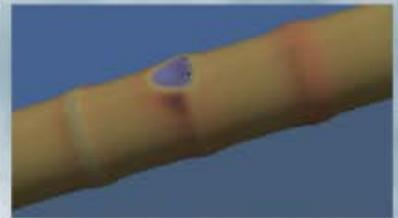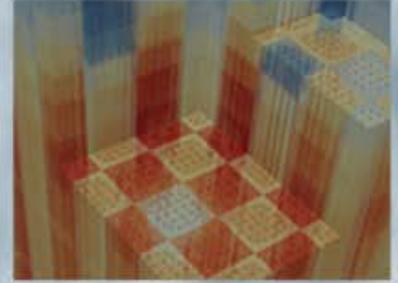# CASL Program Highlights December 2014

Douglas Kothe

Oak Ridge National Laboratory

December 30, 2014
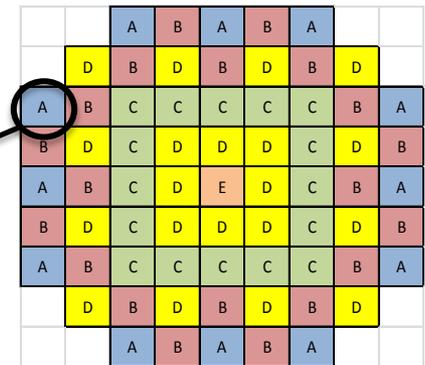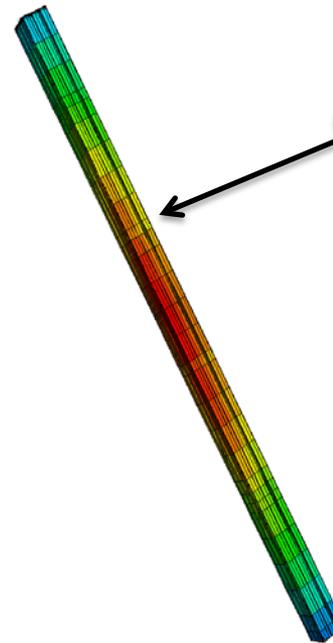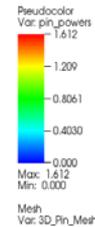
U.S. DEPARTMENT OF ENERGY | Nuclear Energy

CASL VERA installed on Tennessee Valley Authority Computing Cluster

- TVA has built CASL's Virtual Environment for Reactor Applications (VERA) on it's new computing cluster.
  - TVA recently acquired a 100-cpu machine for nuclear core design applications
  - Red Hat Enterprise OS, Intel 1.2 GHz chips, 6 GB memory per core
  - Installed at the Chattanooga corporate offices

- TVA has run several verification cases to confirm a successful VERA installation.
  - TVA nuclear fuel design staff will administer/maintain the VERA installation

- TVA plans to continue VERA Test Stand simulations of iPWR cycles using the TVA machine.
  - New simulations will focus on control rod management

TVA Test Stand simulations with CASL VERA have been focused on iPWR core cycle design development. The fuel assembly layout (right) was simulated with the VERA core simulator. Power peaking for the assembly shown (left) was predicted to be 1.612 at the beginning of the cycle.

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CASL Support for UK Delegation Visit Continues Dialog on UK Nuclear Computing

- UK delegation visited ORNL December 8-9, 2014
- CASL Overview and Tour of the Virtual Office Community and Computing Laboratory
- Key UK Connection with CASL is the Establishment of a "UK National Nuclear Computing Centre of Excellence"
  - ORNL hosted National Nuclear Lab Visit in October 2014 to share CASL experience
  - When established, expecting opportunities for ORNL/CASL engagement

CASL Activities

CASL Collocation

- MPACT (cross section and associated uncertainty generation)
- L1 Milestone Status Update & Risk Meeting
- Kitware Meshing Webinar
- VUQ Efforts at Code Level
- VERA-CS with CFD Codes
- THM CFD Update
- CASL 2.0 Kickoff
- Engagement with a university business school to investigate the post-CASL entity
- Tech Notes
- TCP
- ECSR Meeting
- Hydra-TH Super User
- VERA (and component codes) ECCN Update/Status and Strategy Discussion
- THM CLS Update Meeting
- VERA-CS Core Simulator Update Meeting
- Milestone Status and Discussion - L1:CASL.P10.01
- Post-Processing of VERA-CS Output

VOCC Tours

6 tours for December 2014

- UK Civil Nuclear Mission
- Kevin Knobloch (Chief of Staff for Secretary Moniz)
- Japan Atomic Energy Agency
- Next Generation Safeguards Initiative Human Capital Development
- Chattanooga Electric Power Board

Meetings

- NEAMS Annual Review, Washington, DC , Dec 3-5
- Illinois Applied Research Institute, ORNL, Dec 12

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