US International Cooperation on Geological Repository Programs

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International Cooperation is Key to US Nuclear Fuel Cycle Work

- Both DOE Offices of Nuclear Energy (NE) and Environmental Management (EM) learn from technical/scientific experience gained internationally
- EM (in coordination with NE and other federal agencies) actively engaging other nations' geologic disposal programs
- EM **International Repository Program** (IRP) is managed from the Carlsbad Field Office (CBFO)
  - IRP leverages experience resident in CBFO and its supporting contractors and national laboratories
  - IRP directly supports broader EM and Department of Energy goals through its Advisory Board
  - The Advisory Board provides a forum for liaison among DOE, EPA, NRC and State Department

IRP's Four Major Objectives

1. **Be there:** Establish IRP global presence through obtaining membership/leadership in key international-organizations and activities
2. **Do something:** Establish and manage IRP activities and coordinate nationwide through its Advisory Board
3. **Know something:** Leverage CBFO and other EM experience in waste management through topical technical exchanges
4. **Tell others:** Share what is learned within EM, DOE and the US Government

DOE-EM IRP Membership & Leadership in Key International Organizations

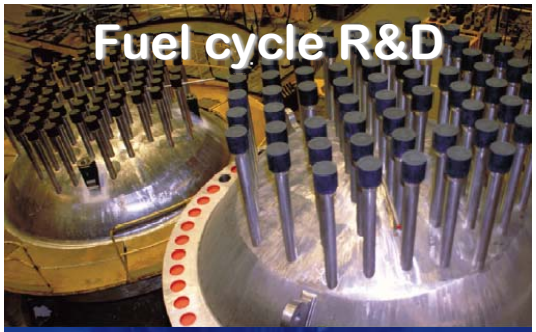
- EDRAM: DOE-EM (CBFO) becoming a US member of the EDRAM consortium (NE and EM both represented)
- IAEA - GEOSAF and DISPONET activity support and leadership
- NEA – RWMC's activity in retrievability and reversibility (R&R) and its activity on Long Term Memory has active CBFO participation
  - Integration Group for the Safety Case (IGSC) has CBFO representation and pending leadership
  - Thermodynamic Data Base (TDB) has leadership from DOE-NE and membership from DOE-EM
- Joint Standing Committee on Nuclear Energy Cooperation (JSNEC), a US State Department initiative, is supported by CBFO as needed
- European Commission-Research Directorate activities: CBFO directed Los Alamos National Laboratory and associated partners in the European community ReCosy project to engage in joint research projects with the German repository program

Status of High-Level Waste/Used Nuclear Fuel Repository Program

- The Administration has made a decision to terminate the proposed Yucca Mountain repository
- The Secretary of Energy has empaneled a group of 15 experts as the "Blue Ribbon Commission on America's Nuclear Future" (BRC)
  - The BRC will recommend new US policy on closing the back end of the US nuclear fuel cycle and managing government legacy wastes
  - BRC to submit draft report in July 2011 and final report in 2012
  - It is expected that the BRC report will lead to a new national nuclear waste policy

US Repository Roles Embodied in 2 Department of Energy Offices

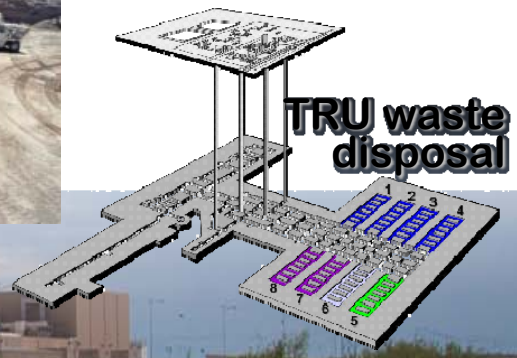
The Office of Nuclear Energy



Reactor development

EM Office of Environmental Management

safety ❖ performance ❖ cleanup ❖ closure



Used Fuel Disposition R&D (NE)

- Department of Energy's Office of Nuclear Energy recently created the Office of Used Fuel Disposition (UFD)
- UFD main objective: Directed UFD research on effects of longer term storage on the physical attributes of used fuel
- UFD also includes:
  - Determine primary features events and processes for a repository in various geological settings
  - Challenges and opportunities using an alternative means of geologic disposal such as deep borehole disposal
  - Coordination with the advanced fuel cycle divisions within NE to anticipate waste forms and quantities from fuel cycle options
  - Seek the best internationally developed information and experience

The Waste Isolation Pilot Plant (EM):

An Operating US Geological Repository for Transuranic (TRU) Defense-Wastes

Operational Experience

- Transportation and Packaging
- Waste Characterization
- Procurement & Contracting
- Nuclear Safety Culture
- Mining Safety
- Fire Protection
- Regulatory Compliance
- Stakeholder Relationships
- Waste Acceptance Criteria Development
- Training and Qualifying a Nuclear Workforce
- Long-term Performance Assessment/Modeling
- Industrial Safety
- Radiation Protection
- Hazards Analyses

Safely shipped and emplaced 72,422 m^3 TRU waste
Contact-Handled TRU: <2 mSv/hr
Remote-Handled TRU: 2mSv/hr -10 Sv/hr

9,207 shipments
18 million loaded kilometers