



New Reactor Licensing Activities

James Lyons, NRR
Farouk Eltawila, RES

Presentation Overview

- **Recent products**
- **Current activities**
- **Stakeholder interactions**
- **Schedule and workload uncertainty**
- **Technical and policy issues**
- **Upcoming products**

Recent Products

- **SECY-01-0188, “Future Licensing and Inspection Readiness Assessment,” October 12, 2001**
- **SECY-01-0207, “Legal and Financial Issues Related to Exelon’s Pebble Bed Modular Reactor,” November 20, 2001**

Recent Products, cont.

- **SECY-02-0059, “Use of Design Acceptance Criteria for the AP1000 Standard Plant Design,” April 1, 2002**

Recent Products, cont.

- **SECY-02-0067, “Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) for Operational Programs (Programmatic ITAAC),” April 15, 2002**

Recent Products, cont.

- **SECY-02-0076, “Semi-annual Update to the Future Licensing and Inspection Readiness Assessment,” May 8, 2002**
- **SECY-02-0077, “Proposed Rule to Update 10 CFR Part 52,” May 8, 2002**

Current Activities

- **PBMR pre-application**
- **AP1000 design certification**
- **GT-MHR pre-application**
- **Early site permit application preparation**
- **Infrastructure development**

PBMR Pre-application

- **On April 16, Exelon withdrew from the PBMR project**
- **Plans for closing out pre-application activities**
- **Recommendations on modular and merchant plant issues - August 2002**

AP1000 Design Certification

- **March 28, 2002 application**
- **Acceptance review to be completed shortly**
- **SECY-02-0059 on the use of design acceptance criteria**
 - **Instrumentation and controls**
 - **Control room**
 - **Piping design**

GT-MHR Pre-application

- **General Atomics licensing plan submitted February 18, 2002**
- **Staff response May 14, 2002**

Early Site Permits

- **Three sites identified**
 - **Clinton (Exelon), June 2003**
 - **Grand Gulf (Entergy), June 2003**
 - **North Anna (Dominion), Fall 2003**
- **Staff review areas**
- **Pre-application activities**

Infrastructure Development

- **Rulemaking**
- **Construction inspection program**
- **Advanced reactor research plan**
- **Related activity**
 - **Risk-informed framework**

Stakeholder Interactions

- **Public**
- **Industry**
- **ACRS**
- **Within NRC**
- **Interagency**
- **International**

Schedule and Workload Uncertainty

- **Impact of PBMR decision**
- **Simultaneous ESP reviews**
- **ESBWR**
- **SWR 1000**
- **GT-MHR**

Technical & Policy Issues

- **Key LWR policy and technical issues**
- **Plan to address gas cooled reactor technical and policy issues**
- **Regulatory framework**
- **Upcoming products**

AP1000

- **NRC and DOE collaborating on integral testing for the AP1000 at the Oregon State University APEX facility**
- **NRC beyond design basis tests will start in October 2002**

ESBWR & SWR 1000

- **Build upon existing LWR technology**
 - **Design basis accidents and acceptance criteria**
 - **Severe accidents and requirements**

ESBWR & SWR 1000

- **Incorporate passive safety features**
- **Passive safety systems reliability**
 - **Perform beyond design basis accident tests to establish margins**

ESBWR & SWR 1000

- **In-vessel melt retention**
- **Drywell flooding for core melt accident**
- **Acceptance of Codes and Standards not endorsed by NRC**

ESBWR & SWR 1000

- **Upgrade NRC PUMA facility**
 - **Perform scenario-specific tests**
- **TRAC-M code validation and improvements**

Gas Cooled Reactors

- **Potential policy issues**
 - **Event selection and safety classifications**
 - **Fuel performance and qualifications**
 - **Source term**

Gas Cooled Reactors

- **Potential policy issues, cont.**
 - **Containment performance**
 - **Emergency evacuation**
- **Stakeholder engagement**
- **Recommendation to Commission –
Fall 2002**

Framework

- **Develop risk-informed, performance-based criteria for advanced reactors**
- **Criteria could be**
 - **Generic**
 - **Design-specific**
 - **Combination of the above**

Framework

- **For gas cooled reactors**
 - **Need to develop Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) as surrogates to the Commission Safety Goals**

Selected Technical Issues

- **Status paper on key gas cooled reactor technical issues – June 2002**
 - **Fuel quality and performance**
 - **Fission products release**
 - **High temperature materials and design**

Upcoming Products

- **Key policy issues on High Temperature Gas Cooled Reactor (HTGR), June 2002**
- **Key HTGR technical issues, June 2002**
- **Risk-informed Regulation Implementation Plan Update, June 2002**

Upcoming Products, cont.

- **Recommendations on modular and merchant plants, August 2002**
- **NEI petitions recommendations, September 2002**
- **Recommendations on HTGR policy, Fall 2002**
- **Advanced Reactor Research Plan, Fall 2002**