



US DOE and the IAEA-International Decommissioning Network

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US Department of Energy
Waste Management Symposia 2009



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Outline

- Overview of DOE Deactivation and Decommissioning Activities
- Overview of DOE Participation with IAEA International Decommissioning Network (IDN)



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Overview of D&D

- DOE's Office of Environmental Management (EM) is responsible for completing **the safe cleanup of the environmental legacy brought about from five decades of nuclear weapons development, production and Government sponsored nuclear energy research**
- It is the largest environmental cleanup effort in the world, originally involving 2 million acres of land at over 100 sites and in 35 states



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Overview of D&D

- The D&D scope includes approximately 3000 facilities including one-of-a-kind, technically complex, football stadium sized nuclear/radioactive facilities such as
 - Reactors
 - Gaseous Diffusion Plants
 - Chemical Separations Plants
 - Research and Laboratory Facilities
 - Hot Cells
- Rough Order of Magnitude Cost = \$20-30B

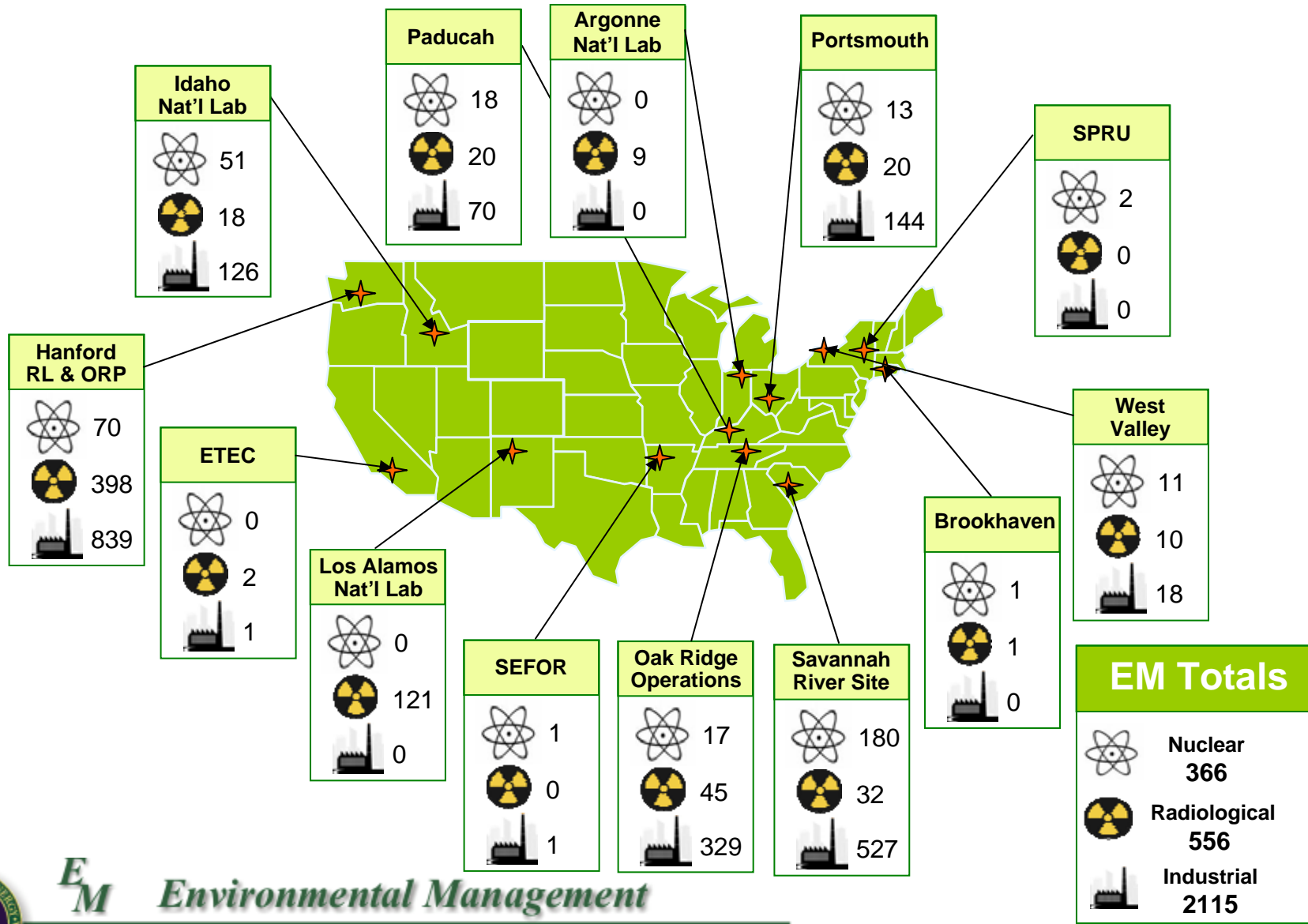


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Remaining EM Facilities to undergo D&D



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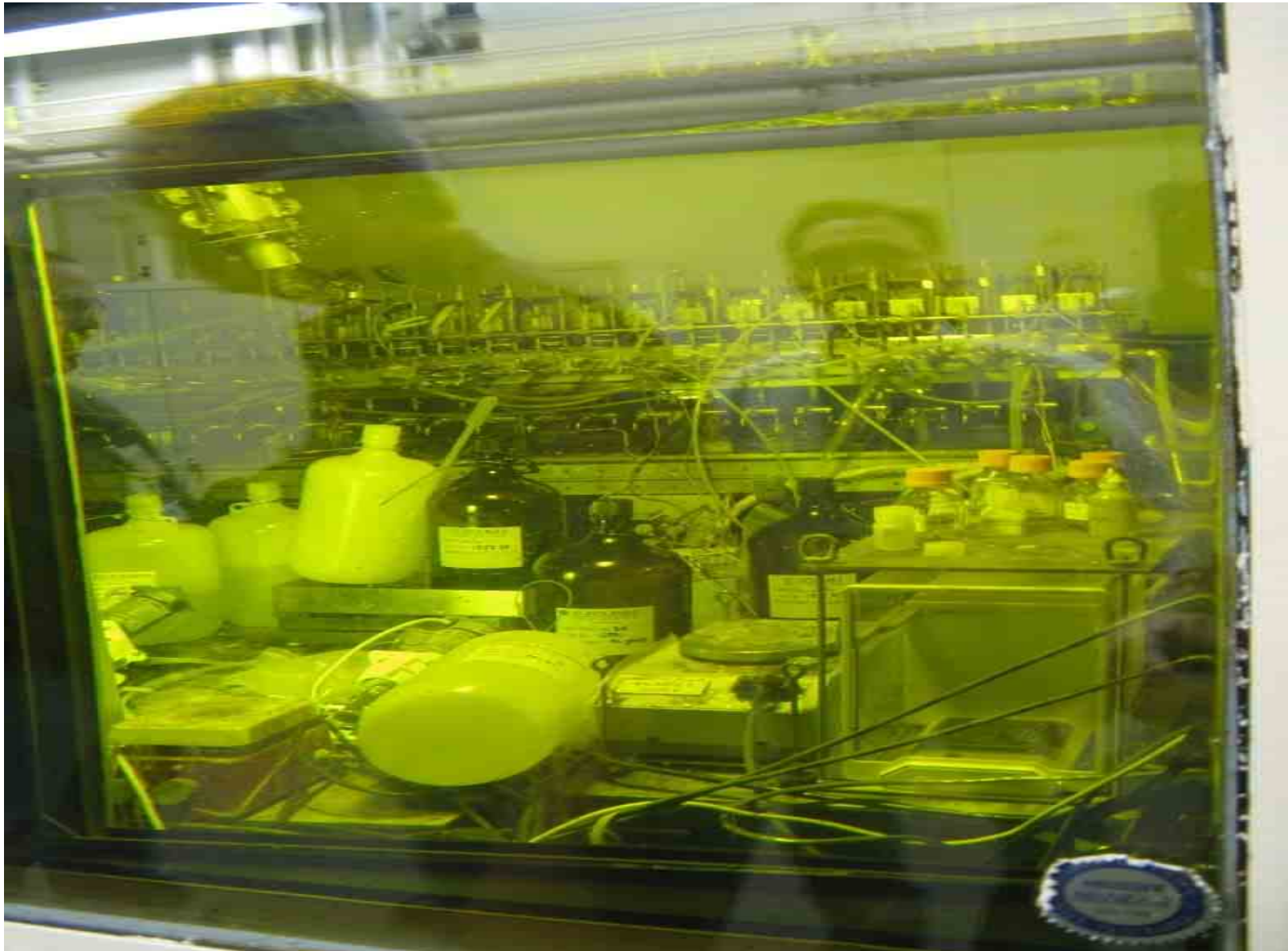
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Radioisotope Development Laboratory (3026)
Radioactivity



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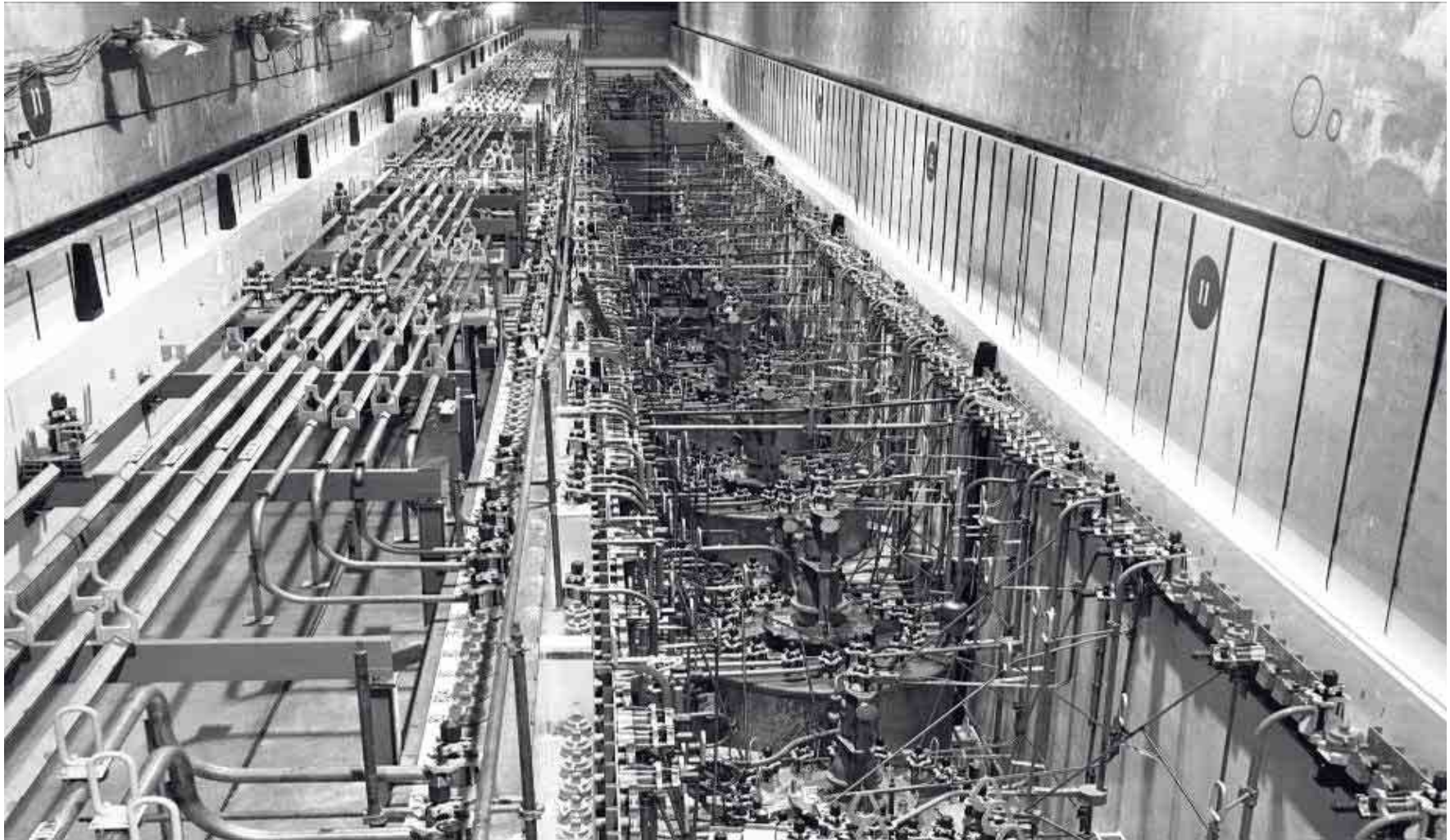
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EM's Office of Engineering and Technology Office of D&D and Facility Engineering

- Mission is to *“Develop, demonstrate and facilitate the implementation of technologies and approaches which result in safe, cost effective and timely D&D”*
- Primary objectives:
 - Reduce technical and programmatic risks and uncertainties
 - Provide technical solutions where none exist
 - Provide improved solutions that enhance safety and operational efficiency
 - Communicate, collaborate and leverage knowledge, lessons learned and technologies



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Major Near Term Focus

- Development and/or adaptation of innovative-improved technologies for:
 - Remotely accessing, characterizing, decontaminating and equipment removal from highly contaminated/very high radiation field facilities unsafe for human entry (hot cells)
 - Effectively implementing in-situ decommissioning (entombment) of very large, robust facilities (e.g., canyons)
 - Science based decontamination/fixative agents



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IAEA - IDN

- The basic premise – to have “member countries with more experience provide support to member countries with less experience” is parallel to DOE/EM’s objectives for networking
- One hidden derived benefit is that
 - “Teaching” is the most effective method of learning



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IAEA - IDN

- On a broad international scale, the challenges faced by IDN are equivalent to DOE's (and I suspect other countries and organizations)
- Providing solutions at the macro level will provide solutions at the micro levels
 - Feedback loop will be established between macro-micro-macro
- Even without the benefits gained from technical interactions, the programmatic discussions are most valuable



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Synergy Between DOE/EM and IAEA/IDN

- Full synergy exists between organizational goals
- Depending on your outlook – one is a macrocosm of the other
- Since 2007, EM has participated and supported IAEA/IDN
 - First “programmatically”
 - But also technically
 - Training Materials
 - Access to Knowledge Management Website
 - Access to experience “newsletter” (RL ALARA Center)



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The Future

- Continue and evolve the relationship
- Opportunities to gain mutual benefits are endless
- Moving away from the concept of “giving” and “receiving” to “collaborating and sharing” will drive self-fulfilling objectives



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D&D is a Target Rich Environment for Networking

- Although significant D&D has been accomplished and it can be consider a mature industry
- Only limited “specificity” has been shared on a world, country or even agency specific level
 - technology
 - innovation
 - cost estimating
 - modeling
 - lessons learned
- Compared to other “high tech” industries, technology and innovation have not been widely inserted into D&D
- Prime reason is that D&D can be accomplished with hammers and chisels
 - BUT, at what cost?



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Technical Opportunities

- Advanced Size Reduction
 - Lasers
- Grout Formulations
- Nanotechnology
- Imbedded Sensors
- Robotics
- Characterization – Real Time Instrumentation – Improved Accuracy, Precision and Repeatability



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