



**U.S. DEPARTMENT OF  
ENERGY**



**BLUE RIBBON COMMISSION  
ON AMERICA'S NUCLEAR FUTURE**

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# **The Blue Ribbon Commission on America's Nuclear Future**

**Timothy A. Frazier  
Designated Federal Officer  
U.S. Department of Energy**

October 12, 2011



# Commission Charter

## ■ Established by Secretary of Energy at the direction of President Obama

- Memorandum to the Secretary dated January 29, 2010

## ■ Reports

- Draft report 18 months from date of Presidential memorandum - July 29, 2011
- Final report 24 months from date of Presidential memorandum - January 29, 2012

## ■ Objective and scope

- Evaluation of existing technologies and R&D
- Options for:
  - *Safe storage*
  - *Permanent disposal*
  - *Legal and commercial arrangements for management of used nuclear fuel*
  - *Decision-making processes*
  - *Open and transparent decisions*

## ■ Advice and recommendations on

- Policy and management of used nuclear fuel
- Changes in law
- Fees currently being charged (Nuclear Waste Fee and Fund)



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# Commission Members

- **Lee Hamilton, Co-Chair - Director of The Center on Congress at Indiana University, former Member of Congress (D-IN)**
- **Brent Scowcroft, Co-Chair – President, The Scowcroft Group, and former National Security Advisor to Presidents Gerald Ford and George H.W. Bush**
- **Mark Ayers, President, Building and Construction Trades Department, AFL-CIO**
- **Vicky Bailey, Former Commissioner, Federal Energy Regulatory Commission; Former Indiana PUC Commissioner; Former DOE Assistant Secretary for Policy and International Affairs**
- **Albert Carnesale, Chancellor Emeritus and Professor, UCLA**
- **Pete V. Domenici, Senior Fellow, Bipartisan Policy Center; former U.S. Senator (R-NM)**
- **Susan Eisenhower, President, Eisenhower Group, Inc.**



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# Commission Members

- **Chuck Hagel, Distinguished Professor at Georgetown University, Former U.S. Senator (R-NE)**
- **Jonathan Lash, President, Hampshire College; former President, World Resources Institute**
- **Allison Macfarlane, Assoc. Professor of Environmental Science and Policy, George Mason Univ.**
- **Richard A. Meserve, President, Carnegie Institution for Science, and former Chairman, U.S. NRC**
- **Ernie Moniz, Professor of Physics and Cecil & Ida Green Distinguished Professor, MIT**
- **Per Peterson, Professor and Chair, Dept. of Nuclear Engineering, Univ. of California – Berkeley**
- **John Rowe, Chairman and Chief Executive Officer, Exelon Corporation**
- **Phil Sharp, President, Resources for the Future; former Member of Congress (D-IN)**



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# Reactor and Fuel Cycle Technology Subcommittee

## ■ Will address the question:

- “Do technical alternatives to today’s once-through fuel cycle offer sufficient promise to warrant serious consideration and R&D investment, and do these technologies hold significant potential to influence the way in which used fuel is stored and disposed?”

## ■ Membership

- Pete Domenici – Co-Chairman
- Per Peterson – Co-Chairman
- Al Carnesale
- Susan Eisenhower
- Allison Macfarlane
- Richard Meserve
- Ernie Moniz
- Phil Sharp



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# Transportation and Storage Subcommittee

## ■ Will address the question:

- “Should the US change the way in which it is storing used nuclear fuel and high level waste while one or more final disposal locations are established?”

## ■ Membership

- Richard Meserve – Co-Chairman
- Phil Sharp – Co-Chairman
- Mark Ayers
- Vicky Bailey
- Al Carnesale
- Pete Domenici
- Ernie Moniz
- John Rowe



# Disposal Subcommittee

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## ■ Will address the question:

- “How can the U.S. go about establishing one or more disposal sites for high-level nuclear wastes in a manner that is technically, politically and socially acceptable?”

## ■ Membership

- Chuck Hagel – Co-Chairman
- Jonathan Lash – Co-Chairman
- Mark Ayers
- Vicky Bailey
- Susan Eisenhower
- Allison Macfarlane
- Per Peterson
- John Rowe



# Activities 2010

## ■ Full Commission meetings/Commissioner site visits:

- **March – Where are we and how did we get here?**
- **May – Getting the issues on the table; three subcommittees formed – Reactor & Fuel Cycle Technology; Transportation & Storage; Disposal**
- **July – Hanford visit: a community's perspective**
- **August – Maine Yankee Site visit: decommissioned reactor**
- **September – Crosscutting issues: governance, siting, international implications, ethical & societal foundations**
- **October – Visits to Sweden and Finland**
- **November – International perspectives, working with the states, expert advice**





# Activities to Date 2011

## ■ Full Commission meetings/Commissioner site visits:

- January – Visits to SC/GA (Savannah River) and NM (WIPP)
- February - Visits to Japan, Russia and France; meeting on crosscutting issues: organizational form and scope, siting, financial considerations
- March – Issued staff-developed report on “What We’ve Heard”
- May – NRC/DOE reviews post-Fukushima; discussion of draft subcommittee recommendations to the full Commission
- June – Visits to UK, France; draft subcommittee reports issued
- July – Draft report submitted to Secretary of Energy; public comment period begins
- September – Denver: first public meeting to solicit comments

# Used Nuclear Fuel and High-level Waste

## ■ Civilian nuclear power

- If no new nuclear plants are constructed in the U.S.
  - *About 100,000 metric tons of used nuclear fuel will be produced by 2050*
- If the U.S. maintains 20% of electricity generation with nuclear
  - *About 275,000 metric tons of used nuclear fuel will be produced by 2050*
- Any increase above 20% will result in additional used fuel production

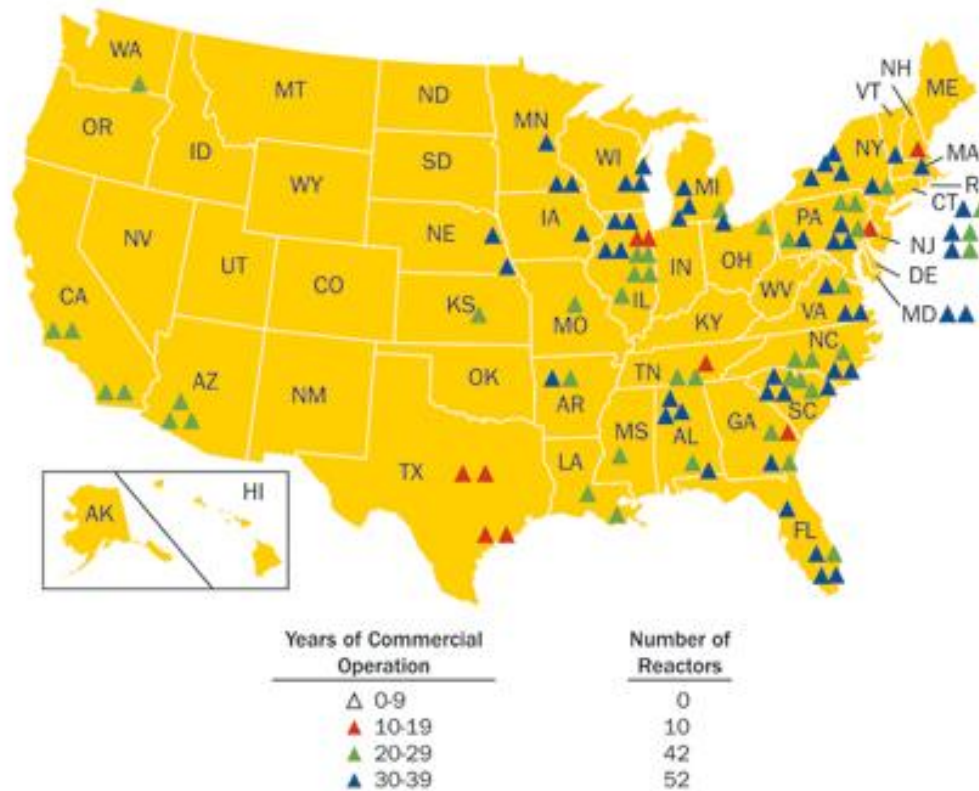
## ■ Defense spent nuclear fuel and high-level waste

## ■ Navy spent nuclear fuel



# Nuclear Power Reactors

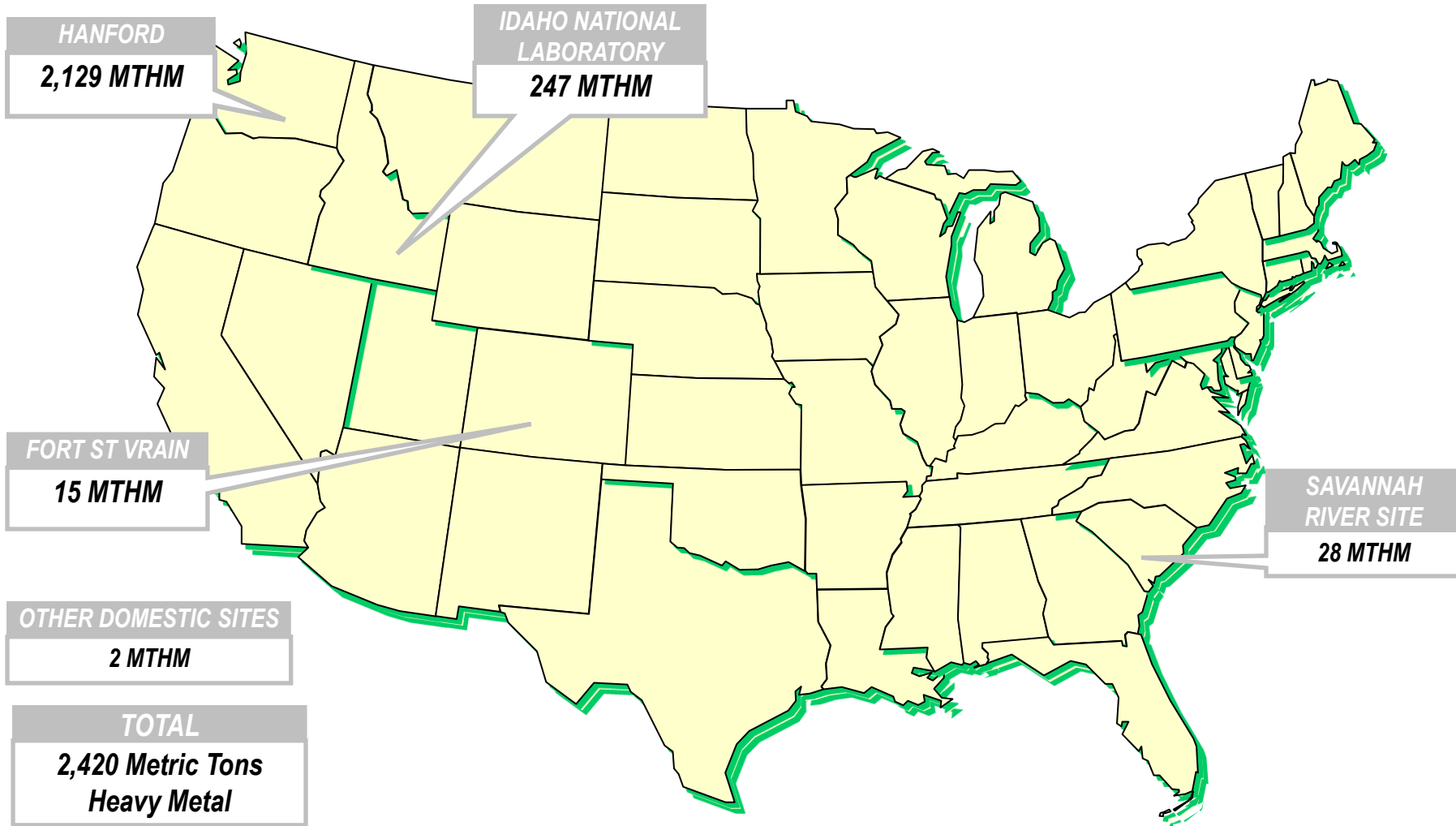
### U.S. Commercial Nuclear Power Reactors—Years of Operation



Source: U.S. Nuclear Regulatory Commission

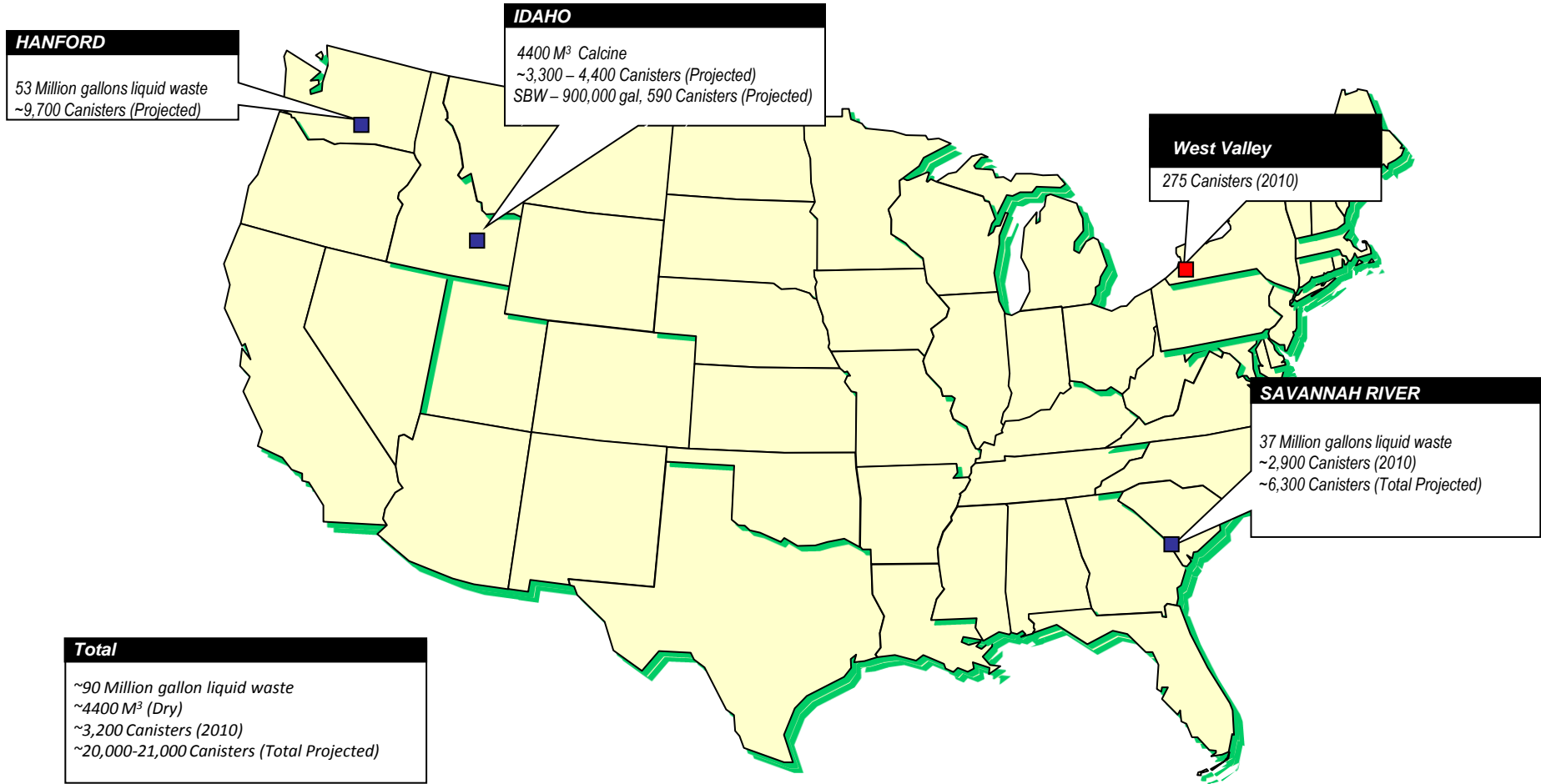


# DOE Spent Nuclear Fuel





# High-level Waste



**Mgal** – Million gallons  
**Canisters** – HLW Canisters for Disposal



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# Draft Commission Report: 7 Key Recommendations

- 1. A new approach to siting and development**
- 2. A new, single-purpose organization focused on nuclear waste in the United States**
- 3. Have assured access to funding**
- 4. Develop permanent deep geological disposal site(s) for spent fuel and high-level nuclear waste**
- 5. Develop one or more consolidated interim storage facilities as part of managing back end of nuclear fuel cycle**
- 6. Create stable, long-term support for research, development, and demonstration (RD&D)**
- 7. Need international leadership**



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# New Approach

## ■ A new approach to siting and development

- Adaptive
- Staged
- Consent-based
- Transparent
- Standards and science based





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# New, Single Purpose Organization

- **A new, single-purpose organization focused on nuclear waste in the United States**
  - **Transportation**
  - **Storage**
  - **Disposal**





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# Assured Funding

- **Have assured access to funding**
  - **Near-term changes to handling of annual nuclear waste fee payments**
  - **Longer-term access to balance of Nuclear Waste Fund**



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# Permanent Deep Geological Disposal

- **Develop permanent deep geological disposal site(s) for spent fuel and high-level nuclear waste**
  - **Expeditiously**
  - **Safely**



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# Consolidated Interim Storage

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- **Develop one or more consolidated interim storage facilities as part of managing back end of nuclear fuel cycle**
  - “Stranded” fuel at shutdown plants - should be first-in-line
  - Expeditiously
  - Safely



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## Continued RD&D

- **Create stable, long-term support for research, development, and demonstration (RD&D)**
  - Advanced reactor and fuel cycle technologies
  - Related workforce needs and skills development



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# International Leadership

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## ■ Need international leadership

- Address global non-proliferation concerns
- Improve the safety and security of nuclear facilities and materials worldwide
- Consolidated interim storage may enable acceptance of international SNF in the U.S.



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# Commission Proposed Near-term Actions for DOE

- **“DOE should initiate a rulemaking to revise the Standard Contract to offer a new fee payment option in which payments to the Waste Fund each year would be based on actual appropriations...”**
- **“Using existing authority in the NWPA, DOE should begin laying the groundwork for implementing consolidated storage...”**
- **“DOE should complete the development of procedures and regulations for providing technical assistance and funds (pursuant to section 180 (c) of the NWPA) for training local and tribal officials in in areas traversed by spent fuel shipments...”**
- **“DOE should keep a repository program moving forward through valuable, non-site specific activities, including R&D on geological media, work to design improved engineered barriers, and work on the disposal requirements for advanced fuel cycles.”**
- **“DOE should develop an RD&D plan and roadmap for taking the borehole disposal concept to the point of a licensed demonstration.”**
- **“DOE should identify any legislative changes needed to authorize and direct the U.S. waste management program to support countries that pursue nuclear technologies...”**



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# DOE's Reaction

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**"Secretary Chu appreciates the hard work done by the members of the Blue Ribbon Commission, and thanks them for a very thoughtful report. The interim report issued today is a strong step toward finding a workable solution to the challenges of the back end of the fuel cycle."**



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# Schedule and Next Steps

- **Continued outreach effort to solicit feedback on draft Commission report**
  - Meetings co-hosted with regional state government groups
    - *Denver: September 13, 2011*
    - *Boston, October 12, 2011*
    - *Atlanta, October 18, 2011*
    - *Washington, DC: October 20, 2011*
    - *Minneapolis: October 28, 2011*
  - Invited talks to interested organizations
  
- **Other visits and meetings as necessary**
  
- **Final report delivered by January 29, 2012**





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# Contact

- We always welcome written input – submit to [brc@nuclear.energy.gov](mailto:brc@nuclear.energy.gov)
  
- Follow the work of the Commission – [www.brc.gov](http://www.brc.gov)
  - Meeting information
  - Webcasts/video archives
  - Comments
  - Commissioned papers