

DIRECTED DISCUSSIONS

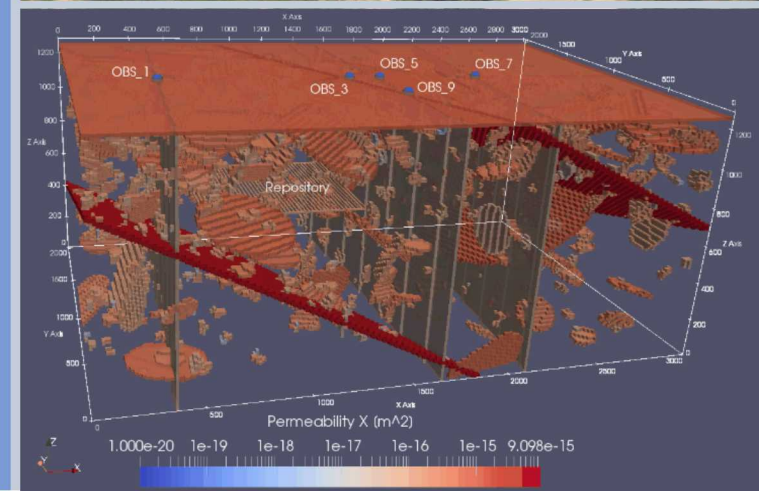
CISCC PROGRAM MEETING

SFWD

SPENT FUEL & WASTE DISPOSITION

*SCC Working Group Meeting
March 5, 2020*

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.



DIRECTED DISCUSSIONS 1:

CISCC SUSCEPTIBILITY AND CHARACTERIZATION/ COLLABORATIONS (60 MIN)

1. What are the goals of this program?

2. How do we achieve these?

- **What interactions/ collaborations are necessary and/or benefit from these?**

3. What are the criteria for completion?

OVERALL SNL OBJECTIVE

Improve ability to predict timing and location of potential canister penetration by stress corrosion cracking (SCC)

GOALS OF SNL EXPERIMENTAL WORK

- **1) BRINE:** Improve knowledge of electrolyte and evolution with time
- **2) CORROSION:** Determine the relationship between surface environment, material properties, mechanical environment, and damage distributions and rates
- **3) PIT-TO-CRACK:** Determine the deleterious environmental and mechanical properties that influence when and where pit-to-crack transition occurs
- **4) Crack Growth Rate:** Determine crack growth rate severity as a function of environment and material

DIRECTED DISCUSSIONS 2:

POSSIBLE MITIGATION STRATEGIES (60 MIN)

- 1. What are the goals of this program?**
- 2. How do we achieve these?**
 - What interactions/ collaborations are necessary and/or benefit from these?**
- 3. What are the criteria for completion?**

QUESTIONS:

- 1. What are current mitigation strategies?*
 - NEUP work in friction stir welding and Cold Spray*
 - Current industrial approaches (weld patches)*
- 2. Are there new strategies out there that we haven't applied?*
- 3. Canister manufacturing vs. repair*

DIRECTED DISCUSSIONS 3:

MITIGATION EVALUATION (60 MIN)

- 1. What are the goals of this program?**
- 2. How do we achieve these?**
 - What interactions/ collaborations are necessary and/or benefit from these?**
- 3. What are the criteria for completion?**

QUESTIONS:

- 1. Are there applicable industry standards to evaluate the proposed techniques?*
- 2. What metric can we use to compare different methods? (e.g. ease of deployment, effectiveness for mitigating existing cracks, beneficial or deleterious changes in stress field or corrosion properties)*
- 3. What is the necessary research and development that needs to be carried out to evaluate these possible fixes?*

DIRECTED DISCUSSIONS 4:

UNEXPLORED TOPICS/ OPEN ENDS (60 MIN)

- 1. What are the goals of this program?**
- 2. How do we achieve these?**
 - **What interactions/ collaborations are necessary and/or benefit from these?**
- 3. What are the criteria for completion?**

QUESTIONS:

- 1. Have coherent program goals been established/ revisited to include the application and evaluation of mitigation strategies?*
- 2. Are the criteria for completion clear?*
- 3. Have inter-laboratory collaboration and needs been addressed?*