

May 7, 1997

APPLICANT: Westinghouse Electric Corporation

FACILITY: AP600

SUBJECT: SUMMARY OF APRIL 18, 1997, SENIOR MANAGEMENT MEETING ON THE AP600

On April 18, 1997, representatives of the Nuclear Regulatory Commission (NRC) and Westinghouse met to discuss the schedule for the AP600 design. Attachment 1 is a list of attendees. Attachment 2 is a copy of the slides presented by the staff. The status of the issues described in Attachment 2 represents the staff's positions on these issues.

The staff and Westinghouse discussed the status of each of the 27 key technical and policy issues that were identified in the December 6, 1996 letter to the applicant, using the status described in Attachment 2 as a starting point. During the discussion, each issue was categorized as either an issue that needed to be elevated to senior management during the upcoming April 22, 1997, senior management meeting, an issue that presented a major vulnerability to meeting the schedule, or an issue that was still under discussion, but not yet one that was a critical milestone to the schedule. One issue, Post-72 Hour Actions (No. 9), was identified as a candidate that needed to be elevated to senior management during the April 22, 1997, senior management meeting. Westinghouse also indicated that they wished to discuss the overall closure process for the open items during that meeting.

Issues that were categorized as critical path items, including the review of WGOETHIC, the regulatory treatment of non-safety-related systems, the review of the probabilistic risk assessment, and the review of the inspections, tests, analyses, and acceptance criteria document, were also identified as potential topics for the upcoming senior management meeting.

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Docket No. 52-003

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Docket No. 52-003

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NRC/WESTINGHOUSE AP600 SENIOR MANAGEMENT MEETING

APRIL 18, 1997

MEETING PARTICIPANTS

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TIM MARTIN	NRC/NRR/DRPM
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1. Content of the SSAR (All branches)

Between March and August 1996, Westinghouse removed design information from the AP600 SSAR that had been approved in the 1994 DSER without prior notification. In addition, Westinghouse has notified the staff that it no longer intends to include responses to RAIs as a separate section of the SSAR. Because of the amount of missing information, the staff no longer believes that the AP600 design application is essentially complete. The staff continues its re-review of the SSAR to ensure that necessary information, including design descriptions, P&IDs, and tables, that have either been removed or were never included are (re)inserted into the SSAR.

Status

- Position letter was sent 3/27/97
- 4/8/97 Westinghouse letter states that they "will meet with Ms. Jackson...to discuss specifically which P&IDs require additional information and specifically what detailed information is required."
- The staff provided examples of problems. Westinghouse is responsible for identifying and correcting problems.

2. Regulatory Treatment of Non-Safety Related Systems (RTNSS) (SRXB lead)

General: A meeting between Westinghouse and NRC was held 4/3/97. Both the staff and Westinghouse are considering how additional regulatory requirements on certain non-safety-related systems (e.g., DAS and RHR) would simplify the focused PRA and thermal-hydraulic uncertainty effort remaining for both the staff and Westinghouse.

The RTNSS issue includes several related issues, including:

- a. Passive System Thermal-Hydraulic Performance Reliability (SRXB) (See Item 21)
- b. Acceptability of Baseline & Focused Probabilistic Risk Assessment (SPSB, SCS3)

The staff is having difficulty coming to agreement on issues to achieve a Baseline PRA that the staff can approve. The Focused PRA effort should follow after an acceptable Baseline PRA is approved.

- A letter on Level 1 PRA was issued 4/3/97.
 - A meeting with Holahan was held 4/15/97.
- c. Adverse Systems Interactions (SRXB) (see Item 25)
 - d. Post-72 Hour Support Actions (SRXB) (see Item 9)

2. Regulatory Treatment of Non-Safety Related Systems (RTNSS) (SRXB lead) (continued)

e. Safe Shutdown End-State (see Item 19)

f. Other RTNSS Concerns

- 1. protection of RTNSS and Defense-in-Depth systems from internal and external floods, internally-generated missiles (inside and outside containment), externally-generated missiles and missiles generated by natural phenomena, and pipe failures.**
 - **Westinghouse letter dated 2/10/97 submitted drawing showing missile, flooding and high energy pipe break protection for some RTNSS systems. Staff to determine if this information resolves this issue.**
- 2. The staff needs to define the criteria for what type of oversight is appropriate for a system that falls under the RTNSS process.**
 - **The staff is still evaluating appropriate regulatory oversight for RTNSS systems. Actions are contingent on Westinghouse review of additional oversight on DAS and normal RHR systems.**

3. Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) (All branches)

The ITAAC for passive safety systems include inspection of the as-built system configuration (sizing and elevation); functional testing to verify isolation valve operation upon receipt of actuation signals, valve stroke time and valve operation at design differential pressures, tests to verify correct divisional power supply to each valve; hydraulic test to determine piping flow resistance; and heat removal performance test for PRHR heat exchanger heat transfer rate.

Westinghouse submitted a complete replacement for the ITAAC on November 7, 1996. It appears that Westinghouse has taken a significantly different approach from that of the evolutionary LWRs based on the staff's preliminary review. The staff has the following preliminary concerns with the ITAAC:

- a. Certain phenomena such as natural circulation, need a heat source for proper testing. Because ITAAC are performed before fuel loading, the staff needs to evaluate the relationship between ITAAC, Chapter 14 initial tests, and the vendor's test program, including scaling effects.
- b. The passive systems that have relatively small driving forces are sensitive to certain parameters, such as (1) effect of relative elevations and piping configurations on gravity injection and natural circulation capability, and (2) effect of surface roughness, coating, striping, and water coverage on the containment

3. Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) (All branches) (continued)

b. (continued)

exterior shell on passive containment cooling system heat transfer capability. Westinghouse will need to perform sensitivity analyses of these parameters to develop acceptable bands for ITAAC verification.

- c. ITAAC will have to be developed for certain non-safety-related defense-in-depth systems based on their importance to the safe operation of the plant.**
- d. Inconsistencies with the evolutionary plant precedents need to be addressed by Westinghouse.**
- e. The Instrumentation and Control-related ITAAC provided by Westinghouse is not consistent with draft SRP Section 14.3. The needed detail has not been provided.**
- f. The Human Factors-related ITAAC provided by Westinghouse is not consistent with draft SRP Section 14.3. The needed detail has not been provided.**

3. Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) (All branches) (continued)

Status

- **The Certified Design Material (CDM) which includes ITAAC is falling behind schedule and there are still some areas where there is disagreement. Westinghouse originally scheduled a revision to the CDM at the end of February 1997 to address the issues identified in the December 6, 1997 letter. This date was subsequently changed to the middle of April 1997 so that Westinghouse could also include changes required by "big picture" comments from the technical branches involved in the review (SCSB was late in providing their comments). The date for the revision is now the end of April 1997.**
- **A SSAR revision will also be required to support the changes that will be made to the CDM. Two major items that need to be incorporated into the SSAR are an explanation in the individual SSAR chapters for how the values that are given in the ITAAC were obtained, and information in Chapter 14.3 that cross references the important design information and parameters of the SSAR to their treatment in the CDM.**

ITAAC Status (continued)

- One key area is the piping design acceptance criteria (DAC). Westinghouse contends that they have enough of the design complete to provide detailed ITAAC in some areas. The staff expected Westinghouse to provide piping DAC similar to the evolutionary plants. Westinghouse's new approach has the potential to cause resource impacts for the staff and Westinghouse. Westinghouse presented its proposal to the staff on 4/17/97. The initial reaction from the staff was positive, however, Westinghouse indicated that the detailed piping design for all ASME class 1, 2, and 3 piping will not be completed until the end of September, 1997.
- The schedule for ITAAC is now obsolete. New milestones need to be added to reflect the revised approach to resolution.

4. Leak-Before-Break (LBB, Design Criteria For Feedwater Piping System (ECGB)

Westinghouse proposed to apply LBB methodology to its feedwater piping system. The staff indicated in the DSER and a letter to Westinghouse dated November 4, 1996, that this proposal was not acceptable, and that LBB should not be applied to the feedwater piping system.

Status

- The specific issue of LBB for FW lines is resolved. Westinghouse updated the SSAR in Revision 11 to delete LBB references to FW lines; minor revisions are expected to complete the issue in Revision 12.
- The remainder of the LBB review is not complete. A meeting was held on 4/16/97 - 4/18/97. Westinghouse believes that dropping the 4-inch lines from LBB closed all issues with LBB. This is not true. EMEB has raised an issue on pressure-induced bending on smaller lines (6 - 8 inch), and has asked Westinghouse to address it in the AP600.

5. Soil/Structure/Seismic Interactions (ECGB)

In its November 4, 1996 letter, the staff informed Westinghouse that the AP600 seismic design capacity could be established through the use of a sufficient and necessary set of minimum seismic design response spectra by the COL applicant to complete its seismic design within the scope of the certified design. Suitability of a future site would then have to be established by demonstrating that the seismic demand spectra for the site are lower than the capacity spectra.

Status

- A structural modules meeting was held 4/14/97 - 4/18/97.
- Westinghouse submitted its draft SSAR markup by letter dated 3/26/97.
- ECGB has provided input to PDST, additional staff (PDST) comments are expected soon. The staff expects to respond by April 25, 1997.

6. Site-Soil Variability (Basemat) (ECGB)

Westinghouse is proposing to use a 6-foot thick basemat versus a typical 10-foot or thicker structure. In its November 4, 1996 letter, the staff informed Westinghouse that the thinness of the basemat makes it unacceptable for the likely soil stiffness variability that can be reasonably expected to exist at a site.

Status

- In the Senior Management meeting on March 3, 1997, it was decided that Westinghouse could propose additional information, including the geotechnical survey requirements and a construction sequence, to ensure that inadequate sites (i.e., non-uniform) would be excluded for the AP600. Westinghouse had sent in a draft of this proposal 2 days prior to the SMM. The staff is reviewing.
- However, the basemat is linked to the re-analysis for seismic due to post 72-hour actions. Westinghouse expects to complete this at the end of May 1997. The link between the two issues was discussed on 3/11/97 with Westinghouse, and documented in a telecon summary dated 4/7/97. The staff will perform confirmatory analysis after this information is received.

7. DBA Radiological Consequences (PERB lead)

Westinghouse uses the EPRI source term for the AP600 10 CFR Part 100 calculations. Issues include

- fission product release fraction
- iodine chemical form
- aerosol deposition in containment
- pH control of water in containment
- use of floating window

Status

- A meeting to audit Westinghouse's analysis code was held on 2/11/97.
- The staff is awaiting RAI responses on aerosol removal in containment (10/96), pH (3/96), and EQ in containment (8/96).

8. Prevention and Mitigation of Severe Accidents (SCSB lead, PERB)

The AP600 does not have a containment spray, which could be used to reduce containment pressure and atmospheric radioactivity concentrations during a severe accident event. In lieu of a containment spray system, Westinghouse has proposed that natural processes for fission product removal, in combination with certain mitigative equipment, are sufficient for mitigation of the consequences of a severe accident. The staff disagrees, and has identified its concerns and potential alternatives in SECY-96-128, dated June 12, 1996. An SRM was received on 1/15/97. Staff provided additional information via SECY-97-044. Westinghouse commented on Commission paper on 3/13/97.

Status

- This matter is currently before the Commission for guidance.

9. Post-72 Hour Support Actions (SRXB lead)

The passive safety systems are designed with sufficient capability to mitigate all design basis events for 72 hours without operator actions and without non-safety-related onsite or offsite power. For long-term safety (post-72 hours), Westinghouse states that the AP600 design includes safety-related connections for use with transportable equipment and supplies to provide the extended support actions for safety-related functions.

In SECY-96-128, the staff stated that local communities struggling with disaster response should not be given the additional burden of providing for nuclear power safety. In addition, the staff is concerned that equipment not under the plant operator's control may be susceptible to damage from environmental conditions. The staff recommended the Commission approve the position that the site be capable of sustaining all design basis events with onsite equipment and supplies for the long term. After 7 days, replenishment of consumables such as diesel fuel oil from offsite suppliers can be credited. On 1/15/97, the Commission issued an SRM supporting the staff's position.

Status

- The staff met with Westinghouse on 2/4/97 to discuss its response & possible design changes.

9. Post-72 Hour Support Actions (SRXB lead) (continued)

Status (continued)

- The staff issued comments on the proposed Westinghouse post-72 hour design changes on 2/18/97.
- Westinghouse's responses to the staff's comments were received on 3/17/97.
- The staff has reviewed the Westinghouse comments and still has several concerns. These concerns involve compliance with GDC 2, seismic analysis of the modified PCS tank and associated roof structure, and the safety-related control room ventilation system. The staff also needs more information on the flow path of steam and vapor produced by spent fuel pool boiling.
- Westinghouse recently submitted (4/15/97, the radiological assessment of doses due to spent fuel pool boiling. Additional radiological, seismic, and WGOTHIC analyses are still needed from Westinghouse to support other aspects of the post-72 hour design changes.

10. Containment Isolation (SCSB)

Many systems that have traditionally been safety-related systems are now non-safety-related systems in the AP600. Non-safety-related systems are typically automatically isolated on a containment isolation signal. The AP600 design does not isolate certain non-safety-related systems, such as the normal RHR. The staff is concerned with the potential for containment bypass because a non-safety-related system fails to isolate.

Status

- A position letter was issued on 4/11/97. Westinghouse needs to demonstrate using probabilistic basis that leaving normal RHR unisolated on a containment isolation signal is safer than isolation of the containment penetration. Westinghouse will also need to provide a leak detection system for the RHR equipment spaces.

11. Systems Reliability of Hydrogen Mitigation Systems (SCSB)

The AP600 design uses passive hydrogen recombiners for design-basis accident (DBA) hydrogen control. The staff is reviewing the acceptability of the design.

Status

- A position letter was sent on 4/1/97 informing Westinghouse that additional information on the environmental qualification of the PARs is needed related to fission product chemical poisons and radiation damage to the hydrophobic coating.

For severe accident hydrogen control, the AP600 relies on 58 igniters. The staff is concerned with the adequacy of igniter coverage within the containment, and diversity of power supplies to the igniters. In a November 4, 1996 letter, Westinghouse has proposed a modification to the design of the ac power supplies.

Status

- A position letter was sent on technical specifications and acceptability of power supply proposal on 4/3/97.

12. Fire Protection Program (SPLB)

The staff has identified four key issues pertaining to the fire protection program for the AP600:

- a. The staff is concerned that the containment fire water supply will compete with the water supply for the passive containment cooling system.**
- b. Zone-of-Influence Inside Containment - Westinghouse has not demonstrated that at least one shutdown path will be free of fire damage for a number of fire zones.**
- c. Westinghouse has not provided an adequate technical bases for why SSE is not needed to go to cold shutdown.**
- d. The staff is concerned with smoke control for the AP600 design.**

Status

- Two principal problems were (1) issues raised by the reviewer needed regulatory focus, and (2) Westinghouse was not responding in a sufficient manner to address the issues.**
- To assist the review, the staff moved AP600 fire protection (FP) review under the normal SPLB FP section, and added the assistance of a senior reviewer.**

12. Fire Protection Program (SPLB) (continued)

Status (continued)

- A meeting was held on 4/7/97 to discuss staff concerns. Bi-weekly meetings were proposed by the staff to provide Westinghouse with timely feedback.
- Position papers are under development.

13. Spent Fuel Pool Cooling System (SPLB)

The SFP cooling system is not safety-related and does not meet the alternate criteria of Section 9.1.3 of the SRP. Section 9.1.3 acceptance criteria for compliance with GDC 2 and 4 calls for a safety-related SFP cooling system, or a non-safety-related SFP cooling system with safety-related makeup and safety-related ventilation. The AP600 SFP cooling system is non-safety-related and has neither safety-related makeup or ventilation. Westinghouse states that the passive heat capacity of the water in the SFP is sufficient to cool the spent fuel for 72 hours. Non-safety-related makeup can be obtained from the IRWST or the demineralizer tank.

Status

- The staff stated in a letter dated 2/18/97 regarding Post 72-hour actions that it cannot conclude Westinghouse meets GDC 19.
- The staff needs to review the spent fuel pool boiling dose calculations (received 4/15/97) and understand how where the steam and vapor produced by the fuel pool boiling goes and how it affects other equipment and instrumentation in the auxiliary building.

14. Overspeed Protection (SPLB)

The staff believes that the AP600 design should include mechanical overspeed protection for the turbine. Westinghouse believes that the electrical overspeed design that they propose is more reliable, and the AP600 design does not include a mechanical overspeed trip.

Status

- Westinghouse committed in April 1996 to submit quantitative data to support its SSAR claims of equal or higher reliability and redundancy.
- Position letter, requiring additional information for acceptance, is in concurrence.

15. Proposed AP600 Security Plan (PSGB)

Westinghouse has submitted a revised security plan and vulnerability analysis employing a simplified safeguards concept using the plant structures as part of their security perimeters.

Status

- Revised Security Report received on 2/28/97.
- Meeting to be held on May 1, 1997 to better understand design and Westinghouse's proposal. The staff is developing discussion items for meeting.

16. Initial Test Program (HQMB lead, All branches)

The staff believes that a rigorous initial test program (ITP) is required for the unique AP600 systems that are different from operating plants. Revision 9 of the SSAR (August 9, 1996) substantially modifies the content, format, and approach for the AP600 ITP. Major concerns identified thus far include:

- a. conformance of the submittal with current SRP and RG 1.68;
- b. acceptability of Westinghouse's new approach for the criteria of SSCs to be tested versus that of Position C.2 of RG 1.68;
- c. treatment of SSCs not considered safety-related, defense-in-depth, or RTNSS-related;
- d. ensuring that the scope of the ITP captures all AP600 passive design features or those not present in traditional designs;
- e. the acceptability of test abstracts designated as first-plant-only by Westinghouse; and
- f. the acceptability of the ITP for water hammer in the secondary systems.

16. Initial Test Program (HQMB lead, All branches)

Status

- Westinghouse is in the process of responding to a March 20, 1997, letter from the staff that details the status of the review and also requests additional information from Westinghouse.
- Additional milestones should be added to the schedule to reflect the resolution approach being used for the ITP. It appears that the staff and Westinghouse are coming to agreement for the resolution of the majority of the issues.
- SCSB has not yet provided comments on the ITP.

17. Code Documentation and Qualification (V&V of Codes) Review Incorporating Testing Data Results (SCSB/SRXB)

The supplement to the DSER on Codes and Testing identified approximately 120 open issues concerning the AP600 testing and code validation program. Although the reactor system code effort is currently on an acceptable path to resolution, the staff continues to identify many significant problems with the documentation for the WGOTHIC containment analysis code.

Status of Code Reviews

WGOTHIC

- A WGOTHIC meeting was held on 4/17/97-4/18/97. The staff continues to meet with Westinghouse to provide additional clarification or information to assist them in producing a defensible set of documents.

NOTRUMP

- RAIs on NOTRUMP Final Validation Report were issued 4/3/97.
- Westinghouse expects to finish all remaining documentation related to the RAIs by early June 1997.

17. Code Documentation and Qualification (V&V of Codes) Review Incorporating Testing Data Results (SCSB/SRXB)

Status of Code Reviews (continued)

LOFTRAN

- Most open items for LOFTRAN are resolved.
- Westinghouse still needs to demonstrate the acceptability of the PRHR heat exchanger heat transfer correlation used in LOFTRAN.

WCOBRA/TRAC - LBLOCA

- Westinghouse is working on answers to the staff's outstanding questions.

WCOBRA/TRAC - Long Term Cooling

- RAIs issued to Westinghouse on letters from the staff dated 3/4/97 and 3/20/97.
- An ACRS meeting was held on 3/28/97 where some additional issues were raised.
- The staff is awaiting Westinghouse's responses to the RAIs.
- Additional RAIs should be issued by the end of April 1997.

18. Chapter 15 Accident Analysis (SRXB lead)

Although a preliminary Chapter 15 accident analysis was submitted by Westinghouse, the final revision to the SSAR was due on 2/28/97. The staff continues to review Code V&V reports and other supporting documentation. Because the review of the codes took precedence over the Chapter 15 review, there has been a hiatus in this area, and many open items remain.

Status

- Westinghouse has been unable to complete the Chapter 15 SSAR analyses until recently due to the delays in finalizing the computer codes. Now that all the codes have been frozen, Chapter 15 analyses are in progress and Westinghouse expects to have all documentation completed by the end of May 1997.
- The staff issued a number of comments on the documentation needed in the final revision of the Chapter 15 SSAR.
- One issue on the application of GDC 17 to analysis of anticipated operational occurrences remains under discussion between the staff and Westinghouse.

19. Westinghouse's Proposed LCO 3.0.3 (OTSB)

In accordance with the staff's position in SECY-96-128, Westinghouse has proposed that, for unanticipated configurations, the safe shutdown end state for the AP600 should be defined as MODE 5 (cold shutdown). In addition, Westinghouse has agreed to include the use of the normal residual heat removal system (NRHR) in technical specification (TS) 3.0.3, in response to the staff's position for a "cold shutdown" default state. However, TS 3.0.3 specifically (by design) excludes any statement about the availability or operability of the NRHR system or any of its necessary support systems (i.e., ac power, cooling water, etc.). Although the staff concludes this is unacceptable, guidelines regarding the type of regulatory controls that should be applied to these RTNSS-identified systems need to be established. (See Item 2, RTNSS)

Status

- Comments on Technical Specifications (Revision 9 to SSAR) issued on 12/24/96.
- Position letter issued 4/3/97 requesting Westinghouse to restore LCO 3.0.3 to the STS version.

20. Integrated Use of PRA Insights (lead SPSB, HQMB)

Westinghouse must use insights from the sensitivity, uncertainty, and importance analyses in an integrated fashion, in conjunction with assumptions from the entire PRA, to identify design certification and operational requirements (such as ITAAC, RAP, TSs, administrative controls, procedures) as well as COL and interface requirements.

Status

- Westinghouse submitted the insights chapter for internal events on 2/28/97.
- The insights chapter for external events has not been received. Westinghouse has indicated that it has just been issued.
- A meeting was held on 4/15/97 to discuss three major issues with the PRA that include the insights, SGTR modeling, and focused PRA issues (see item #2 RTNSS). The action items for the meeting included:
 - NRC reassessment of data used in the PRA for check valves, squib valves, and RCP breakers.
 - Reassessment of loss of AC power assumption for the focused PRA and SGTR modeling.
 - The staff will provide feedback during an upcoming meeting on PRA insights.

21. Passive System Thermal-Hydraulic Performance Reliability (SRXB)

Westinghouse has stated that the AP600 can respond in an acceptable manner to risk-significant PRA accident sequences by using only passive safety systems, and that, as a result, no regulatory oversight of active, non-safety-related systems is required. To support this statement, Westinghouse has proposed using the NOTRUMP small-break loss-of-coolant-accident (LOCA) computer code to perform sensitivity studies on accident sequences that are risk-significant in the focused PRA (which assumes no availability of active systems), using conservative, bounding inputs and assumptions, and to demonstrate that there are large margins to core damage. The sequences to be analyzed will be selected using the MAAP4 computer code to "screen" sequences from the focused PRA. The margins approach is undertaken in lieu of attempting to quantify thermal-hydraulic uncertainties in the PRA, related to passive system performance.

The staff has requested further information from Westinghouse detailing how the approach will be implemented, including (1) complete documentation on how the NOTRUMP sensitivity analyses will be performed; (2) the basis by which the risk-significant sequences will be screened and selected; and (3) documentation of and justification for the selection of the bounding parameters for the sensitivity analyses. Westinghouse has also agreed to address how uncertainties associated with long-term cooling will be evaluated, but the staff has not yet received any information related to this issue.

21. Passive System Thermal-Hydraulic Performance Reliability (SRXB) (continued)

Status

- The MAAP4 benchmarking report (due 2/7/97) and T-H uncertainty report (due 3/31/97) have not yet been received by the staff.
- Westinghouse has also not yet determined how it will demonstrate adequate margin exists for long term cooling uncertainties.
- Westinghouse may revise its approach based on the 4/3/97 RTNSS and the 4/15/97 focused PRA meetings.

22. Shutdown and Low Power Operations (SPSB)

Experience with events occurring during shutdown operation indicates that substantial safety improvements are warranted for low power and shutdown operations. Westinghouse responses to RAIs regarding the shutdown risk issue are mostly qualitative without quantitative analysis. The staff has also requested Westinghouse to provide a systematic evaluation of the AP600 design against the issues identified in NUREG-1449. Included in this issue is whether the proposed AP600 TS comply with SECY-93-190, "Regulatory Approach to Shutdown and Low-Power Operations," and NUREG-1449, "Shutdown and Low Power Operation at Commercial Nuclear Power Plants in the United States."

Status

- The shutdown evaluation report was due on 2/28/97 and has affected the review schedule of technical specifications, ERGs, and Chapters 5, 6, & 15.
- Westinghouse expects to issue a major portion to the shutdown evaluation report during the week of April 14, 1997.

23. External Cooling of the Reactor Pressure Vessel/Severe Accidents (SCSB/ECGB)

The AP600 is the first of the advanced plants to take credit for external cooling of the reactor pressure vessel. The success (or failure) of this cooling mechanism has major implications concerning the progression of severe accident sequences. The staff's concerns include heat transfer correlations, reactor vessel insulation, timing of flooding, and consideration of debris superheat and crust formation in the transient analyses. In SECY-96-128, the staff recommended that Westinghouse use a balanced approach, involving reliance on in-vessel retention of the core complemented with limited analytical evaluation of ex-vessel phenomena, to address the adequacy of the AP600 design for ex-vessel events. Westinghouse has agreed to address ex-vessel phenomena.

Status

- The status of the reports associated with the IVR issue follows:
 - IVR main report: RAs provided to Westinghouse.
 - Reports on IVSE: Comments provided to Westinghouse. Meeting held with Westinghouse. Staff is expecting unresolved peer review comments in short term and resolved comments by end of May. Potential for additional questions at that time.
 - Exvessel phenomena: Provided to staff 12/96. Comments on majority of report expected by 5/7/97.

24. Containment Bypass/SGTR (SRXB)

SECY-93-087 stated that design certification applicants should assess design features to mitigate containment bypass due to steam generator tube rupture (SGTR) events, and recommended 3 features for consideration. Westinghouse provided an analysis of SGTR events involving up to 5-tube ruptures in August 1995. Westinghouse provided a qualitative description of levels of defense available for SGTR events (AP600 systems/event operation matrix), and stated that its severe accident mitigation design alternatives (SAMDA) evaluation of design alternatives showed a risk reduction of $6.7E-4$ man-rem/yr. None of the design alternatives provided a risk reduction that meets severe accident screening criteria. The staff will require Westinghouse to provide a detailed analysis and evaluation with respect to mitigating design features, diagnostic instrumentation, available time for operator actions, ERG, TS, and ITAAC.

Status

- Westinghouse submitted a revised SGTR analysis on March 24, 1997.
- The staff is currently evaluating the revised submittal.

25. Adverse Systems Interactions (SRXB)

Westinghouse should demonstrate that the AP600 design prevents adverse systems interactions between the non-safety-related systems and the safety-related systems. In addition, Westinghouse should demonstrate that the AP600 is designed to prevent adverse systems interactions from water intrusion, internal floods, seismic events, and pipe ruptures. Westinghouse has submitted WCAP-14477, "The AP600 Adverse Systems Interactions Evaluation Report," on which the staff has provided comments to Westinghouse.

Status

- The staff and Westinghouse have had numerous discussions on adverse systems interactions. No specific ASI issues remain outstanding from the staff's perspective.
- Westinghouse to issue final responses to staff's ASI questions and revise the ASI report.
- Based on a PRA meeting between the staff and Westinghouse on 4/15/97, the staff may need to re-examine some issues being considered in the SPSB review of the focused PRA and consider them in terms of ASI interactions.

26. Technical Specifications Review (OTSB)

Because issue preclusion for technical specifications is not provided by the design certification process, the staff must decide the extent of the review that it will perform on Westinghouse's proposed Technical Specifications.

Status

- Position letter on optimized technical specifications issued on 3/27/97.
- Westinghouse has been requested to restore completion times and surveillance frequencies to the equivalent STS values.

27. Quality Classification of Systems (SPLB, ECGB)

Westinghouse proposes to use Quality Group E instead of Quality Group D for systems that could potentially contain radioactive material. This is not consistent with the SRP, and the staff does not believe that acceptable justification for deviation has been provided.

Status

- The issue is technically resolved. Westinghouse agreed to make the systems in question Class D and change its SSAR definition of Class D and E to be in accordance with the SRP.
- Westinghouse faxed in its final draft change 4/10/97. The staff is reviewing the information. The changes are expected in SSAR Revision 12.