

September 19, 2002

ORGANIZATION: Framatome ANP

SUBJECT: SUMMARY OF AUGUST 15, 2002, MEETING WITH FRAMATOME ANP  
REGARDING THE SWR-1000

The Nuclear Regulatory Commission (NRC) held a public meeting with Framatome ANP on August 15, 2002, at NRC Headquarters to discuss issues related to the SWR-1000 boiling water reactor design. A list of attendees is provided as Enclosure 1. Enclosure 2 contains the agenda for the meeting.

Framatome ANP provided handouts during the meeting which can be accessed through the Agencywide Documents Access and Management System (ADAMS). This system provides text and image files of NRC's publicly available documents. The handouts mentioned above may be accessed through the ADAMS system under Accession No. ML022310357. If you do not have access to ADAMS or if there are problems in accessing the handouts located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to [pdr@nrc.gov](mailto:pdr@nrc.gov).

#### Technology Base for SWR-1000

During the meeting Framatome ANP discussed the issues related to the technology base for the SWR-1000 including the following: the safety approach, review of the passive safety features, analysis methods and software, supporting research and development, documentation associated with the program, and review of the test program.

Framatome ANP explained that their safety approach for the SWR-1000 was to incorporate safety-related passive systems that are designed to meet all nuclear safety criteria without reliance on active systems. The passive safety system features include: passive pressure pulse transmitters (a safety system actuation device), emergency condensers, containment cooling condensers, passive outflow reducers, reactor pressure vessel (RPV) flooding lines, and exterior cooling of the RPV for severe accidents. Framatome ANP indicated that it planned to use the computer code S-RELAP5 for analysis of core thermal hydraulics, anticipated operational occurrences, loss-of-coolant accidents, and anticipated transients without scram events. The computer code STAIF will be used for stability analysis and the containment will be analyzed using either the computer code S-RELAP5 or GOTHIC. Framatome then described the supporting research and development for the design including the testing that has already been completed and the testing that they are currently planning to support the design certification application.

#### NRC/Framatome Interactions During Test Program

During this phase of the meeting, the staff and Framatome ANP discussed the type of interaction expected by the NRC, the lead time required for NRC observation of Framatome

tests, and the NRC's approach for conducting independent tests. The staff indicated that for the AP600 and the SBWR review it visited and conducted a quality assurance implementation inspection at the primary facilities (at least once) that were used to provide test data for the design certification application. The staff believed that visiting the test facilities and having periodic interactions with Framatome ANP would lead to a more efficient and effective review. Because visiting the test facilities would involve approval of foreign travel, the staff requested that Framatome ANP provide as much detail as possible as soon as possible regarding their testing plans. Framatome indicated that it would provide an outline of the tests they were planning over the next 12 to 18 months by September 1, 2002. (Subsequent to the meeting, Framatome provided this information in a August 29, 2002, letter - ADAMS Accession No. ML022460351). The staff indicated that it would provide feedback to Framatome on what tests it would like to observe by October, 2002.

Regarding NRC's approach for conducting independent tests, the staff indicated that if during its review it discovered flaws in the test program it would be the applicant's responsibility to fix the problem instead of the staff performing independent testing to address the issue. The staff indicated that if it chose to perform independent testing on its own initiative it would not be charged to Framatome ANP. The staff mentioned Purdue's PUMA facility as a possible testing resource for it to use.

#### Entry into the Pre-Application Phase

Framatome ANP indicated that it plans to provide its first substantive documents for NRC review in mid-2004. Framatome requested that before they submit the documents for review they continue to meet with the NRC to identify and clarify issues related to the certification process and to identify and clarify issues unique to the SWR-1000 design. The staff stated that based on Framatome's request for these interactions (documented in a letter dated May 29, 2002, ADAMS Accession No. ML021570134) the staff had assigned Project Number 723 to the SWR-1000 pre-application review and fee-recoverable TAC numbers were also arranged.

#### Summary Phase of Meeting

There was a short intermission toward the end of the meeting so that the staff could discuss internally the approach to design certification that Framatome ANP outlined in its presentation. During this time the staff developed high-level feedback to provide to Framatome ANP. The meeting then reconvened and the staff provided the feedback contained in Enclosure 3 to Framatome.

**/RA/**

Joseph M. Sebrosky, Senior Project Manager  
New Reactor Licensing Project Office  
Office of Nuclear Reactor Regulation

Project No. 723

Enclosures: As stated

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**Meeting With the Framatome ANP**  
**August 15, 2002**

**Attendance List**

**NRC**

Farouk Eltawila	RES
Jared Wermiel	NRR/SRXB
Ralph Caruso	NRR/SRXB
Steve Bajorek	RES/DSARE
James Han	RES/DSARE
Shanlai Lu	NRR/SRXB
Ralph Landry	NRR/SRXB
George Thomas	NRR/SRXB
Muhammad Razzique	NRR/SRXB

**Framatome ANP**

Jim Mallay  
Sandra Sloan  
Roger Stoudt  
Mike Hibbard  
Ray Ganther  
Bob Twilley  
John Trotter  
Mike Pop

Kaz Kampe	NRR/DSSA
Andre Drozd	NRR/DSSA
Edward Throm	NRR/SPLB
Hulbert Li	NRR/EEIB
Rich McIntyre	NRR/IEHB
Petteri Tiippana	NRR/IIPB
Matt Chiramal	NRR/EEIB
Paul Loeser	NRR/EEIB
Joe Sebrosky	NRR/NRLPO
Brett Rini	NRR/NRLPO
Amy Cubbage	NRR/NRLPO
Robert Pascarelli	NRR/NRLPO
Jerry Wilson	NRR/NRLPO

**Other Attendees**

Leslie Collins	Westinghouse
Lane Hay	SERCH Bechtel
Roger Huston	Licensing Support Services
Mark Wetterhahn	Winston & Strawn
Glenn R. George	PA Consulting Group

**Agenda for Meeting to Discuss Issues**  
**Associated with the SWR-1000**

**Topic**

- I. Introduction
- II Technology Base for SWR-1000
- III NRC/Framatome interactions during test program
- IV Entry into the Pre-Application Phase
- V Public Comment
- VI Conclusions

**Participants**

All

Framatome ANP

Framatome ANP/NRC

Framatome ANP/NRC

All

All

**High-level Feedback Provided to Framatome ANP Regarding its  
Approach for Design Certification of the SWR-1000**

The staff provided the following comments to Framatome ANP at the end of the meeting:

- The staff requested Framatome ANP provide a sufficient description of the plant for the NRC to develop its own phenomena identification and ranking table (PIRT) for the SWR-1000. The staff requested that this description include a preliminary analysis of the events that will be considered in Chapter 15 of the safety analysis report.
- The staff requested that Framatome ANP provide its PIRT to the staff as soon as possible.
- The staff believes that it is important that Framatome ANP address adverse system interactions between active and passive systems. The staff also noted that response times of the passive systems (e.g., passive pressure pulse transmitters) will need to be addressed.
- The staff requested Framatome provide a road map of the test matrix for the SWR-1000.
- The staff stated that Framatome ANP should consider the use of blind tests during the development of the test plan. These blind test could be used later to perform checks of the codes used for accident analysis.
- The staff stated that the operation and history of the emergency condenser would be an area of review for it and information that Framatome could provide relative to the scaling and operational experience of the heat exchanger would help with the staff's review.
- The staff believed that the scaling analysis in general for the design would benefit from early interactions between the staff and Framatome ANP.
- The staff stated it thought treatment of anticipated transients without scram might be unique for the SWR-1000 design.
- The staff stated that the review of Framatome ANP's probabilistic risk assessment for the design would benefit from early interactions with the staff. The staff was interested in the treatment of severe accidents in general and in particular the analysis associated with the use of in-vessel retention. Regarding in-vessel retention, the staff was interested in how Framatome ANP was going to address chemical interaction of the molten corium with the reactor pressure vessel.
- The staff believed that the Advisory Committee on Reactor Safeguards would benefit from a briefing of the SWR-1000 by Framatome ANP as soon as possible.
- The staff believed that thermal-hydraulic stability issues might benefit from early interactions between Framatome ANP and the staff.



- The staff stated that it was interested in the quality assurance program Framatome ANP was applying to each test facility for adherence to the applicable quality requirements of 10 CFR Part 50, Appendix B.
- The staff was interested in hearing more about the containment analysis and the source term analysis for the SWR-1000.

SWR-1000

cc:

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