

Answers you didn't know you needed

National Lab Capabilities Webinar

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Additional support topics – for your awareness

- Regulatory support – Jim Kinsey (INL)
- Safeguards and Security – Andy Worrall (ORNL)
- Contracting Modernization – John Jackson (GAIN)



Advanced Reactors Regulatory Development

Program Goal

Regulatory Development Goal: Address and resolve key regulatory framework and licensing technical issues that directly support the “critical path” to advanced reactor demonstration and deployment

To achieve this goal, Regulatory Development activities focus on each of the four key parts of the regulatory framework for advanced reactor technologies:

- Addressing unresolved and high impact Nuclear Regulatory Commission policy issues
- Developing adaptations of LWR-based regulations & regulatory guidance
- Performing R&D necessary to establish licensing technical requirements
- Establishing clear expectations for license application content and review criteria

Program activities are intended to “float all boats” where possible, and include a particular focus on addressing and resolving regulatory uncertainties in the next 1-2 years that challenge near-term (5-7 years) deployments

Advanced Reactors Regulatory Development

Stakeholder Engagement and Interface

- **NRC Interactions**
 - Program NTDs interface with NRC technical area managers
 - NRC Near-Term Implementation Action Plan
 - NRC public meeting participation
- **Coordination with industry's Technology Working Groups**
 - Fast Reactors
 - Gas Cooled Reactors
 - Molten Salt Reactors
- **Insights from GAIN Initiative and associated engagements**
- **Engagement with Non-Government Organizations (NGOs) NEI**
 - NEI Advanced Reactor Working Group participation
 - NEI Advanced Reactor Regulatory Task Force participation
 - US Nuclear Industry Council

Advanced Reactors Regulatory Development

Objectives

- R&D area objective: Address high priority research needs identified by industry and informed by DOE/national laboratory technology insights
 - Linked to establishing the licensing technical requirements for advanced technology types
 - Generally address topics that are beyond private sector capabilities
 - Example successes in this area include:
 - ASME Section III Div. 5 rules for high temperature reactor construction
 - NRC safety evaluation accepting EBR-II historical data qualification program
 - Pending NRC safety evaluation for TRISO fuel particle qualification
- Regulatory Support area objective – Develop or support industry proposals and NRC interactions to develop a predictable regulatory framework that’s “right-sized” for advanced reactor technologies
 - NRC’s Near-Term Implementation Action Plan & industry stakeholders provide a key inputs
 - Example successes include:
 - Updated Commission policy regarding Containment
 - New Commission policy on risk-informed approach to design & licensing

Safeguards and Security - Context

- A topic that has generated a lot more interest in the last year or so, around Advanced Reactors
 - But don't forget their associated fuel cycles!
- Often overlooked/forgotten, the DOE-NE mission includes safeguards and security:
 - *“Under the guidance of three research objectives, NE resolves barriers to technical, cost, safety, **security, and proliferation resistance** through early-stage research, development, and demonstration...”*
- Aligned to this mission are now TWO national programs for safeguards and security under DOE-NE
 - Material Protection, Accounting and Control Technologies (MPACT)
 - National Technical Director: Mike Browne, LANL
 - Advanced Reactor Safeguards
 - National Technical Director: Ben Cipiti, SNL
- Focus is on domestic safeguards and security, but clearly a need to at least be cognizant of the international needs and dimension e.g., exports, but also IAEA and the US "Eligible Facilities List"

Safeguards and Security - GAIN

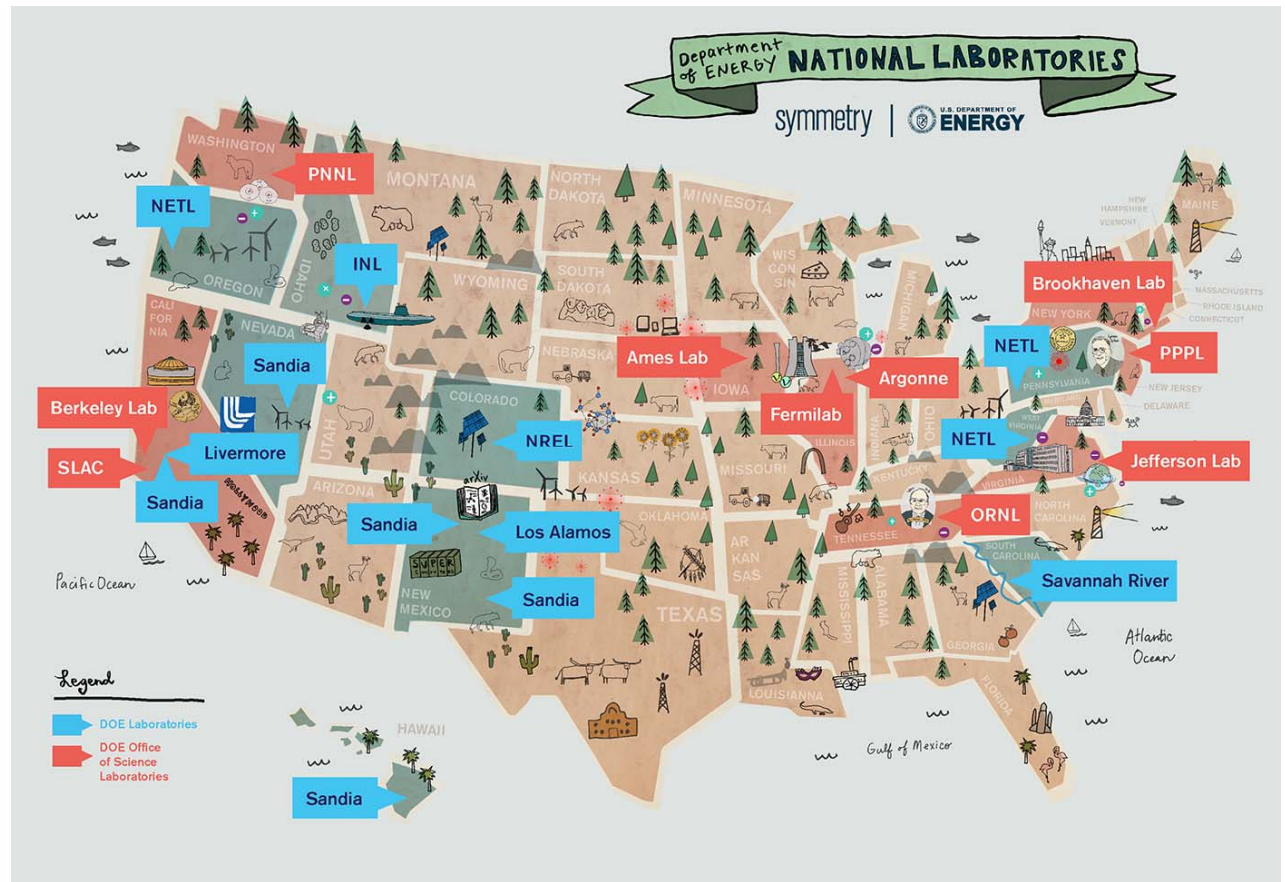
- Since the DOE-NE mission includes safeguards and security topics, it shouldn't be a surprise that awards have been made in this area:
 - NexDefense/DRAGOS: “Nuclear Cybersecurity Initiative”
 - Flibe: “Liquid Fluoride Thorium Reactor (LFTR) Preliminary Safeguards Assessment”
 - Westinghouse: “Nuclear Material Holdup Modeling and Measurement Campaign for the Columbia Fuel Fabrication Facility”
- Demonstrates the application of GAIN to the complete DOE-NE mission, and highlights the specialist capabilities at the labs
- Lab capabilities in this area are supported mainly outside of DOE-NE, primarily NNSA, such as
 - NA-21; International Nuclear Security
 - NA-24: International Safeguards
- A number of new initiatives in NNSA are starting up, and GAIN and DOE-NE is working with the respective federal agencies and programs to collaborate and share information and minimize overlap and duplication

Safeguards and Security – What next?

- GAIN vouchers remain open for this area, and will continue to work with the 2 national programs to integrate new ideas where appropriate
- A number of questions have been asked about safeguards and security, and there remains some “confusion” over when it is relevant, who should be involved, when etc
- Domestic safeguards involves the NRC clearly, and International begins to involve NNSA and others more broadly
- Intention is to establish “informational seminars”, website resources, etc, that the developers can use, and potential for workshop to identify gaps and needs
 - Watch this space!

Contracting Modernization

- Eight topics... and counting
- Working with DOE-GC on your behalf
- We need your feedback!
- What does success look like?



Thank you!

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