

How USA will Meet its Energy Demand With Existing and New Nuclear Power Plants

Presented by:

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President
American Nuclear Society

President and CEO
AMS Corporation - Knoxville, TN



Presented to:

AESJ/ININ

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My Journey

1974

Landed in USA

1977

Founded AMS

2025

President of ANS

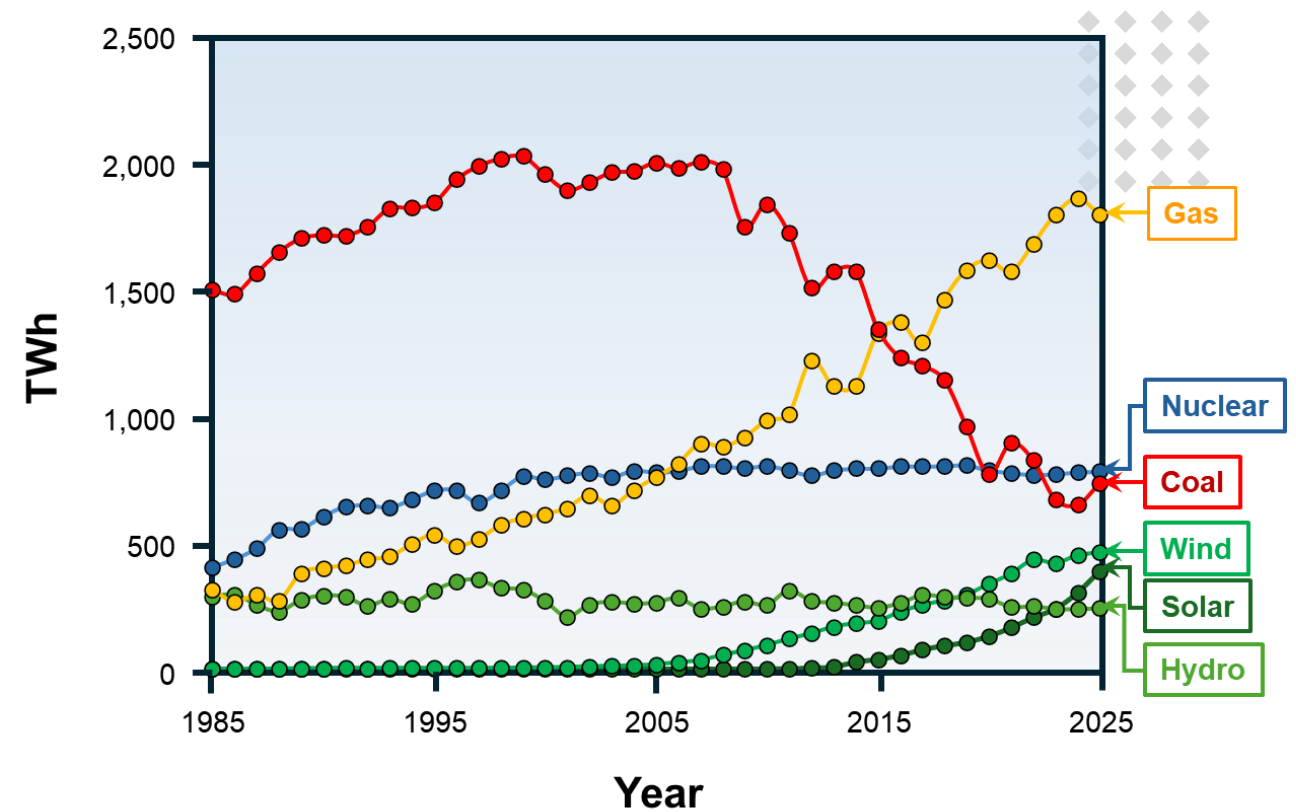
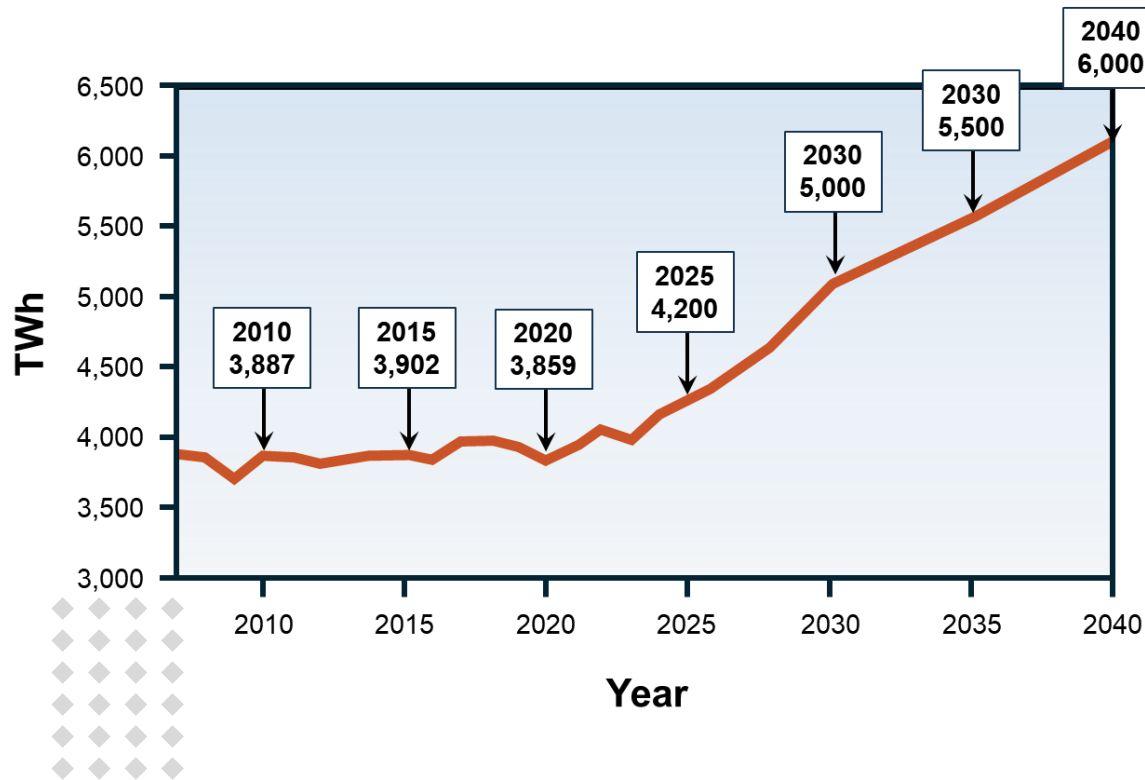


World Energy Outlook by 2050

- Demand Will Double
- Population Will Reach Near 10 Billion
- We Should Reach Net Zero
- Renewables May Max Out
- Over 2000 SMRs and ARs May Be Built
- Fossil Power Generation Will Be Near Zero



Projected US Electricity Demand and Electricity Production By Source



USA is Resurrecting Dead Nuclear Power Plants



- Palisades Nuclear Power Plant
- Three Mile Island Unit 1
- Duane Arnold Energy Center
- Other Possible Restarts
 - San Onofre
 - Crystal River Unit 3
 - Kewaunee





USA is Operating Nuclear Plants for 80 Years



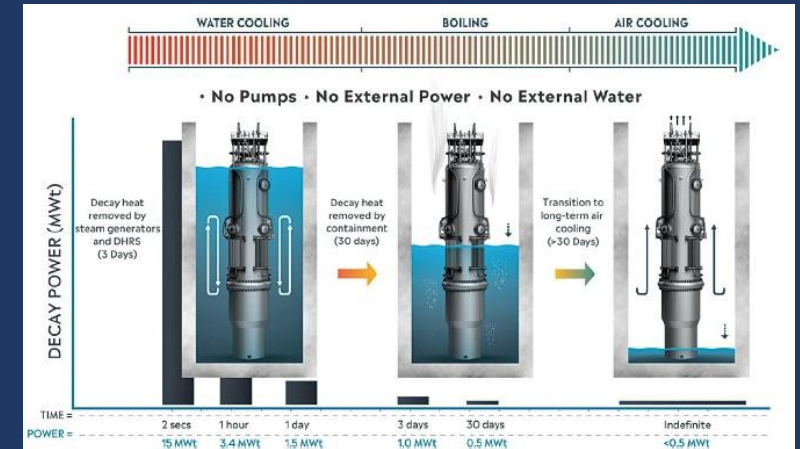
- Browns Ferry 1, 2, & 3
- Dresden 2 & 3
- Robinson
- Monticello
- North Anna 1 & 2
- Oconee 1, 2, & 3
- Peach Bottom 2 & 3
- St Lucie 1 & 2
- Surry 1 & 2
- Turkey Point 3 & 4



Advanced Nuclear Innovations to Improve Safety



- Passive safety – Natural cooling in SMRs and air cooling in HTGRs
- Accident-tolerant fuels
- Online maintenance and diagnostics
- Digital upgrades and digital twins



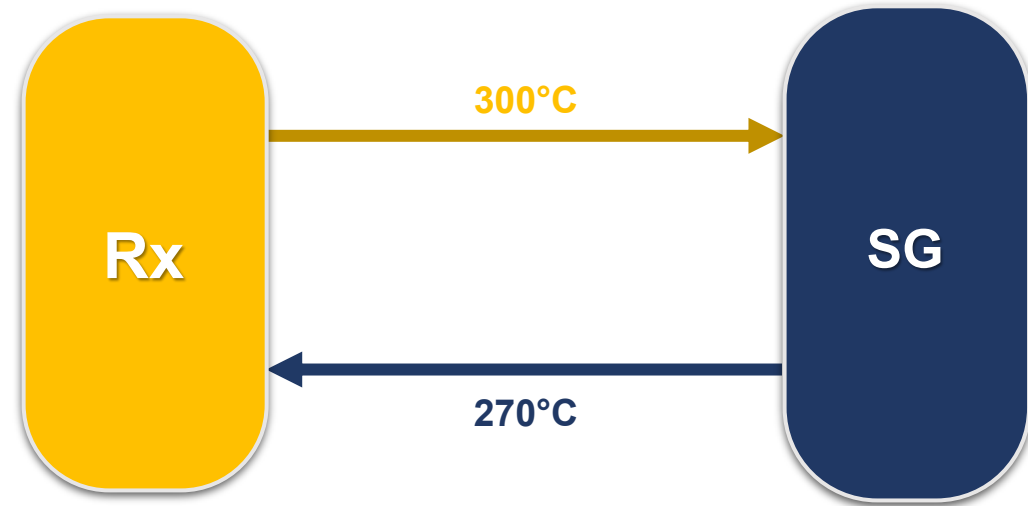
USA Will Recycle Spent Nuclear Fuel



- Spent fuel still contains 96% of its original potential energy
- US has about 90k metric tons of spent fuel

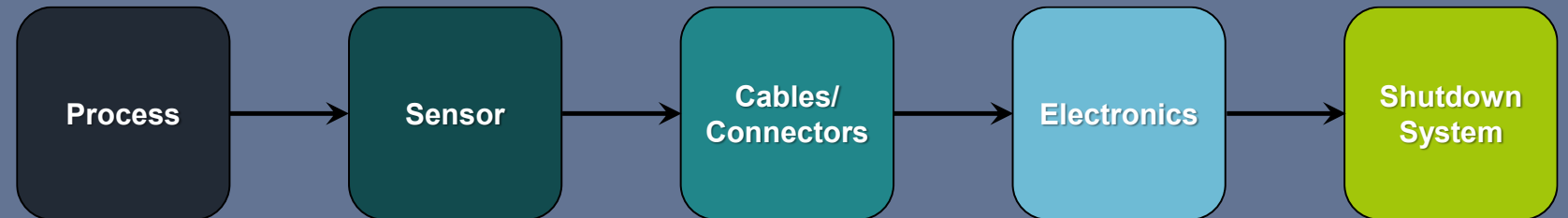


What Does My Company Do?



$$P \approx \dot{m} \Delta T$$

- Calibration
- Response Time





My Contributions Beyond Working for My Company

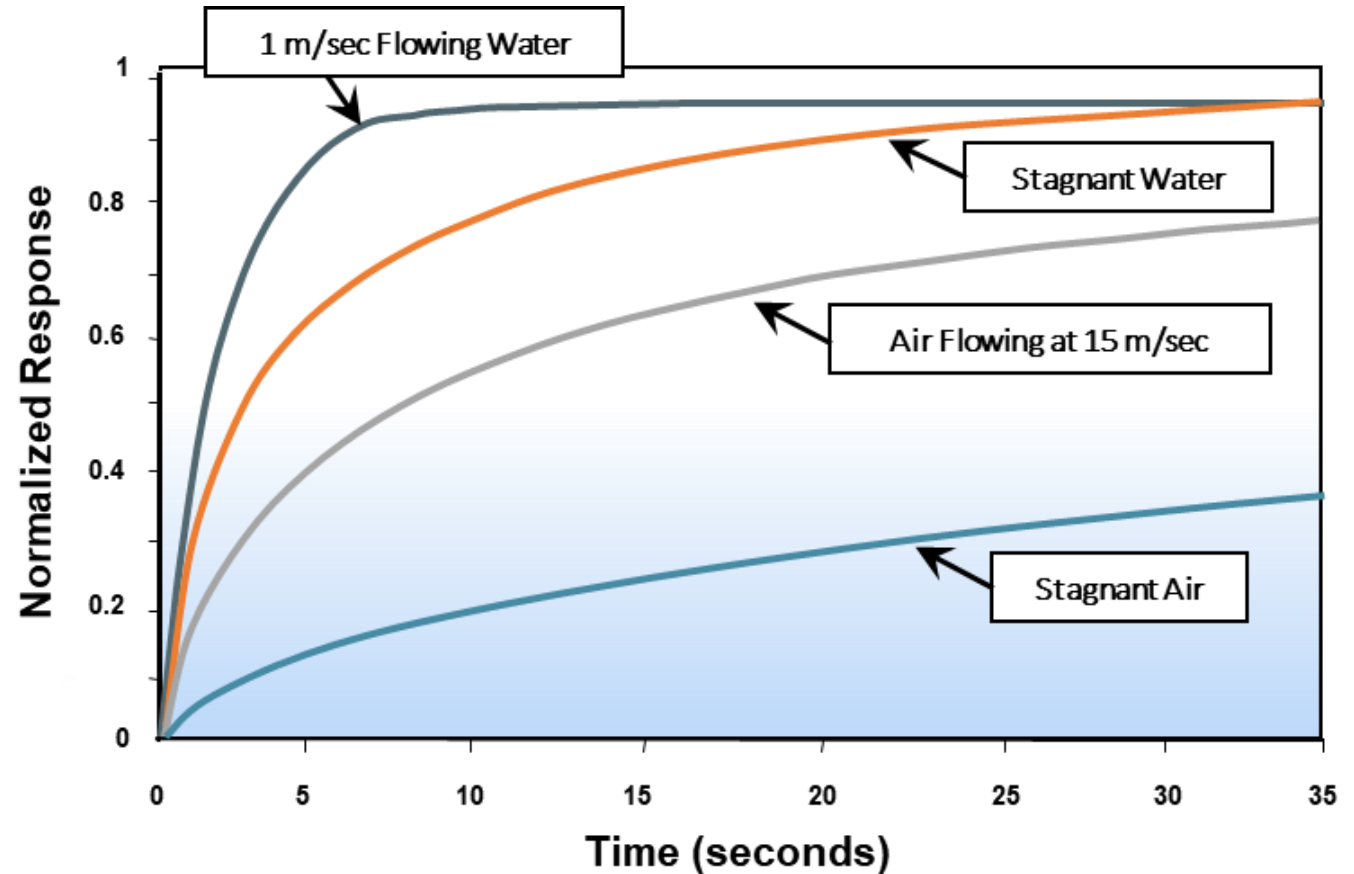
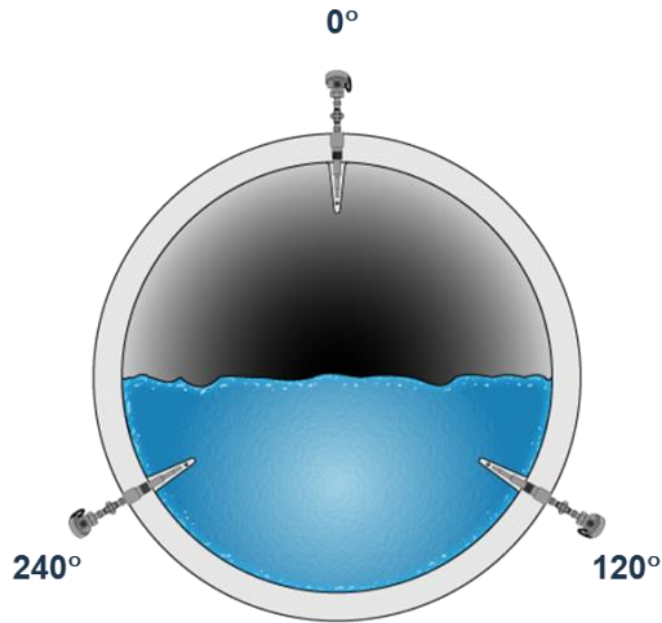
Nuclear Accidents

- TMI
- Chernobyl
- Fukushima

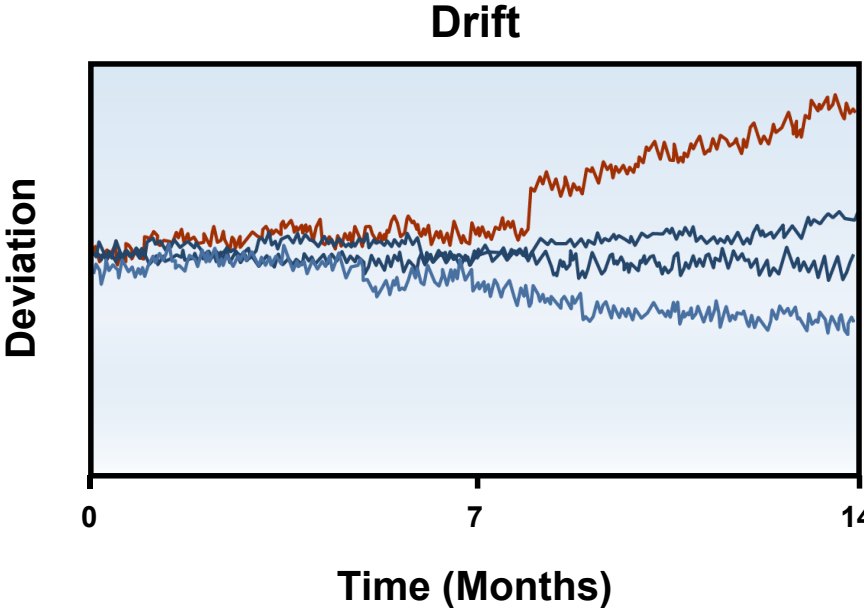
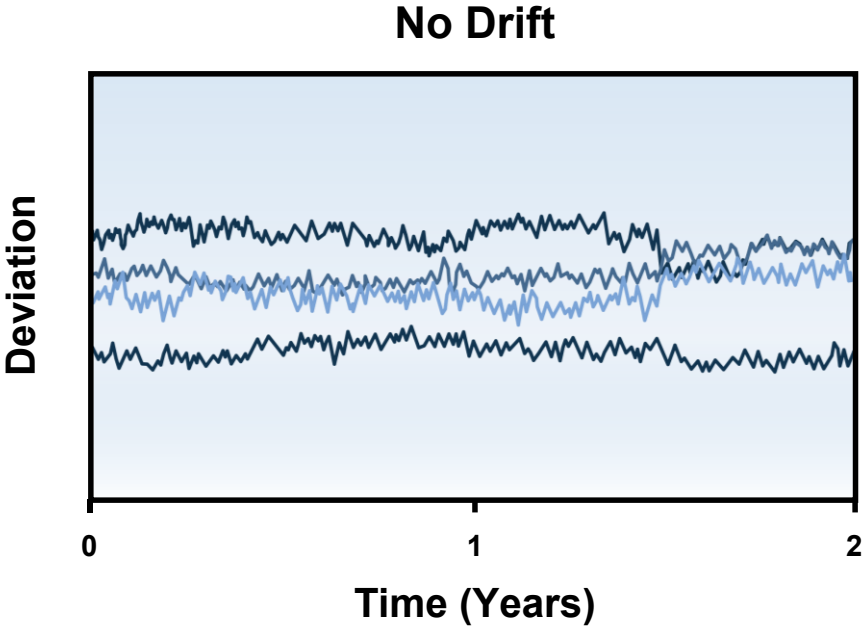
Voluntary Contributions

- IAEA
- ISA
- IEC

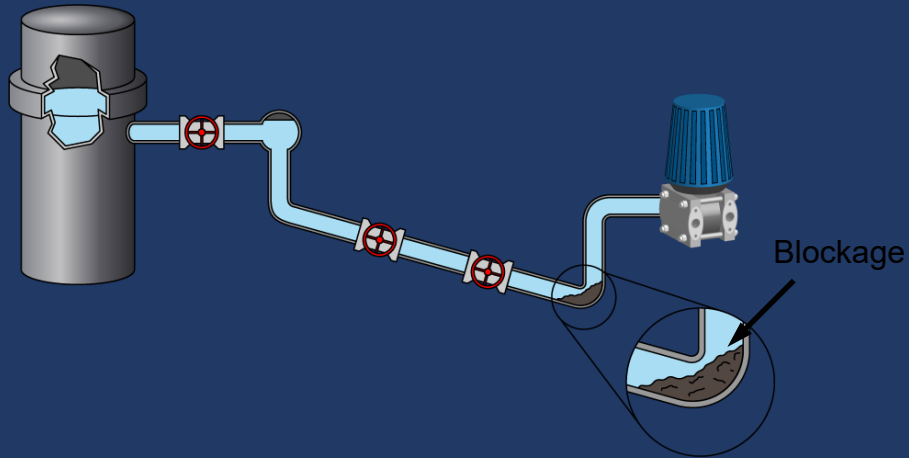
Assistance with **TMI Accident Recovery**



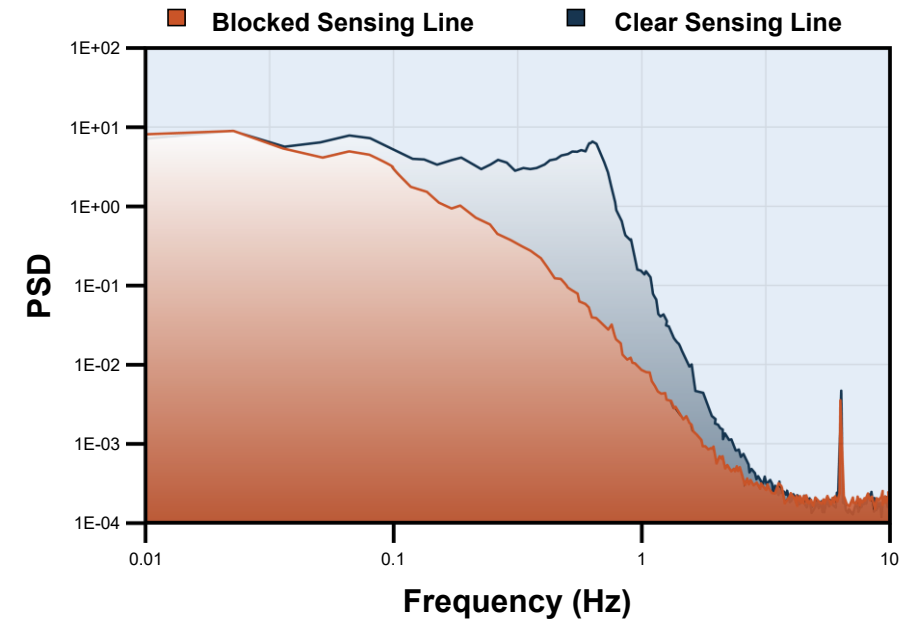
Simple Technology Saving Millions for Nuclear Industry



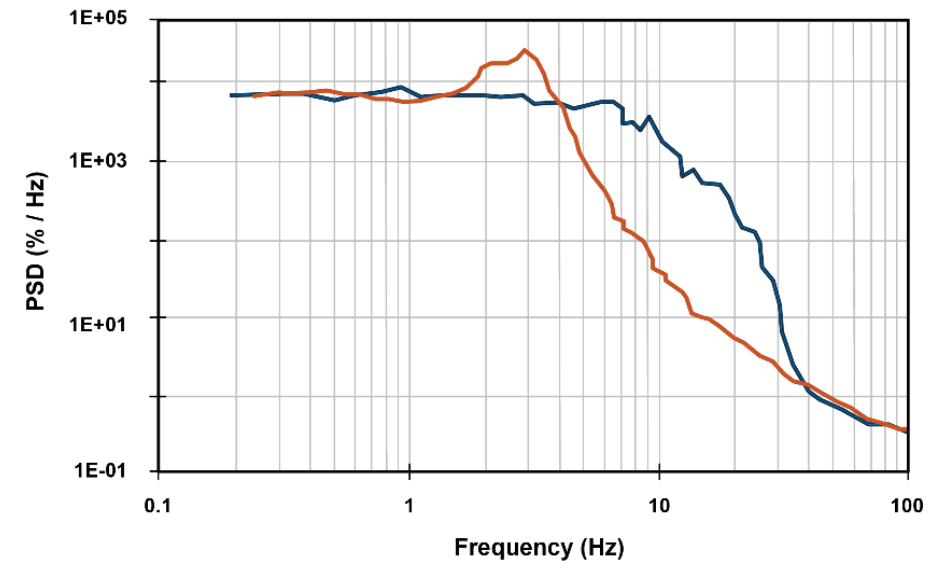
Sensing Line Blockages and Voids



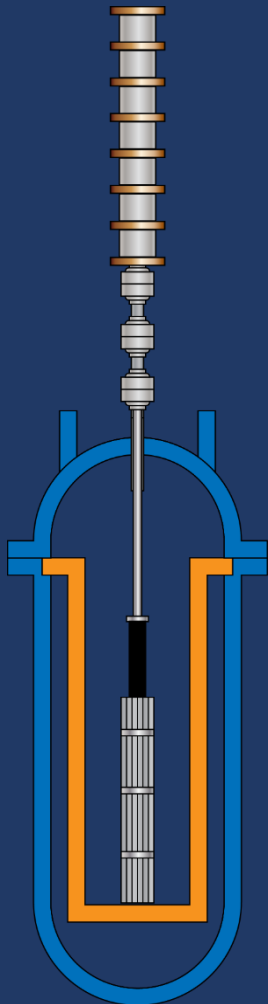
Blockages



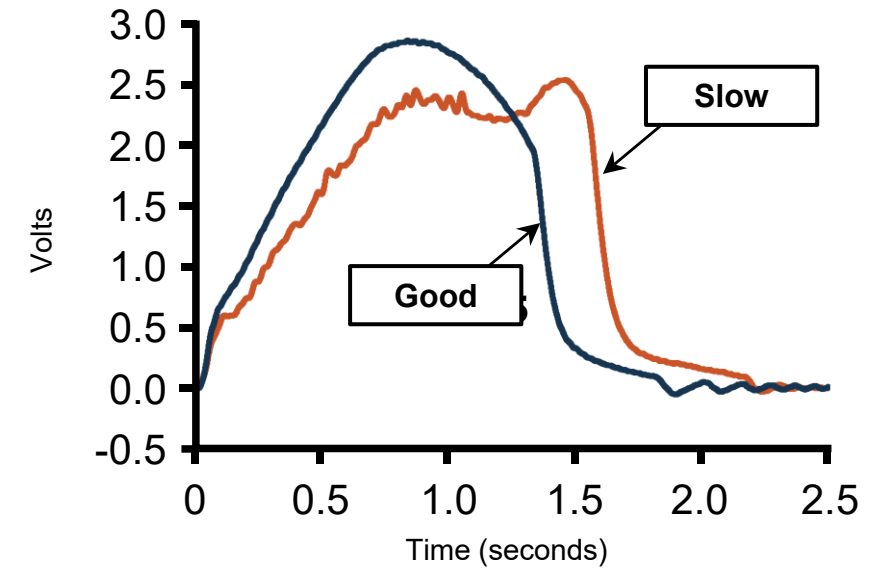
Voids



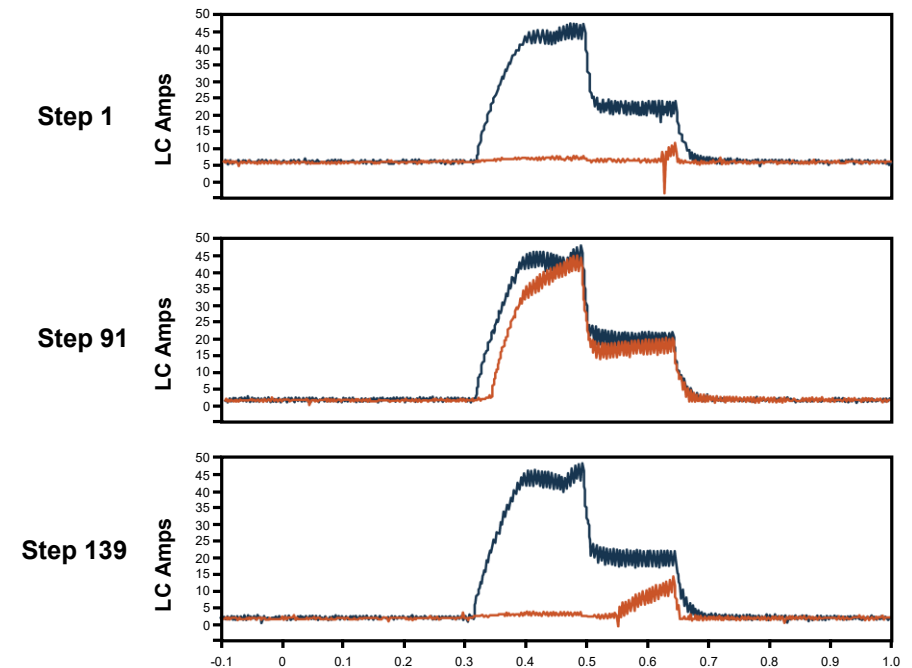
Reactor Shutdown System Problems



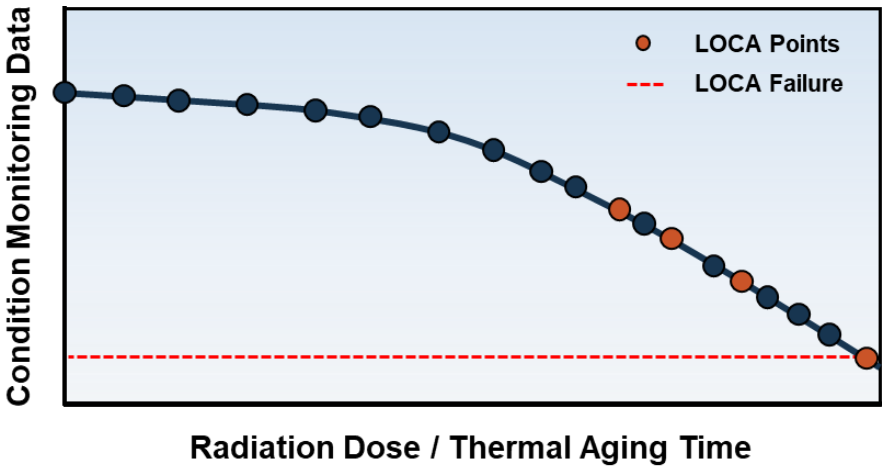
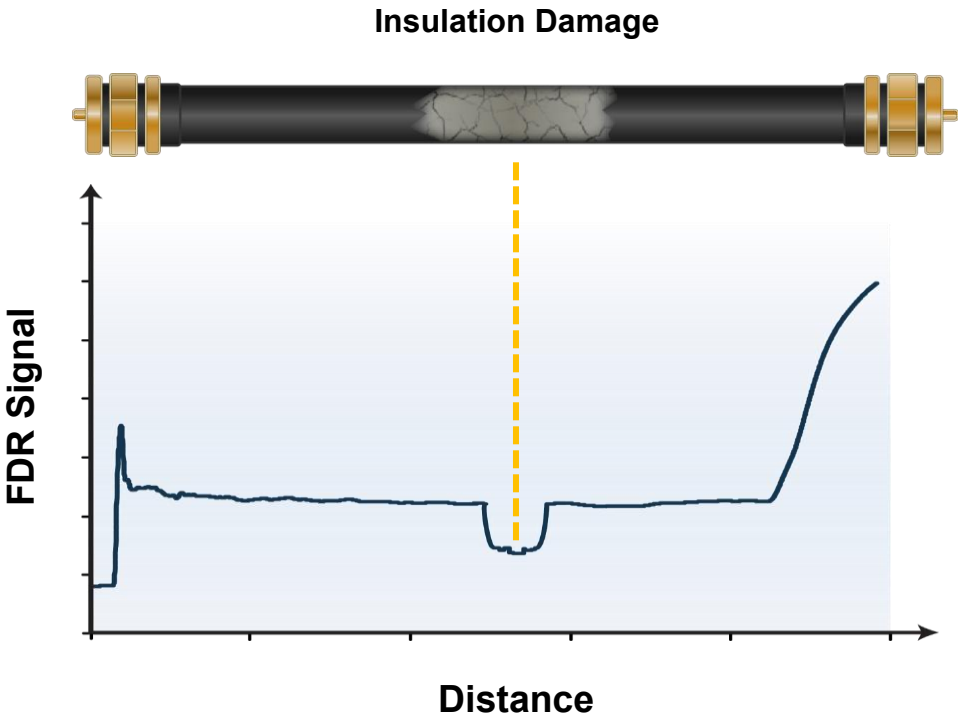
Slow Drop



Bad CRDM

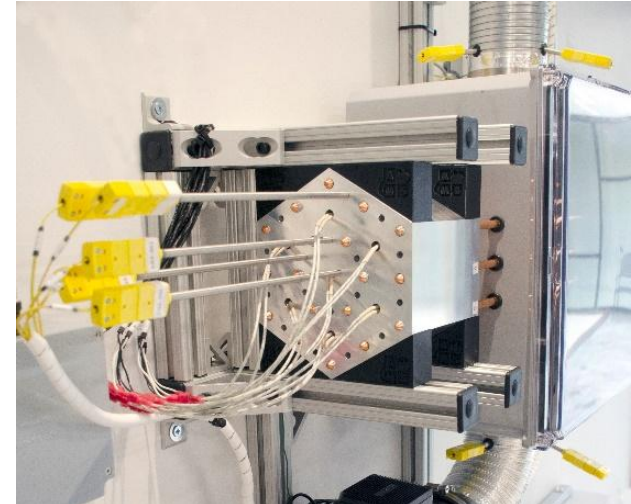


Cable Aging Management



I&C Lessons for Next-Generation of Reactors

- Sensor Design
- Sensor Installation
- Sensor Qualification
- Sensor Redundancy
- Sensor Post-Installation Testing
- On-line Condition Monitoring





Thank you!



Please meet my one and
only granddaughter
Vera Rose Sizemore

Mom: Nikki Hashemian
Dad: Adam Sizemore

Vera!

