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From: Amy Cubbage NRR
To: Akstulewicz, Frank; Orechwa, Yuri; Shoop, Undine NRR
Date: Thu, Aug 9, 2001 11:38 AM
Subject: Fwd: China and Japan Trip: Draft Agendas for Planned Itinerary

FF/18

From: Stuart Rubin RES
To: Charles Ader
Date: Thu, Aug 9, 2001 10:55 AM
Subject: China and Japan Trip: Draft Agendas for Planned Itinerary

Attached is an initial working draft of possible daily meeting agendas for the planned itinerary for the upcoming trip to China and Japan. It is based on the limited information available at this time.

I believe that the number of agenda topics will need to be pared back to stay within the time available at each location. We can subtract from or add to (and refine) the attached draft agenda as appropriate. The agendas assumes that there will be one person from NRR and NMSS added to the current delegation of OIP and RES staff members. I believe that the backgrounds of the current delegation will support an effective and productive dialog on all of the agenda topics. After internal review and revision we should send our agenda ideas to the Chinese and Japanese contacts to review and provide their response proposals.

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CC: Amy Cubbage; Diane Jackson; Donald Carlson; Eric Leeds; John Flack; Joseph Muscara; Kevin Burke; Thomas King

9/3 National Nuclear Safety Administration (NNSA), China

Discuss the Mission of the NRC-Delegation Visit to China and specifically NNSA (i.e. explain NRC-Wide Perspective on HTR Safety Research, Regulatory Approach to HTR Reactor Safety, Ex Reactor Nuclear Materials Safety, Opportunities for Cooperative Efforts and Exchange of information - however this trip will focus on areas of interest to RES and Opportunities for Cooperative research) (NRC/OIP)

Discuss NNSA Mission, programs, organization, activities, etc (NNSA)

Discuss and Obtain Information on the Safety Evaluation of the HTR -10:

- Regulatory/Safety review Framework Used Licensing the HTR-10 (Rules, Regulations, Codes, Standards, Review plans, licensing basis events, special HTR requirements, use of risk perspectives, etc.)
- Safety Assessment and SAR of the HTR-10 including particularly significant safety issues that were identified and resolved by the regulatory review
- Significant HTR inspections, tests that were required for the operating licensing and results (e.g., Startup test program plan and review of results)
- Pebble/TRISO Fuel design Reviews and results: design, manufacture, irradiation testing, accident simulation testing, qualification, etc.
- Heat transfer & fluid flow safety reviews and results: codes and methods reviews, required codes benchmark tests, decay heat removal performance testing, etc.
- Core Nuclear design with pebble flow safety reviews and results: codes and methods reviews and required benchmark tests, active and passive shutdown capability tests, etc.
- Nuclear Graphite components safety reviews and results: grades used, irradiation testing basis for graphite materials and physical properties; structural design-analysis, special in service inspections and tests, etc.
- High temperature metal safety reviews and results: high temperature materials applications, codes and standards used, special in-service inspections and tests, etc.
- Helium technology safety reviews, results: welding, coating friction, wear/dust, leak detection, etc
- Passive accident decay heat removal reviews and results: experiments, codes and methods, analysis, etc.
- Operating experience and safety lessons learned and current oversight activities
- Safety review of fuel cycle safety: storage, transportation, etc

Discuss sources/kinds of HTGR Expert assistance that supported the HTR-10 safety review

Obtain NNSA views and information on key htgr design and technology safety issues which should be closely examined in the PBMR and GT-MHR regulatory safety reviews.

Conduct exploratory discussion of areas for cooperative nuclear safety research on HTGR design and technology.

9/4 Institute for Nuclear Energy & Technology (INET), China

Discuss the Mission of the NRC-Delegation Visit to China and specifically INET (i.e. explain NRC-Wide Perspective on HTR Safety Research, Regulatory Approach to HTR Reactor Safety, Ex Reactor Nuclear Materials Safety, Opportunities for Cooperative Efforts and Exchange of information - however this trip will focus on areas of interest to RES and Opportunities for Cooperative research) (NRC/OIP)

Discuss INET mission, programs, organization, activities, etc (INET), etc.

Discuss and obtain Information on the Research, Development, Design and Safety Analysis of the HTR-10

- Overview of the design, principles of operation and approach to ensuring safety
- Significant R&D related to: materials (e.g., high temperature alloy steel, ceramic [e.g., graphite] materials), safety-related SSCs (e.g., reactor pressure vessel, fuel elements, ceramic core internals, heat exchangers, shutdown equipment), He technology (e.g., friction, wear); Pebble flow mechanics; fission product behavior.
- Safety Analysis and SAR: Design and technology including any significant safety issues that were identified and resolved.
- Pebble/TRISO Fuel design and results: design, manufacture, irradiation testing, accident simulation testing, qualification, etc.
- Heat transfer & fluid flow safety analysis: codes and methods, code benchmark tests, decay heat removal experiments and testing, pebble heat transfer experiments andmodels, etc.
- Core Nuclear design with pebble flow: codes and methods, benchmark tests, active and passive shutdown capability tests; pebble flow experiments and models, comparison with HTR-10
- Nuclear Graphite (ceramic) components: grades used, irradiation test basis for graphite materials properties and physical properties; graphite structural design-analysis, special in service inspections and tests for graphite components, etc.
- High temperature ferrous materials: high temperature materials applications, codes and standards used, design-analysis, monitoring temperatures and material condition, special in-service inspections and tests, etc.
- Accident Passive Decay Heat Removal: experiments, codes and methods, analysis results
- Helium technology design issues: welding, coating friction, wear/dust, leak detection, etc
- Startup testing program and issues identified.
- Operating Experience and technical Lessons Learned to date
- Arrangements for Fuel Cycle Safety (e.g., criticality in Storage, transportation)

Site visit to HTR-10

Discuss Sources/kinds of HTGR Expert assistance that supported the HTR-10 safety review

Exploratory discussion of areas for cooperative nuclear safety research on HTGR design and technology.

9/5 Tsinghua University, China

Discuss overview of Tsinghua University programs, organization, activities supporting HTR-10 and other ongoing HTR research and development activities (Tsinghua University)

Discuss and obtain Information on specific Research, Development, Design and Safety Analysis work at Tsinghua University supporting HTR safety. These may include as appropriate:

- Heat transfer & fluid flow
- Core Nuclear design with pebble flow
- Nuclear Graphite (ceramic) components
- Pebble/TRISO Fuel design, manufacture, testing
- Fuel Cycle Safety areas
- Other activity areas of interest to HTR nuclear safety

Visit Tsinghua University laboratories and experimental facilities of interest to HTR safety

Exploratory discussion of areas for cooperative nuclear safety research on HTGR design and technology.

9/7 Japan Atomic Energy Research Institute (JAERI), Japan

Discuss the background/mission of the NRC-Delegation Visit to China and specifically NNSA (i.e. explain NRC-Wide Perspective on HTTR Safety Research, Regulatory Approach to HTTR Reactor Safety, Nuclear Materials Safety, Opportunities for Cooperative Efforts and Exchange of information - however this trip will focus on areas of interest to RES and Opportunities for Cooperative research) (NRC/OIP)

Discuss JAERI mission, programs, organization, activities, etc (JAERI)

Discuss and obtain Information on the Research, Development, Design and Safety Analysis of the HTTR

- Overview of the design, principles of operation and approach to ensuring safety approach
- Significant R&D related to: materials (e.g., high temperature alloy steel, ceramic [e.g., graphite] materials), safety-related SSCs (e.g., reactor pressure vessel, fuel elements, ceramic core internals, heat exchangers, shutdown equipment), He technology (e.g., friction, wear); Pebble flow mechanics; fission product behavior.
- Safety Analysis and SAR: Design and technology including any significant safety issues that were identified and resolved.
- Prismatic Fuel/TRISO Fuel design and results: design, manufacture, irradiation testing, accident simulation testing, qualification, etc.
- Heat transfer & fluid flow safety analysis: codes and methods, code benchmark tests, decay heat removal experiments and testing, pebble heat transfer experiments andmodels, etc.
- Core Nuclear design with pebble flow: codes and methods, benchmark tests, active and passive shutdown capability tests; pebble flow experiments and models, comparison with HTTR
- Nuclear Graphite (ceramic) components: grades used, irradiation test basis for graphite materials properties and physical properties; graphite structural design-analysis, special in service inspections and tests for graphite components, etc.
- High temperature ferrous materials: high temperature materials applications, codes and standards used, design-analysis, monitoring temperatures and material condition, special in-service inspections and tests, etc.
- Accident Passive Decay Heat Removal: experiments, codes and methods, analysis results
- Helium technology design issues: welding, coating friction, wear/dust, leak detection, etc
- Startup testing program and issues identified.
- Operating Experience and technical Lessons Learned to date
- Arrangements for Fuel Cycle Safety (e.g., criticality in Storage, transportation)

Site visit to HTTR

Discuss Sources/kinds of HTGR Expert assistance that supported the HTTR0 safety analysis

Exploratory discussion of areas for cooperative nuclear safety research on HTGR design and technology.