

WM2008 Conference Panel Reports

Session 07B

Panel: US DOE Idaho National Laboratory (INL) - Advanced Fuel Cycle Waste Management Challenges and Issues – A National Laboratory, Industry and US Nuclear Regulatory Commission (NRC) Perspective

Panel Facilitator: Dirk Gombert, INL; Panel Reporter: Kelly Rhodes, CH2M-WG Idaho

The panel focused on waste management challenges and issues of the future as they pertain to new nuclear energy programs such as the Global Nuclear Energy Partnership (GNEP) and other advanced fuel cycle program activities. Panel members included senior management from the INL, other DOE National Laboratories, industry and the US NRC.

The following individuals participated in the panel:

- Elizabeth Sellers, Manager, U.S. Department of Energy (DOE) Idaho Operations Office
- Kathy McCarthy, Deputy Associate Laboratory Director for Nuclear Science and Technology, Idaho National Laboratory
- Mark Peters, Deputy Associate Laboratory Director for Applied Science and Technology, Argonne National Laboratory (ANL)
- Dorothy Davidson, DOE Key Account Manager/VP Government Programs, AREVA NP
- Alan Dobson, Manager, High-level Waste, Energy Solutions
- Paul Dickman, Executive Assistant to US NRC Chairman Dale Klein, US NRC (USA)

Opening Remarks – Beth Sellers, Manager DOE-Idaho, opened the session by citing Idaho's long history as a leader in nuclear energy development. She noted the biggest hurdle faced by new nuclear energy programs - closing the nuclear fuel cycle.

The Future of the Nuclear Fuel Cycle – Kathy McCarthy, Deputy Associate Laboratory Director for Nuclear Science and Technology at the INL, discussed the Global Nuclear Energy Partnership (GNEP), designed to enable the continued global use and expansion of nuclear power by addressing issues which may adversely affect the use of nuclear power. She said development of an integrated waste management strategy is essential to GNEP including evaluation of product and waste streams, identification of disposal path options, use of waste stream/disposal option information to illustrate benefits of GNEP, identifying alternatives that could increase waste management benefits. She said that moving to a closed fuel cycle is a natural evolution and is necessary for better utilization of uranium resources and for reducing proliferation risk as well as long-term environmental burden from nuclear waste.

Advanced Fuel Cycle Waste Management: Opportunities, Challenges, and Issues – Mark Peters, Deputy Associate Laboratory Director for Applied Science and Technology at ANL, said that the objective of increasing energy production, while reducing the global proliferation risk and environmental impacts, could be achieved with a combination of Light Water Reactors and Fast Reactors. He said the fuel cycle must be designed as a system, taking into account compatibility between technologies, cost reduction, safety, feasibility of each component, proliferation resistance, and suitability of waste forms for geologic disposal; only with proper integration can the waste management system be optimized, coordinating separations and processing needs with

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disposal requirements. He discussed geologic disposal – its potential as safe and feasible as well as worldwide repository environments. He said the grand challenge is the need to understand and predict flow and transport processes and performance of materials over geological time scales with long-term climate changes and the impact of extreme events and to establish a sound foundation for model abstraction and stochastic approaches used for performance assessment. Dr. Peters said that an advanced fuel cycle allows for evolved thinking in the way we design and operate nuclear facilities and that a global nuclear energy enterprise provides the opportunity to address the challenges of geologic repository development and waste management at an unprecedented level.

Waste Management Approach – International Nuclear Recycling Alliance Findings for GNEP Studies - Dorothy Davidson of AREVA NP provided an industry prospective on waste management issues and challenges for new nuclear energy programs. She discussed the Consolidated Fuel Treatment Center (CFTC), a proposed GNEP facility capable of separating used fuel into its usable and waste components. She looked at waste management scenarios; releases vs. current regulations; and licensing for the CFTC.

Advanced Fuel Cycle Waste Management Challenges and Issues - Alan Dobson of Energy Solutions cited waste management issues faced by industry. He noted that legislative and regulatory change is required to close the fuel cycle; advanced technology to close the fuel cycle ready to deploy; waste management challenges are difficult but very doable; and optimizing on cost brings surprising results.

A Regulatory Viewpoint - Paul Dickman provided a nuclear regulatory commission perspective. He said regulatory change will require a major push/demand by industry; Congress must appropriate funds when changes are needed. He noted another challenge to changes – post-911 requirements, design basis threat.

Formal presentations were followed by discussion/commentary by panel members as well as questions from the audience.