

Overview of U.S. – Japan Bilateral Civil Nuclear Collaboration





March 6, 2017 WM 2017 Conference, Phoenix, AZ, U.S.A.

U.S.-Japan Bilateral Commission (BLC)

- The BLC was launched on April 30, 2012 as a senior-level, standing forum in the area of civil nuclear cooperation
- The first BLC meeting was held in Tokyo on July 24, 2012 and five working groups were formed to coordinate cooperative activities
 - Nuclear security
 - Safety and regulatory issues
 - Emergency management
 - Decommissioning and environmental management
 - Civil nuclear energy research and development



Civil Nuclear Energy Research and Development Working Group (CNWG)

- The purpose of the CNWG is to enhance coordination of U.S.-Japan civil nuclear R&D efforts
- The CNWG collaborates through 3 Sub-Working Groups:
 - Advanced Reactor R&D
 - Light-Water Reactor R&D
 - Fuel Cycle R&D and Waste Management
- The CNWG identifies potential activities for near term, intermediate term and long term cooperation







Advanced Reactor R&D Sub-Working Group

Fast Reactor Materials

 Improve key design evaluation methodologies, such as creep-fatigue mechanisms to enhance understanding of design margins

Metal Fuel Core

• Comparative benchmark studies of U.S. and Japan fast reactor core designs to further enhance confidence of the design and safety basis

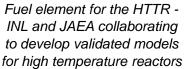
Advanced Reactor Modeling and Simulation

 Develop advanced simulation tools to accurately predict behavior and futher improve safety, performance and economic competitiveness

High Temperature Reactors

 Use data from integral test facilities in the U.S. and Japan to develop and validate HTR simulation methods











Light-Water Reactor R&D Sub-Working Group

Light-Water Reactor Sustainability

 Understand irradiation and material degradation effects on reactor pressure vessels and core internal materials

Probabilistic Risk Assessment

 High Performance Computing to analyze structural response to seismic events and develop Seismic Probabilistic Risk Assessment methods

Severe Accident Code Assessment

 Comparative analysis of Fukushima Daiichi Units 1-3 using various severe accident codes to examine consistency and improve model fidelity

Accident Tolerant Fuels

 Information exchange and R&D activities of accident tolerant fuel concepts and materials

Examination of Fukushima Daiichi (1F) Reactors for Safety

 Obtain relevant 1F data to further enhance safety and lay the groundwork for a potential multinational project



Fuel Cycle R&D and Waste Management Sub-Working Group

Advanced Fuels Properties, Performance and Analysis

 Development and validation of high performance fuel analysis codes for minor actinide bearing mixed oxide fuels

Borosilicate Glass Dissolution Studies

- Improve mechanistic understanding of glass dissolution in various geologies
- Create a robust and defensible model for assessing long-term radionuclide releases

Extraction of Uranium from Seawater

 Develop advanced adsorbent materials and conduct marine testing to inform uranium resource recovery costs

Aqueous Separations from Oxide Fuels

Develop advanced aqueous separation methods for the treatment of oxide fuels



Conclusion

- Nuclear safety is paramount to the long-term sustainability of nuclear energy
- Based on technical progress to date, activities have been extended and expanded
- Collaborative activities are effectively leveraging unique expertise and facilities available in both countries
- Next joint meeting will be held in Idaho Falls, ID May 2017



4th Meeting of the Civil Nuclear Energy Research and Development Working Group of the Bilateral Commission on Civil Nuclear Cooperation

