December 9, 1996

Mr. Nicholas J. Liparulo, Manager
Nuclear Safety and Regulatory Activities
Nuclear and Advanced Technology Division
Westinghouse Electric Corporation
P.O. Box 355
Pittsburgh, Pennsylvania 15230

SUBJECT: STAFF UPDATE TO CERTAIN DRAFT SAFETY EVALUATION REPORT (DSER) OPEN ITEMS(OIs) AND REQUEST FOR ADDITIONAL INFORMATION (RAI) REGARDING THE WESTINGHOUSE AP600 ADVANCED REACTOR DESIGN

Dear Mr. Liparulo:

As a result of recent efforts by the Nuclear Regulatory Commission staff, the status of several DSER OIs has changed and additional information needed to complete the review has been identified. Enclosed is a RAI, designated as RAI# 410.300, and the staff's evaluations of certain OIs.

Please update the open item tracking system database to reflect this information. If you have any questions regarding this matter, you can contact me at (301) 415-8548.

Sincerely,

original signed by:

Diane T. Jackson, Project Manager
Standardization Project Directorate
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

Docket No. 52-003

Enclosure: As stated

cc w/enclosure:
See next page

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Westinghouse Electric Corporation

Docket No. 52-003
AP600

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STATUS OF CERTAIN OPEN ITEMS

RAI# 410.300 - SPLB - SSAR 9.4.2
In SSAR 9.4.2.2.1.4, Westinghouse needs to clarify if high or low efficiency filters are used and provide justification for use.

SSAR 2.5.4
OITS# 556 Action W - Westinghouse will identify SSAR reference to AP600 safety-related facilities.
OITS# 1870 Resolved
OITS# 3483 W Confirmatory - Response is acceptable. SSAR revision is needed.

SSAR 3.9.6
OITS# 805 Action W
OITS# 810 Action W
OITS# 811 Action W
OITS# 1736 Action W
OITS# 1740 Action W
OITS# 1753 Action W
OITS# 2066 Action W - see #1716
OITS# 2071 Closed
OITS# 2072 Closed
OITS# 2073 Closed

SSAR 5
OITS# 934 Resolved
OITS# 1892 Resolved
OITS# 1893 Resolved

SSAR 9.5.1 - From November 19, 1996, meeting
OITS# 308 Action N/W
OITS# 309 Action W
OITS# 314 Action W
OITS# 323 Action W

DSER 21
OITS# 28 Resolved
OITS# 29 Resolved

On November 5, 1996, a telephone conference was held to discuss open items in SSAR 9.3.1; 9.3.5; and 9.5.4

OITS# 237 Resolved
OITS# 239 Action W - Return text to SSAR from RAI# 410.154c regarding instrument air being 100% per train and no high pressure air.
OITS# 243 Action W - Westinghouse will clarify SSAR 9.3.2.2.1 on p. 9.3-7 second paragraph, first sentence and revise figures in Chapter 10 to show air supply to valves.
OITS# 244 Action W - Revise SSAR 9.3.1.4 to reflex pre-operational testing for a sudden loss and gradual reduction in instrument air.

Enclosure

OITS# 1094 Action N
OITS# 2815 Action W - revise SSAR to show drain valve on air receiver makeup in Figure 9.3.1-1; revise SSAR to reflect connect non-compatibility; revise SSAR to add purity specification for instrument air in Table 9.3.1-2.
OITS# 253 Action W - revise SSAR to show sumps and inputs into sumps.
OITS# 250 Action N
OITS# 1099 Action N
OITS# 254 Resolved
OITS# 255 Resolved
OITS# 326 Resolved
OITS# 327 Resolved
OITS# 330 Action W - Revise COL action item to address minimum requirements for diesel generator fuel/follow manufacturer recommendations.
OITS# 333 Action W
OITS# 335 Action W - Investigate need to add filter/review SSAR Figure 9.5.4-1 sheet 3 of 3 for correct figure.
OITS# 337 Resolved
OITS# 338 Action W - Return Table 8.3.1-1 and 9.5.4-2
OITS# 340 Action W - Westinghouse will investigate replacement standard for DEMA
OITS# 341 Action W - Verify diesel generator subsystems are Class D and add to Table 3.2-3
OITS# 342 Action W - Include from 12/13/94 meeting summary items a,b, and d regarding DG cooling water system.
OITS# 344 Action W - Revise SSAR 8.3.1.2.1 to meet manufacturer's design specifications
OITS# 346 Action N
OITS# 348 Action W - Revise SSAR 8.3 to meet manufacturer's design specifications
OITS# 350 Action W - Revise SSAR 8.3 to meet manufacturer's design specifications
OITS# 357 Action W - Revise SSAR 8.3 to meet manufacturer's design specifications
OITS# 1127 Action N
OITS# 1128 Action N
OITS# 1130 Action N
OITS# 1129 Action W
OITS# 1131 Action W
OITS# 1132 Action W
OITS# 1923 Action N
OITS# 1924 Action N

On November 21, 1996, a telephone conference/meeting was held to discuss open items in SSAR 11 and SSAR 9.2.

NRC: Chang Li, Jin Guo, and Diane Jackson
Westinghouse: Jim Winters (at NRC) and Gordan Israelson (on telephone)

OITS #1171 Resolved - Acceptable response in 10/17/96 letter
OITS #1192 Resolved - Acceptable response in 10/17/96 letter
11.1-4 Resolved - Acceptable response in 10/17/96 letter
11.1-5 Resolved - Acceptable response in 10/17/96 letter
OITS #1189 Action N
OITS #1194 Confirmatory-W - Acceptable response pending SSAR revision

OITS #1195 Action W - SWS must have a continuous monitoring
OITS #1197 Action W - Westinghouse will investigate adding standard review plan nomenclature to SSAR. Westinghouse will fix system identification error (SWS, not SES) in Table 9.3.3-2 #23.
OITS #1199 Resolved
OITS #3097 Action W - Westinghouse will add to SSAR Table 9.2.10-1: 1)heat exchanger capacity, 2) piping design and pressure, and 3) heating requirements.
OITS #3099 Resolved
OITS #3122 Action W - Westinghouse will investigate wording to SSAR to reflect that startup feedwater is a defense-in-depth system.
OITS #3102 Action N
Action Westinghouse - Provide a copy of legible P&IDs for all AP600 systems.

On November 26, 1996, a telephone conference was held to discuss open items in SSAR Section 3.7 and 3.8.

NRC: Tom Cheng and Diane Jackson
Westinghouse: Richard Orr and Don Lindgren

OITS #621	Resolved - This item is administratively resolved. The resolution of the issue is tracked under OITS #3728.
OITS #623	Action W - Westinghouse needs to review staff report
OITS #628	Action N/W - Further discussion is needed.
OITS #636	Resolved - Staff accepted SSAR 3.7.2.3.2 revision regarding the weir frequencies.
OITS #640	Resolved - Staff accepted SSAR 3.7.2.3.2 revision regarding the weir frequencies.
OITS #649	Action W - Staff will review SASSI 2D analysis in 12/96 meeting. Issue on the potential pounding between structures is resolved by Westinghouse letter dated 10/27/96.
OITS #659	Resolved
OITS #660	Action N
OITS #661	Action N
OITS #662	Action W - Telecon needed with staff
OITS #663	Confirmatory Westinghouse - Acceptable response in Westinghouse letter date 10/27/96. Formal SSAR revision is needed.
OITS #664	Action W - Westinghouse Seismic Margins Analysis in progress
OITS #668	Action W
OITS #672	Action N
OITS #686	Resolved
OITS #717	Action W - Response to staff letter
OITS #720	Action N
OITS #742	Resolved - Open issue to be resolved under SSAR 3.8.5-2 and 3.8.4.2-4
OITS #752	Resolved
OITS #1889	Resolved
OITS #3376	Resolved

STATUS OF ECGB DSER OPEN ITEMS IN EMEB SCOPE OF REVIEW (THROUGH REV. 9)

The status of these items were sent via facsimile on 11/25/96 to facilitate discussion.

1. Open Item 3.2.1-1 (OITS 562) - Appendix B for Seismic Category II
   Action W

The HQMB RAIs relative to the response in the letter from McIntyre to Quay dated October 14, 1996 should be sent to Westinghouse and discussed during the December 5 and 6, 1996 meeting.

2. Open Item 3.2.1-2 (OITS 563) - Appendix B for fuel storage racks
   Action W

Same comment as that for Open Item 3.2.1-1.

3. Open Item 3.2.2-1 (OITS 564) - Classification of ECCS
   Action W

In a letter to Westinghouse dated August 20, 1996, this open item was reported by the staff as being resolved. However, before this issue is considered resolved, the staff needs the following information and/or clarifications from Westinghouse:

a. The staff has identified the components and systems listed below as part of ECCS systems that are classified as AP600 Class C (ASME Class 3):

   - In-containment refueling water storage tank (SSAR Fig. 6.3-2)
   - Accumulator (SSAR Fig. 6.3-1)
   - Accumulator injection piping to discharge check valve V-028 (SSAR Fig. (6.3-1)
   - Containment recirculating piping and valves to IRWST injection check valve V-122 (SSAR Fig. 6.3-1)
   - Piping from 1st, 2nd & 3rd stage ADVs to IRWST, including depressurization spargers (SSAR Fig. 5.1-5 & 6.3-2)

Westinghouse is requested to verify in the SSAR, Subsection 3.2.2.5, that all of the above components and systems and any other Class 3 ECCS not listed above are included in the commitment to random radiography for all ECCS.

b. It appears that SSAR Subsection 3.2.2.5 is the only place in the SSAR that contains the above commitment. Since this commitment is not stated in either Table 3.2-3 or applicable P&IDs, how can the staff be assured that it will be implemented on all AP600 plants?

This issue will be discussed during the December 5 & 6, 1996 meeting.

4. RAI 210.216 (OITS 3506) - Main Control Room Habitability System Tanks Resolved

5. RAI 210.217 (OITS 3507) - Table 3.2-3, Sheet 1, Compressed and Instr. Air System

No Westinghouse response as of 11/20/96.

6. RAI 210.218 (OITS 3508) - Table 3.2-3, Sheet 4, Demineralized Water Transfer & Storage System

No Westinghouse response as of 11/20/96.

7. RAI 210.219 (OITS 3509) - Table 3.2-3, Sheet 6, Passive Containment Cooling System

No Westinghouse response as of 11/20/96.

8. RAI 210.220 (OITS 3510) - Table 3.2-3, Sheet 7, Primary Sampling System

No Westinghouse response as of 11/20/96.

9. RAI 210.221 (OITS 3512)- Table 3.2-3, Sheet 29, Reactor System

No Westinghouse response as of 11/20/96.

10. RAI 210.222 (OITS 3513) - Table 3.2-3, Sheet 39, Steam Generator System

No Westinghouse response as of 11/20/96.

11. RAI 210.223 (OITS 3514) - Table 3.2-3, Sheet 48, Central Chilled Water System

No Westinghouse response as of 11/20/96.

12. RAI 210.224 (OITS 3515) - Table 3.2-3, Sheets 49 & 50 - Liquid Radwaste System

No Westinghouse response as of 11/20/96.

13. Open Item 3.6.2-1 (OITS 592) - Subcompartment Design Action W

The response to this issue in the letter from McIntyre to Quay dated October 23, 1996 does not appear to contain the detailed information requested by the staff during the review meeting with Westinghouse on July 25 & 26, 1995. As stated in the DSER, Section 3.6.2, page 3-94, the staff's position is that a minimum subcompartment pressure which bounds the effects of a high energy pipe break (with consideration of leak-before-break (LBB) acceptance) must be determined. Specifically, the staff requests that for all subcompartments both inside and outside containment, SSAR Subsections 3.8.3.5 and 3.8.4.3.1.4 should be revised to state that those compartments containing high energy piping are designed to the worst case of either the 5 psi load (the 7.5 psi load for the CVS room) or the double ended pipe rupture of the applicable high energy pipe. This issue should be discussed with Westinghouse during the meeting scheduled for January 1997.

14. RAI 210.225 (OITS 3516) - Table 3.6-2, Subcompartments and Postulated Pipe Ruptures

If necessary, this issue will be discussed during the January 1997 meeting.

15. RAI 210.40 (OITS 3702) - Break Exclusion in Steam Generator Blowdown and Startup Feedwater Lines Action W

In a letter from McIntyre to Quay dated October 23, 1996, and in the OITS 3702 report, Westinghouse stated that additional information on the startup feedwater (FW) line, including the isometric drawings will be provided during a forthcoming meeting with the staff. This issue will be discussed during the January 1997 meeting.

16. Open Item 3.6.2.3-1 (OITS 595) - Break Locations and Stress Summary Action W

In a letter from McIntyre to Quay dated November 11, 1996, Westinghouse proposed a significant revision to SSAR Subsection 3.6.2.5 to provide additional information on the pipe break hazard analysis. The staff's preliminary evaluation of this submittal resulted in the following request:

> As discussed under Open Item 3.6.2.3-5 below, Westinghouse has proposed a revision to SSAR Subsection 3.6.1.3.2 which refers to the pipe rupture

hazards analysis. In addition to the proposed revision to SSAR Subsection 3.6.2.5 in the November 11, 1996 letter, add a reference to the proposed information in Subsection 3.6.1.3.2 that is applicable to the hazards analysis.

If the staff has any further questions related to this submittal, they will be discussed during the January 1997 meeting.

17. Open Item 3.6.2.3-2 (OITS 596) - Environmental Qualification
Resolved

18. Open Item 3.6.2.3-5 (OITS 599) - Separating Structures
Action W

In a letter from McIntyre to Quay dated November 11, 1996, Westinghouse proposed a revision to SSAR Subsection 3.6.1.3.2 which provides a basis for resolving this issue as a part of the pipe rupture hazards analysis. Based on a preliminary review of this submittal, the staff has no further requests for information except to repeat the request in this open item to delete the exception to SRP Section 3.6.2 BTP MEB 3-1, Section B.1.c.(4) in WCAP 13054, Revision 2. However, subsequent to a more detailed review, this issue may have to be discussed during the January 1997 meeting.

19. Open Item 3.9.2.1-1 (OITS 780) - Scope of Preoperational Piping Tests
Resolved

In a letter from McIntyre to Quay dated October 23, 1996, Westinghouse submitted a response to this open item which states that the only systems that meet the criteria in SSAR Subsection 3.9.2.1 are the control room habitability system (VES) and the hot water heating system (VYS). The VES is not subjected to vibration due to low flow rates, and the VYS is not a safety-related system. Therefore, neither of these systems is applicable to the Chapter 14 "Initial Test Program." The staff has concluded that, based on this response, these systems need not be in the initial test program. Therefore, this issue is resolved.

20. Open Item 3.9.3.1-5 (OITS 790) - ISLOCA Criteria
Action N

SSAR Revision 7 added a new paragraph in Subsection 1.9.5.1 which references SSAR Subsection 5.4.7 for design features which are applicable to the intersystem LOCA for the normal RHR system (RNS) only. The design criteria in SSAR Subsection 5.4.7.2.2 agrees with the staff's position on this issue which is discussed in the DSER, Section 3.9.3, and is acceptable for the RNS. However, as mentioned in DSER Section 3.9.3, if the staff's evaluation of DSER Open Item 20.3-14 (OITS 1514) results in additional AP600 systems being applicable to the intersystem LOCA issue, the staff's position will be that this same criteria should apply to those systems. In addition, the staff's

preliminary review of the AP600 Technical Specifications may result in a concern relative to the deletion of leak testing of RCS pressure isolation valves, which is related to the intersystem LOCA issue. Therefore, this issue may have to be discussed during the December 5 & 6 meeting.

21. Open Item 3.9.3.1-6 (OITS 791) - HVAC Ductwork Design Criteria
Action N

This issue is included as a part of the staff's review of SSAR Section 3.8.

22. Open Item 3.9.3.3-1 (OITS 792) - Snubber Criteria
W-Confirmatory

In a letter from McIntyre to Quay dated October 23, 1996, Westinghouse proposed a revision to SSAR Subsection 3.9.3.4.3 to add a commitment to include dynamic testing as a part of the qualification tests for snubbers. This agrees with the staff's request, and is acceptable. Therefore, this item is resolved pending formal revision of the SSAR.

23. Open Item 3.9.3.3-2 (OITS 793) - Anchor Bolts for Pipe Supports
Action W

In a letter from McIntyre to Quay dated October 23, 1996, Westinghouse responded to this item by referencing Revision 9 to SSAR Subsection 3.9.3.4. Revision 9 contains no change to this portion of Subsection 3.9.3.4. It still commits only to the baseplate flexibility requirements of IE Bulletin 79-02 and is silent on the factors of safety for concrete expansion anchor bolts. Since the factor of safety issue is being evaluated by the staff under DSER Open Item 3.8.4.2-2, Subsection 3.9.3.4 should contain a reference to the applicable portion of SSAR Subsection 3.8.4 for information relative to these factors of safety.

24. Open Item 3.10-1 (OITS 813) - Use of Seismic Experience Data
Action W

In a letter from McIntyre to Quay dated October 14, 1996, Westinghouse proposed a revision to SSAR Section 3.10.6 which states that the COL applicant, as a part of the Combined License application, will identify equipment qualified based on experience and include details of the methodology and the corresponding experience data. This agrees with the staff's request on this item, and is acceptable. However, the exception to SRP 3.10 in Revision 2 to WCAP 13054 contains statements which either need to be deleted or clarified. The first two sentences imply that IEEE 344-1987 is acceptable relative to the use of experience data. RG 1.100, Revision 2 states that this method of qualification in IEEE 344-1987 will be evaluated by the staff on a case-by-case basis. It appears to the staff that the exception in the WCAP is relative to RG 1.100, Revision 2. These two sentences should be revised to reflect the position in RG 1.100, Rev. 2. In addition, the discussion

relative to Generic Issue A-46 is not applicable to new plants. The staff's position is that A-46 is only used for verification of equipment in operating plants, and is not acceptable for qualification of equipment in ALWRs. This discussion should either be deleted or revised.

25. Open Item 3.10-2 (OITS 814) - Dynamic Analysis of Valve Disks
Action W

In a letter from McIntyre to Quay dated October 14, 1996, Westinghouse responded to this item by proposing a revision to the fourth paragraph of SSAR, Subsection 3.10.2.2 to state that feedwater line valve disks are evaluated for the effect of dynamic loads of pipe breaks by considering the effect of an equivalent differential pressure. This does not appear to address the staff's concerns. The staff considers equivalent differential pressure as being a static load. The SSAR should be revised to describe the methodology used in the AP600 design to analyze the dynamic closure of feedwater line valve disks when they are subjected to dynamic loads due to a pipe break.

26. Open Item 3.10-3 (OITS 815) - RCPB Valve Leakage per SRP 3.10
Resolved

Revision 5 to the SSAR revised Subsection 3.10.2.2 to provide an acceptable response to this item. In addition, WCAP 13054, Revision 2 revised page 3-68 to provide an acceptable comment. Therefore, this item is resolved.

27. Open Item 3.10-4 (OITS 816) -Aging by Analysis
Resolved

Revision 5 to the SSAR revised Appendix 3D to commit to the staff's position to use IEEE 323-1974 rather than the 1983 Edition. Revision 2 of WCAP 13054 revised the "exception" to SRP 3.10.II.1.c to "acceptable." Therefore, this item is resolved.

Open Item Status on 11/21/96
In AP600 Piping Design

The status of these items were sent via facsimile on 11/25/96 to facilitate discussion.

A. Items remaining open:

- Modeling uncertainties: Status: Action W/N

DSER 3.12.3-1 (OITS #822)
Item 2.b -- Needs discussion in 12/5/96 meeting
on W response in 11/11/96 letter.

- Piping functional capability: Status: Action W/N

DSER 3.12.5.3-1 (OITS #832)
Item 5 -- Needs discussion in 12/5/96 meeting on W response in 10/28/96 letter.

DSER 3.12.5.12-1 (OITS #838)
Pending resolution of OITS# 832.5 above.

DSER 3.12.5.19-7 (OITS #847)
Pending resolution of OITS# 832.5 above.

- Thermal stratification Status: Action N

DSER 3.12.5.9-1 (OITS #836)
NRC is evaluating EPRI report and will audit W calculations in GW-PLC-001.

DSER 3.12.5.10-1 (OITS #837)
NRC is evaluating EPRI report and will audit W calculations in GW-PLC-001.

- Composit damping: Status: W-Confirmatory
(W 10/28/96 letter is acceptable. Await SSAR revision.)

DSER 3.12.5.3-2 (OITS #833)

DSER 3.12.5.16-1 (OITS #839)

- Large snubber dynamic testing: Status: W-Confirmatory
(W 10/23/96 letter is acceptable. Await SSAR revision.)

DSER 3.12.6-1 (OITS #848)

B. Items resolved per recent W responses:

DSER 3.12.4.2-1 (OITS #827)
DSER 3.12.4.3-1 (OITS #828)
DSER 3.12.4.4-1 (OITS #830)
DSER 3.12.5.19-2 (OITS #842)
DSER 3.12.5.19-5 (OITS #845)
DSER 3.12.6.3-1 (OITS #850)
DSER CN 3.12.3.6-1 (OITS #1812)
DSER CN 3.12.5.5-1 (OITS #1814)

OPEN ITEM STATUS
Part I

For facilitating resolutions in 12/4-6 meeting, the following is our evaluation of W letter (NSD-NRC-96-4841) dated 10/14/96, which contains W response to certain AP600 open items related to reactor internals flow-induced vibration assessment, CRDM qualification for seismic and LOCA events, incore neutron thimble tube wearing issue, and reactor vessel upper head package deflection limits.

21. Open Item 3.9.2.3-2 (783) - Flow-induced vibration prediction analysis
Action W

The W letter proposed a revision of the first paragraph in SSAR subsection 3.9.2.3 to indicate that the flow-induced vibration assessment is documented in WCAP-14761, which is also to be included to the reference list in SSAR section 3.9.9. This is acceptable. The staff has received WCAP-14761 as a replacement of previously reviewed report MI01-GER-001. WCAP-14761 is acceptable.

However, the fourth sentence in the revised paragraph states that "In the following discussion the term 'reference plant' is equivalent to the term prototype --- " should be deleted and replaced by "Reactor internals of the first AP600 plant is designated as the prototype as defined in SRP 3.9.2 and RG 1.20 for vibration assessment of AP600 reactor internals." Information of vibration assessment from reference plants, which include H. B. Robinson, Doel 3 and 4, etc. may only be used in vibration prediction analysis for the prototype and should not be confused with the prototype. In addition, the third and fourth paragraphs in SSAR subsection 3.9.2.4 should also be revised to avoid similar confusion between the "prototype" and the "reference plants"

22. Open Item 3.9.2.4-1 (785) - Japanese CRDM seismic input tests - RAI 210.94
Action W

The W letter indicated that operability of CRDM is assured by analytically establishing bending limits and validated in several testing programs. For ensuring structural integrity, the bending limits had considered conformance to ASME Code allowables under various load combinations, including seismic and other dynamic events. Functional capability is assured that the CRDM housing will not bind the drive rods during insertion under limiting bending condition. Westinghouse also proposed to add a new paragraph to SSAR subsection 3.9.4.3.

The W response appears reasonable. However, the staff is not clear what testing programs were performed and why the mentioned tests were not included in the proposed SSAR revision. Show documents to verify operability and design adequacy of the CRDM in AP600. If the information is not AP600 specific, explain why the test and analysis results are bounding. In addition, we need better understanding on limiting seismic and pipe break loads used, and the basis why operability of CRDMs need not be verified during the SSE event.

30. New Item - 20% damping value for fuel assemblies
Action W

The W letter did not address this item.

31. New Item - Potential thinning of incore neutron monitoring thimble tubes

Resolved

The W letter indicated that the AP600 incore thimble is an improved design which uses better wear resistant material, has larger diameter, is stiffer, and has smaller gap between thimble and guide tube. All these features results in minimized vibration. In addition, the double-wall design feature will prevent non-isolable leak of reactor coolant, and preclude the need for inservice inspection. W also proposed a revision of the final paragraph in SSAR subsection 3.9.7.2. We found that the response and the proposed SSAR revision is acceptable. This item is resolved pending formal SSAR revision.

32. Open Item 3.9.7-1 (812) - Deflection limits for integrated head package - Action W RAI 210.97

The W letter indicated that the deflection limit for the integrated head package is based on limiting the deflection of the CRDM. Westinghouse further indicated that whether 4" or 6" pipe break resulting from on-going staff review in LBB is inconsequential to CRDM design due to more limiting LOCA loads being postulated. No clarification of the LOCA loads was provided. Thus Item 3.9.7-1 remains open pending resolution of Open Items 3.9.2.4-1, 3.6.3.4-1 and 3.6.3.6-4, and staff review and discussion of related information.

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/21/96

Selection: [DSER Section] like '19.*' And [NRC Branch] like 'NRR/SPSB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
69	NRR/SPSB	19.1	RAI-OI		8/28/96	NUS	Closed	Closed	NSD-NRC-96-4803
				Question 720.280 (Flre PRA) The staff does not accept fire barriers in a fire probabilistic risk assessment (PRA) that are not at least 3-hour rated barriers. For each fire area that is not completely surrounded by 3-hour rated barriers, the location should be analyzed as part of the surrounding fire area.					
				Closed (at 8/17/95 meeting) - Issue subsumed by DSER open item. Closed - RAI response also provided in letter dated 8/26/96.					
70	NRR/SPSB	19.1	RAI-OI		8/28/96	NUS	Closed	Closed	NSD-NRC-96-4803
				Question 720.281 (Fire PRA) Westinghouse should modify the fire risk assessment to treat the risk impact of breached fire barriers due to operator error or maintenance.					
				Closed (at 8/17/95 meeting) - Issue subsumed by DSER open item. Closed - RAI response also provided in letter dated 8/26/96.					
71	NRR/SPSB	19.1	RAI-OI		8/28/96	NUS/P.eid	Closed	Closed	NSD-NRC-96-4803
				Question 720.282 (Fire PRA) Westinghouse has discussed the electrical and spatial separation between the control room and the remote shutdown work station with the staff. However, the presence of a spatially and electrically separate remote shutdown station does not guarantee that the risk from control room fires is negligibly small. Westinghouse should modify the fire risk assesssment as follows. a. quantitatively evaluate control room fires (the dominant risk contributor in many fire PRAs). This assessment should include potential hardware, software failures, and human failures in transferring control to the remote shutdown; work station. b. provide the rationale for placing the switch (that transfers power to the remote shutdown workstation) in the remote shutdown workstation area rather than outside of the main control room separated by a fire barrier. c. evaluate the risk impact of switch location (that transfers power to the remote shutdown workstation) with respect to potential fires in the remote shutdown workstation. d. discuss and clarify whether pinch points exist in the rooms carrying cable between the control rom and remote shutdown work station. e. discuss and clarify whether pinch points exist in the remote shutdown work station room. f. describe what equipment can be operated at the remote shutdown workstation. g. evaluate the consequences of hot shorts in the control room for equipment that cannot be operated at the remote shutdown workstation. h. Include the failure probability of the operator successfully transferring control to the remote shutdown workstation in Table D, "Summary of Human Error Probabilities."					
				Closed (at 8/17/95 meeting) - Issue subsumed by DSER open item. Closed - RAI response also provided in letter dated 8/26/96.					
72	NRR/SPSB	19.1	RAI-OI		8/28/96	NUS	Closed	Closed	NSD-NRC-96-4803
				Question 720.283 (Fire PRA) The staff does not accept spatial separation of locations/zones (without intervening 3-hour rated barriers) to dismiss potential fire propagation scenarios. Therefore, Westinghouse should analyze and report fire propagation scenarios between the feedwater and component cooling water pump areas. Westinghouse should also analyze and report fire propagation between the service water pumps in the updated PRA.					
				Closed (at 8/17/95 meeting) - Issue subsumed by DSER open item. Closed - RAI response also provided in letter dated 8/26/96.					

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73	NRR/SPSB	19.1	RAI-OI		8/28/96	NUS	Closed	Closed	NSD-NRC-96-4803
				Question 720.284 (Fire PRA) At the August 10, 1994, meeting, Westinghouse agreed to re-evaluate fire-induced loss of offsite power events. Westinghouse should include this evaluation in the updated PRA.					
				Closed (at 8/17/95 meeting) - Issue subsumed by DSER open item. Closed - RAI response also provided in letter dated 8/26/96.					
74	NRR/SPSB	19.1	RAI-OI		8/19/95	Stevenson,P	Closed	Closed	
				Question 720.285 (Flood PRA) Westinghouse should modify the PRA flooding assessment as follows: a. provide the quantitative analysis for the normal residual heat removal (RHR) flooding scenario in the updated PRA. b. evaluate in the flooding analysis if flood water can disable additional equipment outside of the normal RHR pump room, should the normal RHR pump room flood. c. provide the details of the analyses for the other dominant flooding scenarios listed in Table 1-5. These details should include how the flooding initiating event frequencies for each flooding area were estimated and the associated safe-shutdown equipment that was damaged.					
				Closed (at 8/17/95 meeting) - Issue subsumed by DSER open item.					
1398	NRR/SPSB	19.1.3.1-1	DSER-OI		9/19/96	PRA-1/Bueter	Action W	Action W	
				Westinghouse should justify assumptions and data used in calculating the pipe break contribution to the LOCA initiating event frequencies.					
				Action W - At 4/20/95 NRC meeting, W provided detailed list to NRC of where in PRA Rev. 2/3 this information is discussed. NRC reviewed the info and issued follow-on questions (#2804, 2805, 2806). Westinghouse responded to the follow-on questions and believes they are closed. NRC then issued follow-on question #3257. Westinghouse to respond to that question.					
1399	NRR/SPSB	19.1.3.1-2	DSER-OI		9/19/96	PRA-1/Bueter	Action W	Action W	
				Westinghouse should address the contribution to the LOCA frequencies associated with non-break failures that lead to LOCA.					
				Action W - At 4/20/95 NRC meeting, Westinghouse provided detailed list to NRC of where in PRA Rev. 2/3 this information is discussed. NRC reviewed the info and issued follow-on questions (#2807 & 2808). Westinghouse responded to the follow-on questions and believes they are closed. NRC then issued follow-on question #3258. Westinghouse to respond to that question.					
1400	~~NRR/SPSB~~ SRXB	19.1.3.1-3	DSER-OI		10/24/96	Thuncert/Bueter/Ohkawa,D	Action W	~~Action W~~ Action W	
				Westinghouse should address the success criteria assumed for the systems and operator actions modeled in the event trees.					
				Action W - This OI relates to T-H uncertainty and passive system reliability. Westinghouse and NRC have agreed on the resolution path for this topic. Westinghouse is currently working on resolving this issue.					
1401	NRR/SPSB	19.1.3.1-4	DSER-OI		9/19/96	PRA-1/Scobel/Ohkawa	Action W	Action W	
				Westinghouse should assess the core damage frequency of LOCA sequences with impaired containment.					
				Action W - At 4/20/95 NRC meeting, Westinghouse provided detailed list to NRC of where in PRA Rev. 2/3 this information is discussed. Appendix A.8.2 explains why this is not an issue anymore. NRC reviewed the info and issued follow-on question (#2809), which more appropriately relates to DSER OI 19.1.3.1-6 than this DSER OI. Westinghouse responded to the follow-on question, but believe this OI is closed. NRC then issued follow-on question #3259 which further clarifies their question. Westinghouse to respond to this question.					
1402	NRR/SPSB	19.1.3.1-5	DSER-OI		8/1/95	Sancaktar	Closed	Resolved	
				Westinghouse should address inconsistencies associated with several sequence transfers between event trees.					
				Closed - In Rev. 3 PRA, Section 33.3.3 discusses consequential events and explains how Westinghouse addressed sequence transfers between event trees.					

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1403	NRR/SPSB	19.1.3.1-6	DSER-OI		9/19/96	PRA-1/Bueter/Ohkawa,D	Action W	Action W		
				Westinghouse should extend the mission time (24 hours) used for long-term core cooling in sequences where the reactor is initially maintained at high pressure.						
				Action W - In PRA Rev. 2/3, section 6.3.1 discussed general success criteria and justification for a 24 hour mission time for all core damage sequences. Westinghouse is following standard PRA conventions when assessing success criteria and mission times. Westinghouse does not agree that the mission time should be extended for the conditions stated in this DSER OI. NRC reviewed W position and issued follow-on question (#2809). Westinghouse responded to the follow-on question, however Westinghouse's position remains the same. NRC then issued follow-on questions #3260 and 3261. Westinghouse to respond to these additional questions.						
1404	NRR/SPSB	19.1.3.1-7	DSER-OI		5/24/96	Haag	Closed	Resolved	NTD-NRC-95-4418	3/15/95
				Westinghouse should document the support system fault trees.						
				Closed - The Rev. 2/3 PRA fault trees are provided in WCAP-13275, Rev. 1. Transmitted via letter NTD-NRC-95-4418 dated March 15, 1995. NRC has provided a follow-on question (#2810) related to this DSER OI. Westinghouse responded to the follow-on question and believe the question is closed.						
1405	NRR/SPSB	19.1.3.1-8	DSER-OI		8/3/95	Morrison	Closed	Resolved		
				Westinghouse should clarify the nomenclature of modularized fault trees used for different failure modes.						
				Closed - Nomenclature is discussed in section 7.5 of the PRA.						
1406	NRR/SPSB	19.1.3.1-9	DSER-OI		9/19/96	PRA-2/Bueter/Haag	Action W	Action W		
				Westinghouse should verify that the PRA models are representative of the AP600 design.						
				Action W - It is Westinghouse's intention that the final PRA models represent the AP600 design. However, as design changes may continue (mainly due to changes initiated to address NRC questions/concerns), a table will be provided in the final PRA report that identifies design changes not included in the model and the expected impact on the overall core damage frequency for internal events based on a qualitative assessment. This was discussed with NRC during the 5/8/96 PRA meeting.						
1407	NRR/SPSB	19.1.3.1-10	DSER-OI		9/19/96	PRA-1/Bueter/Sancaktar	Action W	Action W		
				Westinghouse should address the applicability of generic failure data to risk-important AP600 components.						
				Action W - Rev. 2/3 of PRA contains explanations for why generic data is acceptable for use on passive system equipment (i.e., IRWST CVs). NRC reviewed the info and issued follow-on question (#2811). Westinghouse responded to the follow-on question and believe it is closed. NRC then issued follow-on question #3262. Westinghouse to respond to the question.						
1408	NRR/SPSB	19.1.3.1-11	DSER-OI		5/24/96	Bueter/Freeland	Closed	Action W		
				Westinghouse should address the logic and instrumentation failure data for the microprocessor-based components derived from Westinghouse data.						
				Action W - I&C failure data is discussed in Chapters 26-28 of Rev. 3 PRA. NRC reviewed the PRA and has issued follow-on question (#2812). Westinghouse responded to the follow-on question and believe it is closed. The detailed data is proprietary and is housed in Westinghouse calculation notes, which can be made available for NRC to review. This has been discussed during several meetings with NRC.						
1409	NRR/SPSB	19.1.3.1-12	DSER-OI		7/16/96	Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4770	
				Westinghouse should justify the assumed error factors associated with risk-important events.						
				Closed - Uncertainty analysis issued as Chapter 51 of PRA. Error factors are discussed there and in the data analysis chapter of the PRA (Chapter 32).						

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1410	NRR/SPSB	19.1.3.1-13	DSER-OI		9/19/96	PRA-1/Bueter/Sancaktar	Action W	Action W	
				Westinghouse should justify the assumed multiple Greek letter (MGL) factors used in calculating the common-cause failure (CCF) probability of the IRWST gravity injection line check valves.					
				Action W - At 4/20/95 meeting with NRC, Westinghouse provided detailed list of where in PRA Rev. 2/3 this information is presented. NRC reviewed the info and issued follow-on question (#2813). Westinghouse responded to the follow-on question and believe it is closed. NRC then issued follow-on question #3263. Westinghouse to respond to the question.					
1411	NRR/SPSB	19.1.3.1-14	DSER-OI		5/24/96	Bueter/Freeland	Closed	~~Action W~~ Resolved	
				Westinghouse should justify the assumed beta factor used in calculating CCF probabilities for several hardware I&C components of the PMS.					
				Chapter 28 of Rev. 3 PRA discuss PMS I&C common cause failures. NRC reviewed the info and issued follow-on question (#2814). Westinghouse responded to the follow-on question.					
1412	NRR/SPSB	19.1.3.1-15	DSER-OI		5/24/96	Bueter/Freeland	Closed	~~Action W~~ Resolved	
				Westinghouse should justify the assumed probability for I&C software components.					
				NRC reviewed revised PRA and issued follow-on question (#2898). Westinghouse responded to the follow-on question.					
1413	NRR/SPSB	19.1.3.1-16	DSER-OI		5/24/96	Bueter/Sancaktar	Closed	~~Action W~~ Resolved	
				Westinghouse should justify the frequency of unscheduled maintenance, the assumed or allowed outage times, and the assumed error factors (or distribution parameters) for maintenance duration and component unavailability associated with maintenance.					
				Maintenance assumptions are provided in each PRA system chapter. Error factors for maintenance unavailabilities will be provided, as applicable, in the uncertainty analysis. NRC reviewed revised PRA and issued follow-on question (#2899). Westinghouse responded to the follow-on question.					
1414	NRR/SPSB	19.1.3.1-17	DSER-OI		5/24/96	Bueter/Wallace	Closed	~~Action W~~ Resolved	
				Westinghouse should revise the human reliability analysis.					
				At 4/20/95 meeting with NRC, Westinghouse provided a detailed list of where in PRA Rev. 2/3 this information is presented. NRC reviewed revised PRA and issued follow-on questions (#2946 - 2959). Westinghouse responded to the follow-on questions and believes they are closed.					
1415	NRR/SPSB	19.1.3.1-18	DSER-OI		11/9/95	Wallace	Closed	Resolved	
				Westinghouse should identify assumptions made in the HRA about the control room design and about the emergency operating procedures for all risk-important human actions modeled in the PRA.					
				Closed - At 4/20/95 meeting with NRC, Westinghouse provided a detailed list to NRC of where in PRA Rev. 2/3 this info is presented.					
1416	NRR/SPSB	19.1.3.1-19	DSER-OI		5/24/96	Bueter/Wallace/Wiesemann	Closed	Resolved	
				Westinghouse should demonstrate that it has considered the current understanding of crew responses during a common-cause failure of several I&C hardware and software components.					
				Closed - At 4/20/95 meeting with NRC, Westinghouse provided a detailed list to NRC of where in PRA Rev. 2/3 this information is presented. NRC reviewed and statused as resolved.					
1417	NRR/SPSB	19.1.3.1-20	DSER-OI		8/3/95	Wallace	Closed	Resolved	
				Westinghouse should justify the operator stress level used in calculating the probability for the operator action to scram the reactor within 1 minute during an ATWS.					
				Closed - Information presented in Sections 30.6.38 - 30.6.42 of PRA.					

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1418	NRR/SPSB	19.1.3.1-21	DSER-OI		5/24/96	Bueter/Sancaktar	Closed	Resolved	
				Westinghouse should discuss the dominant cutsets (by accident sequence) for each of the top accident sequences that cumulatively contribute at least 90 percent to the total core damage frequency (CDF) from internal events.					
				Closed - Information is provided in Chapter 59 of PRA Rev. 3 (Top 13 sequences cummulatively equal 90% of internal events CDF). NRC reviewed info and statused as resolved.					
1419	NRR/SPSB	19.1.3.1-22	DSER-OI		9/28/95	Sancaktar	Closed	Resolved	
				Westinghouse should verify that the dominant cutsets do not contain correlated events.					
				Closed - If "correlated events" means common cause or dependent failures, this is addressed in Section 29.2 of Rev. 3 PRA. NRC reviewed PRA and statused as resolved.					
1420	NRR/SPSB	19.1.3.1-23	DSER-OI		7/16/96	Bueter/Sancaktar	Closed	~~Action W~~ Resolved	NSD-NRC-96-4770
				Westinghouse should identify the major contributors in the uncertainty of the CDF estimate for the plant.					
				Closed - The uncertainty analysis has been provided in Chaper 51 of the AP600 PRA.					
1421	NRR/SPSB	19.1.3.1-24	DSER-OI		8/19/95	Tran/Sancaktar	Closed	~~Action W~~ Resolved	
				Westinghouse should expand the importance analysis to provide proper interpretation of the results.					
				Closed - Importance analyses are provided in Chapters 33 and 50 of the PRA.					
1422	NRR/SPSB	19.1.3.1-25	DSER-OI		8/19/95	Tran/Sancaktar	Closed	~~Action W~~ Resolved	
				Westinghouse should perform additional sensitivity analyses to determine (1) the sensitivity of the estimated CDF to potential biases in numerical values, (2) the impact of potential lack of modeling details on the estimated CDF, and (3) the sensitivity of the estimated CDF to previously raised issues.					
				Closed - Sensitivity study analyses are provided in Chapter 50 of the PRA.					
1423	NRR/SPSB	19.1.3.1-26	DSER-OI		9/19/96	PRA-2/Bueter/Haag	Action W	Action W	
				Westinghouse should use insights from the sensitivity, uncertainty, and importance analyses in conjunction with assumptions from the entire PRA to identify design certification and operational requirements, as well as COL and interface requirements.					
				Action W - Westinghouse is currently working on this.					
1425	NRR/SPSB	19.1.3.2-1	DSER-OI		9/19/96	PRA-2/SMA/Haag/LaPay	Action W	Action W	
				The staff has not yet completed its review of the revised seismic margins analysis.					
				Action W - NRC audited Westinghouse calcnotes on HCLPF calculations. Westinghouse responding to NRC meeting action items. On 8/2/95, received a fax from NRC containing seismic margins questions.					
1426	NRR/SPSB	19.1.3.2-2	DSER-OI		8/28/96	Haag/NUS	Closed	~~Action W~~ Resolved	NSD-NRC-96-4803
				Westinghouse should provide specific references to SSAR information used in the fire PRA.					
				Closed - response issued 8/26/96.					
1427	NRR/SPSB	19.1.3.2-3	DSER-OI		8/28/96	Haag/NUS	Closed	~~Action W~~ Resolved	NSD-NRC-96-4803
				Westinghouse should provide information on fire areas and fire zones considered in the PRA.					
				Closed - response issued 8/26/96.					

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1428	NRR/SPSB	19.1.3.2-4	DSER-OI		8/28/96	Haag/NUS	Closed	~~Action W~~ Resolved	NSD-NRC-96-4803
				Westinghouse should address the use of the 3-hour fire-rated barriers.					
				Closed - response issued 8/26/96.					
1429	NRR/SPSB	19.1.3.2-5	DSER-OI		8/28/96	Haag/NUS	Closed	Action W	NSD-NRC-96-4803
				Westinghouse should quantitatively evaluate control room fires.					
				Closed - response issued 8/26/96. → Several RAIs were sent to W on this					
1430	NRR/SPSB	19.1.3.2-6	DSER-OI		8/28/96	Haag/NUS	Closed	Action W	NSD-NRC-96-4803
				Westinghouse should assess the risk of a fire-induced loss of systems during shutdown conditions.					→ 2 RAIs under prepara
				Closed - response issued 8/26/96.					
1431	NRR/SPSB	19.1.3.2-7	DSER-OI		8/28/96	Haag/NUS	Closed	Action W	NSD-NRC-96-4803
				Westinghouse should assess fire-induced opening of the ADS valves in the PRA. → 3 RAIs were sent to W					
				Closed - response issued 8/26/96.					
1432	NRR/SPSB	19.1.3.2-8	DSER-OI		8/28/96	Haag/NUS	Closed	Action W	NSD-NRC-96-4803
				Westinghouse should evaluate lube oil fires in the PRA.					
				Closed - response issued 8/26/96. → RAIs were sent to W					
1433	NRR/SPSB	19.1.3.2-9	DSER-OI		8/28/96	Haag/NUS	Closed	~~Action W~~ Resolved	NSD-NRC-96-4803
				Westinghouse should evaluate events involving fire-induced loss of offsite power in the PRA.					
				Closed - response issued 8/26/96.					
1434	NRR/SPSB	19.1.3.2-10	DSER-OI		8/28/96	Haag/NUS	Closed	~~Action W~~ Resolved	NSD-NRC-96-4803
				Westinghouse should list all human actions that were credited in the fire analysis.					
				Closed - response issued 8/26/96.					
1435	NRR/SPSB	19.1.3.2-11	DSER-OI		8/28/96	Haag/NUS	Closed	~~Action W~~ Resolved	NSD-NRC-96-4803
				Westinghouse should identify the risk dominant fire minimal cutsets in the fire PRA.					
				Closed - response issued 8/26/96.					
1436	NRR/SPSB	19.1.3.2-12	DSER-OI		8/28/96	Haag/NUS	Closed	~~Action W~~ Resolved	NSD-NRC-96-4803
				Westinghouse should identify the "focused PRA" results regarding fires.					
				Closed - response issued 8/26/96.					
1437	NRR/SPSB	19.1.3.2-13	DSER-OI		8/28/96	Haag/NUS	Closed	~~Action W~~ Resolved	NSD-NRC-96-4803
				Westinghouse should provide sensitivity and importance analyses in the fire PRA.					
				Closed - Since the fire PRA is a "scoping" analysis with various conservative assumptions, it is not appropriate to perform sensitivity and importance analyses since it could produce biased insights. Response issued 8/26/96.					
1438	NRR/SPSB	19.1.3.2-14	DSER-OI		1/9/96	Stevenson,P	Closed	Resolved	NTD-NRC-95-4513
				Westinghouse should include all specific references to the SSAR in the flooding PRA.					
				Closed - PRA flood analysis provided in Chapter 56 of PRA. SSAR information is referenced.					

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1439	NRR/SPSB	19.1.3.2-15	DSER-OI		10/24/96	PRA-1/Flood	Closed	Action W	NTD-NRC-95-4513
				Westinghouse should provide additional information for each flooding area credited in the flooding PRA.					
				Closed - The requested information can be found in the PRA flood analysis provided in Chapter 56 of the PRA. NRC reviewed PRA and issued follow-on questions (#2900, 2901, 2902, 2903, 2904, 2905, 2906). Westinghouse responded to those follow-on questions in letter NSD-NRC-96-4856 (10/23/96).					
1440	NRR/SPSB	19.1.3.2-16	DSER-OI		1/9/96	Stevenson,P	Closed	Resolved	NTD-NRC-95-4513
				Westinghouse should evaluate flooding areas that contain safe-shutdown equipment.					
				Closed - PRA flood analysis evaluates areas that contain safe-shutdown equipment as modeled in the PRA. PRA flood analysis is provided in Chapter 56 of PRA.					
1441	NRR/SPSB	19.1.3.2-17	DSER-OI		10/24/96	PRA-1/Flood	Closed	Action N	NTD-NRC-95-4513
				Westinghouse should document how the flooding initiating event frequencies for each flooding area were estimated.					
				Closed - PRA flood analysis provided in Chapter 56 of PRA. The flooding analysis documents the flood initiating event frequency calculations. NRC reviewed PRA and issued follow-on question (#2907). Westinghouse responded to the follow-on question in letter NSD-NRC-96-4856 (10/23/96).					
1442	NRR/SPSB	19.1.3.2-18	DSER-OI		10/24/96	PRA-1/Flood	Closed	Action N	NTD-NRC-95-4513
				Westinghouse should list all human actions that were credited in the flooding PRA.					
				Closed - PRA flood analysis is provided in Chapter 56 of PRA. The operator actions developed for flooding scenarios are presented in this chapter. NRC reviewed PRA and issued follow-on question (#2908). Westinghouse responded to the follow-on question in letter NSD-NRC-96-4856 (10/23/96).					
1443	NRR/SPSB	19.1.3.2-19	DSER-OI		10/24/96	PRA-1/Flood	Closed	Action N	NTD-NRC-95-4513
				Westinghouse should identify all risk dominant flood minimal cutsets in the flooding PRA.					
				Closed - PRA flood analysis dominant minimal cutsets are provided in Chapter 56 of PRA. NRC reviewed PRA and issued follow-on question (#2909). Westinghouse responded to the follow-on question in letter NSD-NRC-96-4856 (10/23/96).					
1444	NRR/SPSB	19.1.3.2-20	DSER-OI		10/24/96	PRA-1/Flood	Closed	Action N	NTD-NRC-95-4513
				Westinghouse should provide details of the normal RHR pipe rupture analysis in the flooding PRA.					
				Closed - PRA flood analysis, provided in Chapter 56 of the PRA, includes a discussion on pipe ruptures. NRC reviewed PRA and issued follow-on question (#2910). Westinghouse responded to the follow-on question in letter NSD-NRC-96-4856 (10/23/96).					
1445	NRR/SPSB	19.1.3.2-21	DSER-OI		10/24/96	PRA-1/Flood	Closed	Action N	NTD-NRC-95-4510
				Westinghouse should report its Focused PRA results in the AP600 flooding PRA.					
				Closed - The focused PRA sensitivity study results pertaining to flood PRA are provided as part of the RTNSS focused PRA sensitivity study (Charter 52 of PRA). NRC issued follow-on question (#3241). Westinghouse responded to the follow-on question in letter NSD-NRC-96-4856 (10/23/96).					
1446	NRR/SPSB	19.1.3.2-22	DSER-OI		10/24/96	PRA-1/Flood	Closed	Action W Resolved	NTD-NRC-95-4513
				Westinghouse should provide sensitivity and importance analyses in the AP600 flooding PRA.					
				Closed - A sensitivity study was performed pertaining to the flooding event-developed operator actions. Since the flood PRA is a limited analysis with various conservative assumptions, it is not appropriate to perform additional sensitivity analysis or importance analyses since it could produce biased insights. NRC reviewed PRA and issued follow-on questions (#2911 & 2912). Westinghouse responded to those follow-on questions in letter NSD-NRC-96-4856 (10/23/96).					

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Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
1447	NRR/SPSB	19.1.3.3-1	DSER-OI		5/24/96	Wallace	Closed	Action W	NTD-NRC-94-4510
				Westinghouse should submit a detailed task analysis justifying the value assumed for operator error during shutdown that would inadvertently drain the reactor vessel level inventory through the normal RHR system.					
				Action W - Information discussed in the Shutdown PRA (Chapter 54 of PRA). NRC reviewed PRA and issued follow-on question (#2939). Westinghouse responded to the follow-on question and believes it to be closed.					
1448	NRR/SPSB	19.1.3.3-2	DSER-OI		5/24/96	Wallace	Closed	Action W	NTD-NRC-95-4510
				Westinghouse should evaluate the risk for safe shutdown operations when the RCS temperature is greater than 177 øC (350 øF).					
				Action W - Discussion of events evaluated in shutdown analysis is presented in subsections 54.2.3 and 54.2.4 of the PRA. NRC reviewed PRA and issued follow-on question (#2940). Westinghouse responded to the follow-on question.					
1449	NRR/SPSB	19.1.3.3-3	DSER-OI		11/8/95	Wallace	Closed	Resolved	NTD-NRC-95-4510
				Westinghouse should using a separate event tree to assess the risk associated with overdraining during shutdown.					
				Closed - Shutdown PRA (Chapter 54) provides overdraining shutdown evaluation.					
1450	NRR/SPSB	19.1.3.3-4	DSER-OI		5/24/96	Wallace/Reid	Closed	Action W	NTD-NRC-95-4510
				Westinghouse should document the functions of the plant monitoring system, diverse actuation system, and diverse indication system during safe shutdown, cold shutdown, and midloop/vessel flange operation.					
				Action W - Section 54.5 of the PRA provides information concerning the modeling of PLS, PMS, and DAS during the low power and shutdown conditions modeled. NRC reviewed PRA and issued follow-on question (#2941). Westinghouse responded to the follow-on question.					
1451	NRR/SPSB	19.1.3.3-5	DSER-OI		1/9/96	Wallace	Closed	Resolved	NTD-NRC-95-4510
				Westinghouse should develop separate event trees for loss of normal RHR and loss of offsite power (LOOP) during safe/cold shutdown and midloop/vessel flange operation.					
				Closed - Separate event trees for loss of RNS and loss of offsite power are provided in the low power and shutdown PRA (see Section 54.4 of PRA).					
1452	NRR/SPSB	19.1.3.3-6	DSER-OI		5/24/96	Wallace	Closed	Action W	NTD-NRC-95-4510
				Westinghouse should document the maintenance unavailabilities and related assumptions used in the shutdown PRA.					
				Action W - Maintenance information and assumptions at shutdown is presented in Chapter 54, low power and shutdown risk assessment. Specific information on maintenance can be found in Table 54-8. NRC reviewed PRA and issued follow-on question (#2942). Westinghouse responded to the follow-on question.					
1453	NRR/SPSB	19.1.3.3-7	DSER-OI		11/8/95	Wallace	Closed	Resolved	NTD-NRC-95-4510
				Westinghouse should justify the mission time used in the shutdown PRA for normal RHR operation, for both hot/cold shutdown and midloop/vessel flange operation.					
				Closed - Mission times for shutdown operations are discussed in subsection 54.3.2 of the PRA.					
1454	NRR/SPSB	19.1.3.3-8	DSER-OI		11/8/95	Wallace	Closed	Resolved	NTD-NRC-95-4510
				Westinghouse should document the dominant shutdown sequences and cutsets, assuming that no safety-related systems are available.					
				Closed - Shutdown focused PRA sensitivity study evaluates the case with no credit for nonsafety-related system mitigation. The results, including dominant cutsets, are provided in Chapter 52 of the PRA.					

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1709	NRR/SPSB	19.1	MTG-OI		8/19/95	Sancaktar	Closed	Resolved	NTD-NRC-95-4510
				Per Oct. 20, 1994 meeting: The staff requested that Westinghouse confirm why cutsets identified by the staff were not included in Table F-14 of the PRA report. Westinghouse agreed to review the focused PRA sensitivity study for the potential missing cutsets as part of Revision 2 of the PRA. (NRC meeting notes dated 11/1/94)					
				Closed - The focused PRA sensitivity study has been updated as part of Rev. 4 PRA. The focused PRA sensitivity study is presented in Chapter 52 of the PRA.					
1710	NRR/SPSB	19.1	MTG-OI		8/3/95	Sancaktar/Tang	Closed	Resolved	NTD-NRC-95-4479
				Per Oct. 20, 1994 meeting: Westinghouse to provide an electronic version of the Level 1 PRA, Rev. 2, fault trees and cutsets. The same information provided in response to RAI 720.58 for Rev. 0 will be provided. The staff is interested in using the information to update data for the IRRAS modeling of the AP600 design. (Per NRC meeting notes dated 11/1/94).					
				Closed - Information provided on tapes to NRC in letter dates June 2, 1995.					
1973	NRR/SPSB	19.1.3.1-1	DSER-COL		7/15/96	Winters	Closed	Action N	NSD-NRC-96-4662
				19.1.3.1-1 The COL applicant should incorporate the list of important SSCs in the D-RAP and maintenance programs.					
				Closed - SSAR subsection 16.2.7.2, Revision 7, includes a COL information item covering the holder's activities for listing and maintaining SSCs in the RAP program.					
1974	NRR/SPSB	19.1.3.1-2	DSER-COL		5/8/96	Winters	Closed	Action N	NSD-NRC-96-4662
				19.1.3.1-2 The COL applicant should use the list of risk-important operator tasks to prevent or mitigate severe accidents in the control room design and fixed display panel, as well as to implement procedures and develop training programs.					
				Action N - See response to DSER OIs 18.5.3-1 and 18.5.3-2. Closed - Response provided by NSD-NRC-96-4662.					
2046	NRR/SPSB	19.	DSER-OI50		8/19/95	Sancaktar	Closed	Action N	W -> see DSER O
				50. Treatment of Common Cause Failures According to DSER OI 19.1.3.1-15, the Staff believes the Multiple Greek Letter (MGL) factors used to calculate the common cause failure probability of the IRWST gravity injection line check valves are significantly lower than those recommended by the ALWR URD.					
				Closed - The MGL factors used for IRWST equipment is from URD Rev. 5/6. See subsection 29.4.3 and Table 29-2 of the PRA for more information. (At the 4/20/95 meeting with NRC, Westinghouse provided a detailed list of where in the PRA this information is presented.)					
2047	NRR/SPSB	19.	DSER-OI50		6/5/96	Bueter/Wallace	Closed	Action N	Resolved
				51. Human Reliability Analysis This is primarily a documentation issue where Westinghouse needs to improve the documentation of Rev. 0 PRA assumptions and justifications for human error probabilities.					
				Human Reliability Analysis was updated as part of Rev. 2/3 PRA. At 4/20/95 meeting with NRC, Westinghouse provided a detailed list to NRC of where in the PRA the information is discussed. Waiting for NRC review.					

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2048	NRR/SPSB	19.	DSER-OI50		9/13/96	Haag	Closed	Action W		

52. Integrated Use of PRA Major Insights
DSER OI 19.1.3.1-26 is a reminder that Westinghouse needs to use insights from the PRA in an integrated fashion to identify design certification and operational requirements (ITAAC, RAP, Tech Specs, procedures) as well as COL and interface requirements.

Discussed at 2/9/95 SMM)
Rev. 2 to PRA to include these insights.

5/2/95 Status: Insights not submitted yet. Issue discussed briefly during March 29-30, 1995 mtg.

CLOSED - This item number is being closed since it is a duplicate and is already in the database under DSER OI 19.1.3.1-26.

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
2049	NRR/SPSB	19.	DSER-OI50		5/8/96	Bueter/Freeland	Closed	Action N Resolved	NSD-NRC-96-4688	

53. Instrumentation Failure Data for Microprocessor-Based Components
NRC requests for information on the Westinghouse instrumentation failure data used for micro-processor-based components. (DSER OI 19.1.3.1-11).

Action N - I&C information is presented in Chapters 26 through 28 of the PRA. Waiting NRC review.

Closed - Response provided by NSD-NRC-96-4688.

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
2050	NRR/SPSB	19.	DSER-OI50		6/5/96	Bueter/Sancaktar	Closed	Action W		

54. Applicability of Generic Failure Data in PRA
NRC are concerned with applicability of generic failure data, derived from current plants, for the AP600 passive system equipment. An NRC concern is that the AP600 environment and operating conditions are different than current plants. An example is IRWST injection line check valves. (DSER OI 19.1.3.1-10)

Action N - Rev 2/3 of the PRA contains explanations for why generic data is acceptable for use on passive system equipment (i.e., IRWST CVs). Waiting for NRC review.

See ← ? this contradicts what W says under DSER OI 19.1.3.1-10 !!

However, it can be argued that this RAI has been superceded by RAI 720.332 (p. 38)

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2051	NRR/SPSB	19.	DSER-OI50		9/13/96	Haag/Ohkawa	Closed	Active		

55. Passive System Reliability
Per DSER OI 19.1.3.1-3, the Staff requests detailed documentation on the success criteria assumed for various systems and operator actions modeled in the event tree top events.

At 7/27/95 meeting between NRC and W, Westinghouse presented how we were proceeding on the T/H uncertainty evaluation. NRC's interpretation of the scope of what T/H uncertainty evaluation should be was expanded. NRC Action to provide to Westinghouse again what the mission of this evaluation is to be.
At 6/29/95 SMM, W/NRC appear to be diverging on the purpose of the evaluation. Actions were provided for both W and NRC.
At 4/20/95 meeting between W/NRC, agreed to the purpose of the T/H uncertainty evaluation and the steps involved.

Discussed at 2/9/95 SMM)
Staff will develop focussed issues that will define path to resolution.

5/2/95 Status: Discussed at April 1995 SMM. Issue discussed during March 30 & April 20, 1995 mtg. W & staff agree on a resolution path for this issue (margins approach).

(Discussed at 4/4/95 SMM)
55. Passive System Reliability
Westinghouse will be benchmarking MAAP4 against NOTRUMP to demonstrate the adequacy of using it for addressing this issue. The staff will also benchmark MAAP4 against RELAP to identify any problems with using this code.
The staff recommended that Westinghouse identify preferred analysis cases of prolonged, maximum core uncovery events, and evaluate these cases (with sensitivity runs) first to provide some confidence and feedback in the areas of concern in the short term.

Action W Westinghouse will provide the NRC with the list of preferred analysis cases.
(5/2/95 Status) Action W - Analysis cases to be provided as part of MAAP4 T/H uncertainty benchmarking process.

Action N The staff will provide details of a calculation using the RELAP code that indicates that MAAP4 is nonconservative.
(5/2/95 Status) Action N - Still under staff review.

CLOSED - This item number is being closed because it is a duplicate of another entry in the database and is covered by DSER OI 19.1.3.1-3.

2052	NRR/SPSB	19.	DSER-OI50		9/13/96	Haag/NUS	Closed	Action W		

56. Quantification of Control Room Fires
Per DSER OI 19.1.3.2-5, NRC requests AP600 quantify control room fire in the Fire PRA.

Discussed at 2/9/95 SMM)
Issue to be clarified at upcoming meeting.

5/2/95 Status: Not discussed yet.

CLOSED - This item number is being closed since it is a duplicate of another entry in the database and is covered by DSER OI 19.1.3.2-5.

2714	NRR/SPSB	19.1	RAI-OI		10/30/96	Orr/Lutz	Closed	Action W	NTD-NRC-96-4617	1/4/96

Follow-on question item 12:
In PRA Section 42.4, coefficient of variation, not coefficient of variance, should be used.

Closed - See response to this meeting item (Westinghouse letter dated 1/4/96). Chapter 42 of PRA has been revised.

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2792	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter	Action W	Action W	
				Seismic Margins Analysis follow-on question 1: The risk-based seismic margins (SMA) must be updated to reflect revisions made in the internal event analysis. Such revisions include changes in event and fault tree models, success criteria, hardware failure and human error probabilities. The updated analysis should state explicitly all important assumptions made in constructing the seismic event trees, starting with the internal event trees.					
2793	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter	Action W	Action W	
				Seismic Margins Analysis follow-on question 2: The guidance provided by NRC for SMA requires that in addition to seismic only contributions, combinations of seismic and random failures/human errors need to be identified and reported. Only random failures having a failure probability of 1E-3 or greater need to be considered. The explanation provided in Sections H.3.5 and 2.2 is not clear. Please explain how potential combinations of seismic and random failures were systematically identified.					
2794	NRR/SPSB	19.1	RAI-OI		10/9/96	PRA-2/SMA/Bueter	Action W	Action W	
				Seismic Margins Analysis follow-on question 3: Because of the extra demands on the operators following a seismic event, human error probabilities (HEPs) used in seismic events should be reviewed to determine their applicability to the conditions expected to exist after the seismic event of the postulated magnitude. Please identify which of the internal event's "operator failure to start ADS? is used in the SMA and provide a brief discussion of its applicability.					
2795	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter	Action W	Action W	
				Seismic Margins Analysis follow-on question 4: A mission time of 24 hours is assumed in the SMA (as for the internal events analysis). This assumption must be justified on the basis of the plant state at 24 hours. If the plant is not at a stable state, the beyond 24 hours risk must be assessed or shown to be nigligible (e.g., in terms of available options, time windows for human actions, etc.). An example is the scenarios of a seismic event that causes loss of offsite power and loss of all non-safety related "active" systems (low HCLPF values) combined with failure to isolate the containment (random plus seismic).					
2796	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter	Action W	Action W	
				Seismic Margins Analysis follow-on question 5: The seismic fault tree for the passive RHR (Figure 2.2-2) shows a system failure when the D power needed to open the AOVs is lost. Do not these AOVs fail open upon loss of 125 V DC power? Please explain.					
2797	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter	Action W	Action W	
				Seismic Margins Analysis follow-on question 6: Section H.3.2.8 states: "a consequential small LOCA could occur because the pressurizer safety valves open and do not close, small pipe breaks occur, or for any other reason." Are these small pipe breaks due to the seismic event? If the answer is yes please provide the HCLPF valves for such small pipes.					
2798	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter	Action W	Action W	
				Seismic Margins Analysis follow-on question 7: No seismic event tree is included in the analysis for main steam line breaks inside containment (MSBI). The explanation for this (provided in H.3.3.5) is not clear. Please provide a seismic event tree for MSBI or explain why this event tree is not needed to gain additional insights than those already available through other seismic event trees.					
2799	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter	Action W	Action W	
				Seismic Margins Analysis follow-on question 8: Westinghouse should correct several errors in reporting combinations of seismic and random failures (mixed cut sets). For example, in sequence 27 of MSBO event tree, 1.28g + OA(2.2E-3) is reported. The correct result should be stated as: 1.28g + 1.28g * OA(2.2E-3) = 1.28g.					

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2800	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter	Action W	Action W	

Seismic Margins Analysis follow-on question 9:
The only failure mechanism considered for loss of containment cooling, as a result of blockage of the baffle, is the structural failure of the baffle itself. However, it is possible for the baffle to be blocked as a result of release of water following the seismic induced failure of the Passive Containment Cooling Water Storage Tank (PCCWST) and failure to drain the water below the baffle plate due to, for example, blockage of the drains by debris from the failed PCCWST. Westinghouse should report the HCLPF for the PCCWST and evaluate and discuss the feasibility of this containment cooling failure mode.

2801	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter	Action W	Action W	

Seismic Margins Analysis follow-on question 10:
For several components, the reported HCLPF and median values seems to be inconsistent. For example, the HCLPF value for the RCS components V001A/B/C/D is estimated to be 2.85g. This is higher than the listed median value of 2.38g (Table H-1). Please explain.

2802	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter	Action W	Action W	

Seismic Margins Analysis follow-on question 11:
Westinghouse should evaluate the results of the seismic analysis. This should include sensitivity analyses to evaluate the effects of changes in certain assumptions. For example, the effect on the plant HCLPF of a reduction in the assumed HCLPF valves of certain systems, structures and components (e.g., due to uncertainties). Such sensitivity analyses provide important insights about the design. The documentation of this evaluation should include: (1) a discussion of the plant HCLPF; (2) a discussion of the dominant seismic and mixed (seismic/non-seismic) sequences; (3) conclusions and discussion of the conclusions; and (4) a list of important assumptions and insights.

2803	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-2/SMA/Bueter/LaPay	Action W	Action W	

Seismic Margins Analysis follow-on question 12:
Passive systems depend on very low driving heads to generate the required flow. The specific orientation of equipment and piping may have a significant impact on the ability of these systems to generate sufficient head. Seismic events in excess of the SSE have the potential to result in inesaltic behavior and associated permanent distortion of systems or the structures they are anchored to. In forced flow systems, such minor distortions (such that the operability fo the equipment would not be compromised) would not result in system failure, since pumped flow would be able to overcome minor changes in flow resistance. Therefore, previous SMAs (for operating and advanced evolutionay reactor designs) do not consider such failure modes. However, it is not clear that this assumption can be fully supported for passive systems.

Changes in the orientation of equipment or piping (e.g., the downstream end of a pipe being raises above the upstream event) could result in loss of sufficient driving head through increases resistance or the formation of gas bubbles ("loop seals") within the piping runs. There is a need to understand the importance of piping orientation to the success of these systems. Similarly, seismically-induced failure of check valves to open has not been considered. While the existing guidance on SMA justifies this assumption for check valves in active systems, that guidance did not consider whether such an assumption would be valid under the operating conditions present for passive systems.

A systematic investigation is needed to determine whether there are "passive system related" failure modes with HCLPF values lower than those already considered in the SMA. If such failure modes are found, they should be addressed in the SMA or show (e.g., using results from the passive system performance reliability analysis) that they will not affect the conclusions and insights expected from the SMA.

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2804	NRR/SPSB	19.1	RAI-OI		3/12/96	Schulz	Closed	~~Action W~~	NSD-NRC-96-4662

RAI Related to DSER Open Item 19.1.3.1-1

1. The Passive Residual Heat Removal (PRHR) tube rupture frequency was chosen by Westinghouse to be 5.0E-4/year on the basis that it should be approximately an order of magnitude lower than the frequency of a Steam Generator Tube Rupture (SGTR) event. If Westinghouse's approach, based on a pipe break failure rate of 4.25E-10 per year per section, was followed, this frequency would be 5.0E-3/year. If the failure rate for PRHR heat exchangers of 1.0E-7/year (recommended by EPRI in its Utility Requirements D... t, the PRHR tube rupture frequency would be 2.0E-3/year.

Please re-eval...

...wing: (1) it is not possible to isolate and repair a single leaking ...hich accelerates under stagnant conditions by allowing local ... leaks to a very large body of water (in the IRWST), under stagnant conditions, ...apability of circulating primary in the steam generators, (4) the potential impact of mechanical loads on heat ...ubing and supports, including potential steam hammer load caused by phase separation within the tubes under accident conditions, and (5) the smaller heat transfer area of PRHR heat exchanger, as compared to steam generators, combined with the potential for two-phase flow in the IRWST side of the tubes during accident conditions where critical heat flux and vapor blanketing of the tubes may be of concern.

Closed - Issued RAI response.

2805	NRR/SPSB	19.1	RAI-OI		3/11/96	Sancaktar	Closed	~~Action W~~	NSD-NRC-96-4662

RAIs Related to DSER Open Item 19.1.3.1-1

2. The primary system pipe break analysis assumes a certain apportionment of the failure rate, according to pipe sizes, into "large", "medium", "intermedium" and "small" LOCAs. Although such apportionment is logical, the assumed percentages are rather arbitrary. Sensitivity analyses are needed to assess the impact of this apportionment on the PRA results and insights.

Closed - RAI response issued.

2806	NRR/SPSB	19.1	RAI-OI		5/24/96	Sancaktar	Closed	~~Action W~~	NSD-NRC-96-4662

RAIs Related to DSER Open Item 19.1.3.1-1

3. The next PRA revision should reflect the PRHR design change, i.e., one instead of two heat exchangers.

Closed - One PRHR HX is reflected in the PRA update.

2807	NRR/SPSB	19.1	RAI-OI		5/24/96	Bueter/Sancaktar	Closed	~~Action W~~	NSD-NRC-96-4662

RAIs Related to DSER Open Item 19.1.3.1-2

1. Westinghouse is requesting the extension of the testing interval, from quarterly to semi-annually, for the ADS stage 1, 2 and 3 motor operated valves (MOVs). The FSAR states in 3.9.6.3.1 that the ADS stage 1 through 3 valve exercise testing represents a risk of loss of coolant and depressurization of the reactor coolant system if the test sequence is not followed. Operator error during exercise testing of ADS MOVs (e.g., failure to follow test sequence) must be addressed in the PRA.

Closed - Potential operator error during testing of ADS stages 1-3 leading to spurious ADS actuation is addressed in PRA update.

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2808	NRR/SPSB	19.1	RAI-OI		3/12/96	Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4662

RAIs Related to DSER Open Item 19.1.3.1-2

This item is administratively resolved. More detailed RAIs were submitted and resolution of these items will technically resolve this open item. Superseded by RAI#

signal train. Section 11.1.2, ossible combinations of 2 signals. how the contributions to the analysis (including intermediate, medium and large LOCA, reported in Section assumptions, data and associated bases) used to calculate ADS spurious actuation frequencies and their contributions to the various LOCA initiating event frequencies.

Closed - RAI response issued.

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2809	NRR/SPSB	19.1	RAI-OI		3/12/96	Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4662

RAIs Related to DSER Open Items 19.1.3.1-4 and 19.1.3.1-5

This item is administratively resolved. More detailed RAIs were submitted and resolution of these items will technically resolve this open item. Superseded by RAI#

sendently of plant condition. This assumption must be justified by urs) is not significant. Otherwise the event tree models must be extended is not significant).

Closed - RAI response issued.

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2810	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4688

RAIs Related to DSER Open Item 19.1.3.1-7

1. Westinghouse needs to correct several inconsistencies or provide an explanation indicating that the apparent inconsistency resulted from a misunderstanding. Several entries in the "System Dependency Matrix" tables, at the end of each specific system chapter, are inconsistent with the "AP600 Support System Interdependency Matrix" table located in Chapter 5. Examples are:

- For the Passive Containment Cooling System (PCS), Table 13-4 on page 13-9 of the PRA, shows that IDS is the support system required to operate AOVs and MOVs. However, PCS-PCT in Table 5-6 on page 5-30 of the PRA does not show that the IDS system is a support system.

- For the Normal Residual Heat Removal System (RNS), Table 17-4 on page 17-10 states that PLS system provides manual actuation logic for pumps, MOVs, etc. However, RNS-RHR and RNS-RNP (Table 5-6 on page 5-33) indicate the PMS system (not the PLS system) provides support.

In addition, Section 21.4.2 refers to subsection 8.3.1 of reference 21-1. Reference 21-1 is the revision 1 fault trees and there is no subsection 8.3.1. The correct reference should be given.

Resolved - The second and third items will be addressed in the updated PRA.

Closed - Response provided by NSD-NRC-96-4688

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/21/96

Selection: [DSER Section] like '19.*' And [NRC Branch] like 'NRR/SPSB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Ltr Date
2811	NRR/SPSB	19.1	RAI-OI			Closed	Action W	NSD-NRC-96-4662

RAI-

...inghouse to assess and document the applicability of generic failure data to the AP600 design. While check valves are not ...AP600, the conditions under which they will be operating in the plant are substantially different from those in current generation nuclear plants. For example, they will have to open on demand under very low differential pressures after long periods of being held closed by fluid at RCS temperature, pressure and chemistry. In the revised PRA submittal the failure rate of the IRWST check valves was changed, as suggested in EPRI's Utility Requirement Document, to account for "less than ideal conditions" which may exist at the time the valves are demanded. However, no discussion is included in the submittal which shows that this change addresses the failure data applicability concern for the IRWST check valves or for any other components. Please provide this information and/or perform sensitivity studies to assess the impact of changes in failure rates of risk-important components to risk.

Closed - RAI response issued 3/8/96.

This item is administratively resolved. More detailed RAIs were submitted and resolution of these items will technically resolve this open item. Superseded by RAI#

2812	NRR/SPSB	19.1	RAI-OI		5/24/96 Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4688

RAIs Related to DSER Open Item 19.1.3.1-11

1. The staff was unable to find in the revised PRA submittal a complete response to DSER Open Item 19.1.3.1-11. Please provide documentation of I&C failure data derived from Westinghouse data or identify specifically where this information can be found.

Closed - RAI response issued NSD-NRC-96-4688. Information was discussed in meetings with NRC.

2813	NRR/SPSB	19.1	RAI-OI		3/11/96 Sancaktar	Closed	Action W	NSD-NRC-96-4662

RAIs Related to DSER Open Item 19.1.3.1-13

...valves, MGL factors from Revisions 5 and 6 of EPRI's ...ions 5 & 6 of the URD. This is much lower than the ...System 80+). No explanation for this is provided. ...values used in previous PRAs.

This item is administratively resolved. More detailed RAIs were submitted and resolution of these items will technically resolve this open item. Superseded by RAI#

Closed - RAI response issued.

2814	NRR/SPSB	19.1	RAI-OI		5/8/96 Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4688

RAIs Related to DSER Open Item 19.1.3.1-14

1. The staff was unable to find in the revised PRA submittal the beta factor, or MGL parameter, values used in calculating common cause failure probabilities of I&C hardware components (as requested in the DSER Open Item 19.1.3.1-14). Please provide this information, including sources and related documentation. In addition, please provide detailed documentation of the calculation of probabilities for the most risk-important CCF events (in terms of both baseline and focused PRA results) related to I&C hardware components.

Closed - Response provided by NSD-NRC-96-4688.

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/21/96

Selection: [DSER Section] like '19.*' And [NRC Branch] like 'NRR/SPSB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2898	NRR/SPSB	19.1	RAI-OI		5/24/96	Bueter/Freeland	Closed	Action W, Resolved	NSD-NRC-96-4688

RAI Related to DSER Open Item 19.1.3.1-15

1. The staff was unable to find in the revised PRA submittal how the software common-cause failure probabilities were calculated. The following statement is made (see pages 26-25 and 28-20):

"The software common-cause failure evaluations are based on a model that incorporates a number of factors that can affect the development and implementation of software modules. This model yields a resultant software common mode unavailability of 1.1E-05 failures/demand for any particular software module, and a software common mode unavailability of 1.2E-06 failures/demand for software failures that would manifest themselves across all types of software modules derived from the same basic design program in all applications."

The above statement does not provide adequate information to the staff to understand how software failures were modeled in the PRA. Please explain the "model" and the "particular software modules" you are referring to in your statement. Also, please explain how the common mode unavailabilities (1.1E-05 and 1.2E-06) were obtained.

Closed - Response provided by NSD-NRC-96-4688.

2899	NRR/SPSB	19.1	RAI-OI		5/24/96	Bueter/Sancaktar	Closed	Action W, Resolved	NSD-NRC-96-4662

RAI Related to DSER Open Item 19.1.3.1-16

1. It is not clear whether unscheduled maintenance that could affect the unavailability of safety-related "passive" systems is modeled in the PRA. For example, it is mentioned (Table 9-5) that the normally closed air-operated valves in the Core Makeup Tanks are exercise-tested every three months. Although failure unavailabilities are based on quarterly testing, which implies that faulty valves will be repaired upon detection, the valve unavailability due to such unscheduled maintenance is not modeled in the PRA (neither a justification for not modeling it is provided). This seems true, also, for several other systems, such as the PRHR and the ADS. Please address unscheduled maintenance in the PRA.

Closed - PRA updated as necessary. See RAI response.

2900	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action N Action W	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-15

1. The PRA includes layout drawings of the containment and auxiliary buildings only. Please include layout drawings of the annex and turbine buildings.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

2901	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action N Action W	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-15

2. The potential flooding sources in each area are now given by system name. Please provide the maximum water available from each of these flooding sources. For those areas where credit is taken for mitigation actions or drainage through the drain system, please also provide the assumed break flow rates.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

2902	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action N Action W	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-15

3. The SSAR (page 9.5-2) indicates that the fire suppression water system must be able to supply a minimum of 500 gpm for fire hoses plus the demand of any automatic sprinkler. Page 56-11 of the PRA states that fire hose stations in the Annex building are assumed to deliver 125 gpm. Please provide an explanation of the difference between these values and if the assumption of a maximum 125 gpm instead of 500 gpm flow rate has an impact on the result of the flooding analysis.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/21/96

Selection: [DSER Section] like '19.*' And [NRC Branch] like 'NRR/SPSB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2903	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action W	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-15

4. Doors in the AP600 flooding analysis are assumed to remain intact in their normal position (page 56-8). Due to uncertainties in door loading and strengths, and the movement of personnel, this assumption may be optimistic: that is, the door may be open, or fail to remain closed; or the door may be closed, or mistakenly closed by personnel; or due to pressure from the flood water it may not be possible to open or close a door. Please identify the scenarios where the assumption that the doors remain intact in their normal position mitigates the effects of flooding, and justify the assumption that the door will remain intact in that position.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2904	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action W	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-15

5. The Flood Zones and Barriers Plans in the flooding PRA include a '+' symbol indicating "WATER TIGHT FLOOR/ROOF." Please clarify if this indicates that the rooms with that symbol on a given level have a watertight floor, roof, or both. Some cases, assuming that both the floor and roof are water tight, result in inconsistencies between the different level drawings. If such a symbol does not exist for a room, has the possibility of water running through pipe and electrical penetrations between floors been considered?

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2905	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action W	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-15

6. On page 56-10 of the PRA, "I - Assumptions made about the Annex building," states that in Section 3.4 of the SSAR, no credit is taken for floor drains. In the referenced SSAR section on page 3.4-22, however, floor drains are discussed and credited with routing water away from adjacent rooms. Please clarify this apparent discrepancy and identify what impact, if any, the clarification might have on the PRA analysis.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2906	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action W	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-15

7. Please justify the assumption that 1" line breaks can be neglected in the flooding analysis.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2907	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action W	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-17

1. The SSAR indicates that the fire suppression water system must be able to supply a minimum of 500 gpm for fire hoses plus the demand of any automatic sprinkler. It further states that there are 2, 2000 gpm rated pumps and that pressure switches are used to start the pumps to maintain full line pressure. When the 8" fire line in Annex Building 135'-3" North Handling Equipment Area Ruptures, two hours is allowed for the security guard and operators to mitigate the event before the 1E DC batteries in Auxiliary Building non-RCA 66'-6" level would fail. Please identify and justify the flow rate used to estimate this 2 hour time interval, and address the sensitivity of these flow rates on the flood induced DC power failure probability.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

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Selection: [DSER Section] like '19.*' And [NRC Branch] like 'NRR/SPSB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2908	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action N	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-18

1. The assumption that human actions in the control room, credited in the internal events models and thus credited in the flooding analysis, are not seriously impacted by the flood is reasonable. Some human actions credited in the internal event PRA are, however, actions taken outside of the control room. These actions include CCN-MAN02, CVN-MAN04, REG-MAN00, and TCB-MAN02. Please verify that the human actions which are performed outside of the control room are:

a) not credited in the models used in the flood analysis,
b) not in an area impacted by the flood if they are used,
c) or that the impact of flooding on the probability of successfully completing the action, will be negligible.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

2909	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action N	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-19

1. The flooding CDF was quantified using approximately 2,500 applicable cut sets from the internal events analysis. A flooding event changes the failure probability of many normally reliable components to 1.0, and major changes to the dominant cut sets can be expected. Please provide the results of the final flooding scenarios based on quantification of the original logic models, not on the reduced set of 2,500 cut sets.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

2910	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action N	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-20

1. Please verify that, when selecting which initiating event to use in Table 56-5 (e.g. scenario 1 vs. 2 ; 3 vs. 4 ; 5 vs. 6 vs. 7 ; etc.), identical component/system failures were used and only the event trees were changed to identify the most conservative IE to use.

Unlike the scenarios in the selection process above, Scenarios 15 and 16 are quantified using the same initiating event and initiating event frequency, but 15 has a much wider propagation and many more component failures. It is not surprising that sequence 15 has a greater CDF. If 16 is intended to model the partial flood event assuming successful actions to prevent flood propagation to the auxiliary building, it should have a higher initiating event frequency. Please clarify the reason for evaluating both scenarios 15 and 16 in Table 56-5.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

2911	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action N	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-22

1. Due in large part to assumed human mitigating actions, the frequency of flooding the non-RCA Auxiliary building 66'-6" level and failing the 24 hour 1E DC batteries is estimated to be 4.4E-08/yr. Since this appears to be the lowest level in the plant, flooding events caused by check valve failures and backflow through the drain system may occur with comparable or higher frequency. Please provide a discussion indicating why drainage to this lowest level is expected to be less frequent than 4E-08/yr.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

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Date: 11/21/96

Selection: [DSER Section] like '19.*' And [NRC Branch] like 'NRR/SPSB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2912	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action W	NSD-NRC-96-4856

RAIs Related to DSER Open Item 19.1.3.2-22

2. The PRA states that the site is to be chosen such that the annual frequency of occurrence of a flooding event is less then 1.0E-06 year and thus external flooding need not be evaluated. The staff notes that the 1E DC battery rooms are at 66'-6" (the lowest level) in the non-RCA part of the Auxiliary building. The 1E DC Buses are at 82'-6", one level higher. Grade level is 100' so both areas are below grade. Consequently, extreme measures would be necessary to prevent external flooding from failing all 1E DC and preventing any foreseeable recovery. Chapter 2, Site Characteristics, of the SSAR discusses the 10E-06 per year criteria on page 2-2, but appears to exclude external floods from consideration under this criteria. Floods are discussed separately on page 2-6, where information collection requirements are discussed but no criteria are given. Please explain why an external flood will not lead to "severe consequences", or identify where the maximum acceptable annual frequency of 10E-6 for external floods will be addressed in the AP600 documentation.

Closed - Westinghouse responded to this follow-on question in letter NSD-NRC-96-4856 (10/23/96).

Item No.	Branch	DSER Section/ Question	Type	Title/Description Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2939	NRR/SPSB	19.1	RAI-OI		10/8/96	Bueter/Wallace	Closed	~~Action W~~	NSD-NRC-96-4680

Shutdown PRA follow-on question to DSER OI 19.1.3.3-1:

Open item 19.1.3.3-1 requested Westinghouse to justify the low human error rate for inadvertent draining of reactor vessel inventory though the Normal Residual Heat Removal (RHR) system. In response, Westinghouse quantified the likelihood of the operator overdraining the reactor coolant system during drain down operations to reach midloop conditions. Westinghouse also quantified the likelihood that a LOCA could occur by inadvertent opening of Normal RHR valve V024. The staff needs the following information to conclude that the frequency of overdraining the reactor vessel to reach midloop conditions is on the order of E-6 per year, which is much lower than current operating experience.

a. Westinghouse should use operating experience to determine the frequency of the operator inadvertently overdraining the RCS during midloop, or justify that current operating experience is not applicable by describing any AP600 design improvements over current plants.

b. Westinghouse needs to add more information in the shutdown PRA about the available level instrumentation during the drain down process. A description of how the pressurizer wide range level instrumentation is connected to the RCS would be helpful.

c. Westinghouse needs to clarify in the PRA how the two hot leg instruments are connected and clarify whether they share common reference legs.

d. Westinghouse needs to document in the PRA the basis for the beta factor of 0.05 for the hot leg instruments. This value is not listed in Chapter 29 or Section 54.7 of the PRA.

e. For drain down scenario 2, Westinghouse needs to justify the likelihood that the air operated valves fail to close on demand. Westinghouse needs to (1) document the testing interval for these valves and (2) calculate valve unavailability using ((standby failure rate)*(testing interval)/2) or a demand failure rate (such as 1E-3 listed in Table 54-58).

Closed - Response provided by NSD-NRC-96-4680 and revision 1 of RAI response NSD-NRC-96-

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Date: 11/21/96

Selection: [DSER Section] like '19.*' And [NRC Branch] like 'NRR/SPSB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
2940	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	~~Action W~~	NSD-NRC-96-4680	

Shutdown PRA follow-on question (DSER OI 19.1.3.3-2): CLOSED

With respect to Open Item 19.1.3.3-2, Westinghouse responded in Section 54.3.2 of the PRA that the core damage contribution from the cool down period to 350F and 400 psig is negligible compared to hot/cold shutdown and midloop/vessel flange operations. In section 54.3.2, Westinghouse justifies this assumption based on 1) the cool down period to hot shutdown of 350F and 400 psig lasts only eight hours, and (2) all mitigating systems available when the reactor is at power are available except the accumulators. In order for the staff to conclude that this shutdown period does not need to be quantitatively evaluated, the staff is asking Westinghouse to:

a. Modify this argument to indicate that the risk is low compared to the at-power risk. The argument that Westinghouse gave does not directly lead to the conclusion that the core damage risk is low compared to the risk from hot/cold shutdown and midloop/vessel flange operations.

b. Clarify in Section 54.3.2 of the PRA if all actuating signals that are available at full power are also available during this time period. In Table 54-2, it would be helpful if an additional column was created for full power operation to allow for a simple comparison of available signals.

c. Document in Section 54.3.2 of the PRA and Table 54-8 if any maintenance can be performed on any system during this period. Document how these maintenance assumptions will be met (i.e., Tech. Specs., administrative controls, etc.).

Closed - Response provided by NSD-NRC-96-4680.

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
2941	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	~~Action W~~	NSD-NRC-96-4680	

Shutdown PRA follow-on question (DSER OI 19.1.3.3-4): CLOSED

In reference to open item 19.1.3.3-4, the shutdown PRA still does not clearly identify when automatic injection is available from the IRWST and when only manual injection is available (i.e., during draindown to midloop conditions). In Section 54.2.5 of the PRA, the PRA states, "The low hot leg level signal, used to monitor and control the reactor vessel water level during the drain down of the reactor coolant system for the midloop/vessel flange shutdown phase, is available." The PRA goes on to state, "This instrumentation automatically actuates the IRWST MOVs on low level during the midloop/vessel flange shutdown phase." However, the staff identified that in event tree RCS-OD (overdraining of the RCS during draindown to mid-loop), only manual actuation of the IRWST was credited. The IRWST success criteria summary for this event tree (IW2AO and IWRNS) stated that there were no automatic injection signals. The staff also identified that following a loss of offsite power without grid recovery, automatic IRWST injection was not credited. To resolve this inconsistency, the staff is asking Westinghouse to:

a. Document in Section 54.2.5 of the PRA (Actuating Signals and Systems Available) when IRWST automatic injection is available and when only manual IRWST injection is available during midloop/vessel flange operation.

b. Document in Table 54-2 (Systems Availability and Actuating Signals Type) when IRWST automatic injection is available and when only manual IRWST injection is available during midloop/vessel flange operation.

c. Document in Table 54-2 for each available actuation signal what instrumentation is used to deliver the signal (PMS and/or DAS).

Closed - Response provided by NSD-NRC-96-4680.

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Date: 11/21/96

Selection: [DSER Section] like '19.*' And [NRC Branch] like 'NRR/SPSB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2942	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

Shutdown PRA follow-on question (DSER OI 19.1.3.3-6):

In reference to open item 19.1.3.3-6 regarding shutdown maintenance, the staff asked Westinghouse to document all maintenance assumptions and provide cross-reference to the SSAR. Westinghouse responded by clearly documenting testing and maintenance assumptions for specific systems in Table 54-8. In addition, Westinghouse stated that no test and maintenance activities will be conducted during midloop/vessel flange conditions (Section 54.10.2 of the PRA). However, the staff found that Westinghouse provided no cross references to the SSAR. The staff also concluded that maintaining equipment availability (particularly the IRWST) during shutdown is necessary to achieve the low shutdown core damage frequency estimates. Therefore, the staff is requesting Westinghouse to:

a. State in Table 54-8, the maintenance assumptions individually for PMS and DAS. Justify and document in the PRA how these maintenance assumptions will be met (i.e., Tech. Specs., etc.).

b. Justify and document in the PRA how each maintenance assumption for each system in Table 54-8 will be met (i.e., Tech. Specs., etc.).

c. Justify and document in the PRA how the requirement for no test and maintenance activities during midloop/flange operation will be met (i.e., Tech. Specs., etc.).

d. Define and document the assumed "allowed" time to return to a filled condition given a Normal RHR component failure during midloop/vessel flange operation. Document how this "allowed" time will be met (i.e., Tech. Specs., etc.).

e. Clarify and document in the PRA if the "Normal RHR component failure" during midloop/flange operation includes Normal RHR support systems such as CCS and SWS.

Closed - Response provided by NSD-NRC-96-4680.

2943	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	~~Action W~~	NSD-NRC-96-4680

Shutdown PRA:

720.286 The staff is requesting Westinghouse to document in the PRA what AP600 auxiliary and passive systems were examined to identify shutdown initiating events (Section 54.2.1, p. 54-2) and the results of this evaluation.

Closed - Response provided by NSD-NRC-96-4680.

2944	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	~~Action W~~	NSD-NRC-96-4680

Shutdown PRA:

720.287 The staff is requesting Westinghouse to explain the screening process in more detail (Section 54.2.4, p. 54-4). Several screening criteria are mentioned. However, the staff would like Westinghouse to document in the PRA how each of the "at power" initiating events was screened out.

Closed - Response provided by NSD-NRC-96-4680.

2945	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

Shutdown PRA:

720.288 The staff agrees that losses of Normal RHR during refueling are expected to have a negligible addition to the total core damage frequency (Section 54.2.4 of the PRA). However, the concluding statement in that paragraph mentions all losses of water inventory rather than just boil off. Westinghouse needs to evaluate and document in the PRA the potential for LOCA and draining events applicable to the refueling mode.

Closed - Response provided by NSD-NRC-96-4680.

Item No.	Branch	DSER Section/ Question	Type	Title/Description Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
2946	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680	

Resolved

RAIs Related to DSER Open Item 19.1.3.1-17:

1. In page 30-2 of the revised HRA it is stated:

"Because of some degree of uncertainty in the data, in terms of estimates for human error probabilities, it is often useful to perform a sensitivity analysis of the operator actions, during which the estimated human error probabilities, stress levels, dependency levels, or other human performance factors are systematically changed to determine the effect on the human reliability analysis results."

The staff agrees with this statement but could not find such sensitivity analysis in Westinghouse's submittals. Such sensitivity analysis, combined with insights from the importance and uncertainty analyses, would be very helpful to understand the plant's tolerance of human errors and to decide which (if any) human actions require more detailed analysis.

Closed - Response provided by NSD-NRC-96-4680.

Item No.	Branch	DSER Section/ Question	Type	Title/Description Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
2947	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680	

Resolved

RAIs Related to DSER Open Item 19.1.3.1-17:

2. Several operator actions modeled in the ATWS event tree are required to be performed in a very short time. For example: (a) ATW-MAN03 (manually trip the reactor through the PMS in one minute), (b) ATW-MAN04 (manually trip the reactor through the DAS in one minute, given that an earlier attempt to trip the reactor through the PMS fails), (c) ATW-MAN01 (manually step-in control rods in one minute, using the Plant Control System, given that earlier attempts to trip the reactor through the PMS or DAS fail). These three actions have the same "time window" of one minute, defined in page 30-8 as the time from when cues are provided to the time when system failure is expected if no operator action is taken. Westinghouse estimated that approximately one minute is needed to perform both ATW-MAN03 and ATW-MAN04 (30 seconds each). Similarly, Westinghouse estimated that approximately one minute is needed to step-in the control rods (ATW-MAN01) to provide "sufficient" negative reactivity so that opening of the pressurizer safety valves can prevent RCS pressure from exceeding 3200 psig. Please provide the following information.

a. What is the "net" time window to manually trip the reactor through DAS (action ATW-MAN04), given that the attempt to manually trip the reactor through PMS (action ATW-MAN03) fails?
What is the actual time needed to perform this action? What is the slack time for ATW-MAN04 assuming that this action follows an attempt by the operator to manually trip the reactor through PMS (action ATW-MAN03) and failed? How were dependencies evaluated? Please document your response by referring to specific subtasks and analyses and by stating clearly your assumptions.

b. What is the "net" time window to manually step-in the control rods (action ATW-MAN01), given that the attempts to manually trip the reactor through PMS (action ATW-MAN03) and through DAS (action ATW-MAN04) have failed? What is the actual time needed to perform this action? What is the slack time for ATW-MAN01 assuming that this action follows the attempts by the operator to manually trip the reactor through both the PMS (action ATW-MAN03) and the DAS (action ATW-MAN04) have failed? How were dependencies evaluated? Please document your response by referring to specific subtasks and analyses and by stating clearly your assumptions.

c. How were "mechanical faults," such as binding of rods within their channels and rod drive mechanisms failing to disengage, modeled in the AP600 PRA?

d. Westinghouse estimated that approximately one minute is needed to step-in the control rods (ATW-MAN01) to provide "sufficient" negative reactivity so that opening of both pressurizer safety valves can prevent RCS pressure from exceeding 3200 psig. Is this true even when an "adverse" moderator temperature coefficient (MTC) exists, such as at the beginning of fuel cycle? How is this modeled in the ATWS event tree? Please provide calculations of RCS pressure for the limiting transient (e.g., total loss of feedwater without turbine trip) assuming early core life MTCs. How was the failure of one safety valve to open modeled in the ATWS event tree?

Closed - Response provided by NSD-NRC-96-4680.

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/21/96

Selection: [DSER Section] like '19.*' And [NRC Branch] like 'NRR/SPSB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2948	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

Resolved

RAIs Related to DSER Open Item 19.1.3.1-17:

3. Several assumptions about "time windows," used in the HRA, are not clear to the staff. For example, a "time window" of 30 minutes is assumed for events LPM-MAN01/LPM-MAN03/LPM-MAN07 (operator failure to recognize the need for RCS depressurization). A 30 minute "time window" is also assumed for event ADN-MAN01 (operator failure to perform RCS depressurization, given LPM-MAN01/LPM-MAN03/LPM-MAN07 success). Does this imply that the total "time window" for depressurizing the RCS (i.e., recognizing the need for depressurization and manually actuating the ADS) is one hour? Does the 30 minute "time window" for task LPM-MAN01 imply that task ADN-MAN01 (actuate ADS) will not be successful if it is initiated after 30 minutes, even if the estimated actual time to complete task ADN-MAN01 is 20 minutes? Is it true that the need to actuate ADS has been diagnosed when the 30 minute "time window" for task ADN-MAN01 begins? Westinghouse responses to same questions are also needed for the "time window" of 22 minutes for events LPM-MAN02/LPM-MAN04/LPM-MAN08 (operator failure to recognize the need for RCS depressurization during a medium or intermediate LOCA) in combination with the 30 minute "time window" for ADN-MAN01. Please explain.

Closed - Response provided by NSD-NRC-96-4680.

2949	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

Resolved

RAIs Related to DSER Open Item 19.1.3.1-17:

4. The "time window" estimates used in the HRA, could be significantly affected by the various thermal-hydraulic (T-H) uncertainties associated with passive system T-H modeling. Do the "time windows" assumed in the HRA account for T-H uncertainties? Please explain how the issue of T-H uncertainties and their potential impact on "time windows" has been addressed, or will be addressed, in the HRA.

Closed - Response provided by NSD-NRC-96-4680.

2950	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

Resolved

RAIs Related to DSER Open Item 19.1.3.1-17:

5. There seems to be a conflict between the operating philosophy as documented in the SSAR and the operating philosophy as modeled in the PRA. The PRA states that the operator does not need to do any significant knowledge-based diagnosis and decision making (operators will only need to detect alarms, indications, etc., and then will be guided by the symptom-based procedures). On the contrary, in the SSAR (e.g., pages 18.8-14 and 18.6-7) it is stated that operators will be thinking ahead of the plant. This implies that the operators will not just be detecting information and then acting, but that they will be proactive. These two operating philosophies require a very different HRA model. Operating experience has shown that, even when "symptomatic" procedures are used, operators do still diagnose and, in fact, will circumvent procedures, skip ahead to solutions (which Westinghouse plants also allow) when operators know what the event is. This is modeled best by Table 20-3 of the HRA Handbook which includes perception, discrimination, interpretation, diagnosis and first level decision making. Please respond to these comments.

Closed - Response provided by NSD-NRC-96-4680.

2951	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

Resolved

RAIs Related to DSER Open Item 19.1.3.1-17:

6. In the HRA quantification credit is often taken for separate recovery actions by the senior reactor operator (SRO) and the shift technical advisor (STA). The AP600 HRA is assuming a very low degree of dependence between recovery actions for a single subtask. One would argue that common operator training, communication and short time intervals provide strong sources of dependency between operators. For this reason, the THERP methodology does not allow to take credit for more than one recovery and only if there are formal checks. Given that the AP600 PRA credits recovery for every action by the control room crew, will there be formal checks in the procedures for each step for both the SRO and the STA? In addition, according to the HRA Handbook, the "one-of-a-kind checking with alert factors" recovery probability of 8.1E-2 is applicable to normal operating conditions, only. Please explain.

Closed - Response provided by NSD-NRC-96-4680.

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2952	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W Resolved	NSD-NRC-96-4680

RAIs Related to DSER Open Item 19.1.3.1-17:

7. The passive nature of the safety systems in the AP600 design, combined with the reliance of the design on advanced instrumentation and control (I&C), has the potential to change the operator's interactions with the plant (as compared with operating plants) during accident conditions. In addition, operators may intentionally choose to circumvent procedures to avoid economic consequences (e.g., avoid containment steaming, avoid thermal shock due to overcooling or avoid water hammer). Please perform at least a qualitative evaluation of errors of commission that could impact the performance and reliability of the plant during accident conditions. This, also recommended by EPRI in its Utility Requirements Document (URD), is needed to identify potential errors of commission (and their consequences) and ensure that appropriate design certification and operational "requirements" will be used to prevent such errors.

Closed - Response provided by NSD-NRC-96-4680.

2953	NRR/SPSB	19.1	RAI-OI		7/23/96	Bueter/Wallace	Closed	Action W Resolved	NSD-NRC-96-4680

RAIs Related to DSER Open Item 19.1.3.1-17:

8. Westinghouse needs to evaluate the uncertainty associated with human error probability (HEP) estimates (e.g., present the HRA results in terms of a mean value and an associated error factor).

Closed - Response provided by NSD-NRC-96-4680 and the uncertainty analysis (PRA Chapter 51) was submitted.

2954	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W Resolved	NSD-NRC-96-4680

RAIs Related to DSER Open Item 19.1.3.1-17:

9. Is event RNS-V024 (operator opens MOV 024 to replenish the IRWST inventory using the NRHR pumps) included in the revised PRA models? If yes, was its probability revised to address DSER concerns? Please explain.

Closed - Response provided by NSD-NRC-96-4680.

2955	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W Resolved	NSD-NRC-96-4680

RAIs Related to DSER Open Item 19.1.3.1-17:

10. The cues for LPM-MAN02 (failure to recognize the need for RCS depressurization) and CMN-MAN01 (failure to actuate the CMTs) are identical (see page 30-26). Could the operator fail to diagnose the need for CMT actuation believing that only depressurization is needed? What would the operator do first? How does this affect the estimated "actual time" and the diagnosis of either one of these events?

Closed - Response provided by NSD-NRC-96-4680.

2956	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W Resolved	NSD-NRC-96-4680

RAIs Related to DSER Open Item 19.1.3.1-17:

11. The "actual time" it will take the operator to actuate the CMTs (event CMN-MAN01) was estimated to be approximately 20 minutes during a small LOCA and only 8 minutes during a medium LOCA (see pages 30-26 to 30-28). Given that the operator will have to follow the same procedure and perform the same subtasks in both cases, what is the basis for the much shorter "actual time" during medium LOCAs?

Closed - Response provided by NSD-NRC-96-4680.

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Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
2957	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	~~Action W~~ Resolved	NSD-NRC-96-4680

RAIs Related to DSER Open Item 19.1.3.1-17:

12. Multiple alarms, close in time, could impact event diagnosis. By referring to the most risk important human actions, as determined by the importance analysis, please discuss how multiple alarms has been analyzed and accounted for in the HRA models.

Closed - Response provided by NSD-NRC-96-4680.

2958	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

Shutdown PRA HRA:

1. The time window for operator action RCS-MANOD2S (detect failure of automatic closure of air- operated valves CVS-V045 and -V047 and manually close them) is very small (5 minutes). The shutdown PRA, as the PRA for power operation, states that the operator does not need to do any significant knowledge-based diagnosis and decision making (operators will only need to detect alarms, indications, etc., and then will be guided by the symptom-based procedures). Operating experience has shown that, even when "symptomatic" procedures are used, operators do still diagnose and, in fact, will circumvent procedures, skip ahead to solutions (which Westinghouse plants also allow) when operators know what the event is. This is modeled best by Table 20-3 of the HRA Handbook which includes perception, discrimination, interpretation, diagnosis and first level decision making. Please respond to these comments and re-quantify the probability of event RCS-MANOD2S as necessary.

Closed - Response provided by NSD-NRC-96-4680.

2959	NRR/SPSB	19.1	RAI-OI		8/28/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

Shutdown PRA HRA:

2. Regarding DSER open item 19.1.3.3-1, Operator action, RHN-MANDIV, represents the likelihood that the operator would inadvertently drain reactor coolant into the IRWST through Normal RHR valve V-024. The probability of RHN-MANDIV was assigned a value of 1E-5 in Chapter 30 of the PRA. The corresponding task analysis for RHN-MANDIV evaluated the likelihood that the operator selects the wrong control to align Normal RHR and fails to close the diversion path. This probability was then used as a frequency (1E-5 per year) in the shutdown PRA to represent the frequency of overdraining the Normal RHR system through inadvertent opening of V-024. This frequency is very low and suggests that a pipe rupture of Normal RHR is more likely than an inadvertent draindown event.

a. Please search for other potential reactor coolant drain down paths that the operator could create, considering that the reactor coolant system may be pressurized (i.e. during hot shutdown) and document this search in the shutdown PRA.

b. The task analyses for RHN-MANDIV only evaluates the likelihood of the operator selecting the wrong control (V-024) to align Normal RHR. The staff believes that other conditions could create an opportunity to create this drain path (i.e. valve testing, etc.). Please use operating experience to obtain a frequency of inadvertent drain down events or justify in the shutdown PRA why operating experience is not applicable.

c. Please explain why the failure probability of RHN-MANDIV is used, also, as the frequency of overdraining the NRHR system.

d. Same time windows are used in the task analysis of event RHN-ANDIV for both pressurized (i.e., hot shutdown) and non-pressurized (i.e., cold shutdown) conditions. A draindown event when the RCS is pressurized would drain the RCS faster than an event with the RCS non- pressurized. This may require separate analysis of same scenario for hot and cold shutdown conditions, respectively. In addition, please provide the following details in the shutdown PRA for each potential drain path:

i) Define in the shutdown PRA what the term "time window" means for each scenario (time to core damage, time to core uncovery, etc.).

ii) Define in the shutdown PRA what the term "actual time" means for each scenario.

ii) Develop time windows considering both pressurized and non-pressurized conditions.

Closed - Response provided by NSD-NRC-96-4680. Revised response provided in NSD-NRC-96-4803 dated 8/26/96.

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Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
3007	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

720.303
The following questions pertain to **shutdown** operation with the RCS open.

a. According to the SSAR Chapter 6, Stages 1, 2, and 3 of ADS are manually opened PRIOR to initiating RCS draindown operations to midloop conditions. However, no information is provided in the shutdown PRA as to when ADS is opened prior to drain down operations. Please document in the shutdown PRA how this SSAR assumption will be met (i.e Tech. Specs., admin. controls, etc.)?

b. During RCS draindown operation with Stages 1, 2, and 3 open, if Normal RHR cooling is lost, the operator has to manually initiate gravity injection from the IRWST. If the operator actuates gravity injection AFTER the RCS begins to boil, could surge line flooding occur and cause gravity injection to stop? The staff requests Westinghouse to provide analyses verifying that surge line flooding is not a problem, assuming any RCS level.

Closed - Response provided by NSD-NRC-96-4680.

3008	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

720.304
In the sensitivity study for test and maintenance outages **during drained** conditions, only electrical components from the AC and DC power system were included. The staff requests Westinghouse to evaluate through sensitivity studies the impact of unscheduled maintenance of components from the PMS system, Normal RHR, and Normal RHR's support systems.

Closed - Response provided by NSD-NRC-96-4680.

3009	NRR/SPSB	19.1	RAI-OI		8/28/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

720.305
In the **shutdown PRA**, many of the potential boron dilution initiating events are discussed and dropped as being not significant. However, since the shutdown core damage frequency is 5.5E-8 per year, the staff cannot conclude that these initiators have frequencies less than this value. Based on previous screening calculations and the Surry shutdown PRA, the staff requests Westinghouse to quantify the following boron dilution events identified in the AP600 PRA:

a. Chemical and Volume Control System (CVS) during hot shutdown using the DILUTE mode of operation.

b. CVS water injection and boron dilution during plant startup.

c. CVS water injection and boron dilution following a loss of offsite power event, with subsequent startup of the reactor coolant pumps.

d. Steam generator tube rupture event with transfer of water to and from the primary circuit.

Closed - Response provided by NSD-NRC-96-4680 and by Rev. 1 of RAI provided in NSD-NRC-96-4739.
Revision 2 responses provided in NSD-NRC-96-4803 dated 8/26/96.

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Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
3010	NRR/SPSB	19.1	RAI-OI		7/23/96	Bueter/Wallace	Closed	Action W	NSD-NRC-96-4680

720.306
The PRA clearly states that containment integrity is maintained during modes 1 through 4. However, the status of containment during modes 5 and 6 is unclear in the PRA (Section 54.2.5). The PRA states that during midloop operation, containment "closure" is maintained. However, midloop operation is only a subset of shutdown operations in mode 5 with the RCS open. Also, the term "closure" is not defined. The staff assumes that "closure" is different from containment integrity.
The staff is concerned that the results of the PRA do not include the risk impact of a potentially open containment given a core damage event during mode 5. The staff needs this information since events occurring during midloop/vessel flange operation account for over 90% of the shutdown core damage frequency. Therefore, Westinghouse is requested to provide the following information in the shutdown PRA:
a. Westinghouse is requested to document in the PRA how the requirement for containment integrity will be maintained during Modes 1-4 (i.e. Tech. Specs., admin. controls, etc.).

b. Westinghouse is requested to document in the shutdown PRA the status of containment during cold shutdown (mode 5) when the RCS is completely intact. This explanation should include the status of the equipment and personnel hatches, penetrations for operating systems, and temporary instrument and electrical penetrations. This explanation should also describe the operator's ability to close containment should a core damage event occur. Westinghouse is requested to document in the PRA how these assumptions will be met (i.e. Tech. Specs., admin. controls, etc.)

c. Westinghouse is requested to document in the shutdown PRA the status of containment during cold shutdown up to when the refueling cavity is flooded with an open RCS (midloop operation/vessel flange operation is a subset of this phase of shutdown). This explanation should include the status of the equipment and personnel hatches, penetrations for operating systems, and temporary electrical and instrument penetrations. This explanation should also describe the operator's ability to close containment before steaming through an open RCS makes containment conditions intolerable to the operator. Westinghouse is requested to document in the PRA how these assumptions will be met (i.e. Tech. Specs., admin. controls, etc.)

d. For both of the shutdown phases addressed above, Westinghouse is requested to identify in the shutdown PRA the probabilities assumed for containment isolation.

e. For both of the shutdown phases addressed above, Westinghouse is requested to report the fraction of core damage scenarios occurring with an open containment and their combined frequencies.

Closed - Response provided by NSD-NRC-96-4680 and by Rev. 1 of RAI provided in NSD-NRC-96-4739. closed

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
3038	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Freeland	Closed	Action W	NSD-NRC-96-4688

720.307 The staff was unable to find in the revised PRA submittal simplified diagrams for the Protection and Safety Monitoring System (PMS) and for the Plant Control System (PLS) as they were modeled in the PRA. The review of the I&C PRA models without simplified process block diagrams is extremely cumbersome, if at all possible. There
seems to be significant differences in terminology and designations between the PRA and the SSAR (Chapter 7). Such process block diagrams should show the various subsystems, groups, trains, and divisions modeled in the PRA (with the same terminology and designations used in other parts of the PRA). In addition, simplified diagrams showing important components within each block or subsystem, are needed to determine whether important failures have been modeled and to understand important modeling assumptions as well as their implications. This information was available in revision 0 of the PRA. It should be updated and included in the revised PRA, also.

Closed - Response provided by NSD-NRC-96-4688. closed

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. / Ltr Date
3039	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Freeland	Closed	Action W	NSD-NRC-96-4688

720.308 The staff was unable to find in the revised PRA submittal the unavailabilities for the various PMS and PLS I&C subtrees. This information is needed for efficient review of the I&C PRA models. Please provide this information. In addition, please provide lists of the top 200 cutsets for IC11A (line 1 of ADS stage #1 fails to open) and IC12A (line 2 of ADS stage #1 fails to open).

Closed - Response provided by NSD-NRC-96-4688.

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3040	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4680
				720.309 File IRW-IC13.WLK (* WLK files contain results) includes basic event REN-MAN03 in the most important ("top") cut set for subtree IRW-IC13. A manually constructed IRRAS model (developed based on the fault trees contained in WCAP-13275, "AP600 Probabilistic Risk Assessment Fault Trees, Revision 1, 1995) for IRW-IC13 does not generate a cut set including this event. Is REN-MAN03 correctly located in the IWF tree (which is fed by the IRW-IC13 subtree)? Please explain.					
				Closed - Response provided by NSD-NRC-96-4680.					
3041	NRR/SPSB	19.1	RAI-OI		7/23/96	Bueter/Freeland	Closed	Action W	NSD-NRC-96-4688
				720.310 Subtrees IRW-IC13, IRW-IC14, IRW-IC15, and IRW-IC16 all appear to have similar logic. However, IRW-IC13 has some 737 cut sets (according to file IRW-IC13.WLK) while only 4 cut sets are reported for IRW-IC14, IRW-IC15, and IRW-IC16 (according to their .WLK files). Note that the probability of subtree IRW-IC13 is reported to be about 0.004; the probability of subtrees IRW-IC14 through IRW-IC16 is reported to be about 5E-9. Is some of the logic in subtrees IRW-IC14, IRW-IC15, and IRW-IC16 to be neglected in the analysis? If so, please provide a justification for this treatment.					
				Closed - Response provided by NSD-NRC-96-4688.					
3042	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Freeland	Closed	Action W	NSD-NRC-96-4688
				720.311 According to Table 26-2e (trees CVS-IC4 and CVS-IC5, pages 26-79, 80) it appears that subtree MPLL03 should transfer into subtree MESOUTA. The staff was unable to find this transfer in the WCAP-13275 fault trees. Does fault tree MPLL03 affect CVS-IC4 and CVS-IC5? If so, please indicate where MPLL03 should transfer into MESOUTA.					
				Closed - Response provided by NSD-NRC-96-4688.					
3043	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Freeland	Closed	Action W	NSD-NRC-96-4688
				720.312 Table 26-11, page 26-215, SG 1 and 2, FW NR (Narrow Range) FLOW. In general, the SG1 and SG2 sensors support SG1 and SG2, respectively. In the case of the feedwater narrow range flow sensors, it appears that the "SG2" sensors support SG1 and the "SG1" sensors support SG2. Is this characterization correct? Please explain.					
				Closed - Response provided by NSD-NRC-96-4688.					
3044	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Freeland	Closed	Action W	NSD-NRC-96-4688
				720.313 RHR-IC2A, Figure 26-62, page 531. Event TRANS-E2 is found in the RHR-IC2A.WLK file, but there appear to be no transfer labels or logic structures for TRANS-E2 in the WCAP-13275 fault trees. What does this event represent? What files/logic are associated with it?					
				Closed - Response provided by NSD-NRC-96-4688.					
3045	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4680
				720.314 Event tree ATWSC (page 4-153) shows top event PRHR2 as being substituted with SFWA&PRTA. The Westinghouse XSRT.IN file (the * IN files provide instructions to generate cut sets) includes SYS-SFWA and SYS-PRT (and not SYS-PRTA). Should SYS-PRT or SYS-PRTA be used in the substitution for PRHR2? Are the cut sets in file ATWSC developed using SYS-PRT or SYS-PRTA?					
				Closed - Response provided by NSD-NRC-96-4680.					
3046	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4680
				720.315 The data for basic event CASMOD03 (IAS system, page 25-16) has been truncated (in printing). Are there any other contributors to the probability for CASMOD03, or is it the same as that for CASMOD02 (i.e., 2.31E-2)?					
				Closed - Response provided by NSD-NRC-96-4680.					

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3047	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Sankcatar	Closed	Action W	NSD-NRC-96-4680
				720.316 The following pairs of system tops appear at specific event tree nodes: CM2NL/RCN, CM2SL/RCL, CIB/SGHL, CSAX&ADF, CM2AB/RCT, SFWA&PRTA, CN2SL/RCS. Based on the notation, it would be expected that the "&" implies an AND operation between the two top events, yet it appears that sometimes an OR operation is employed (e.g., for SFWA&PRTA). Please provide the logic used to treat each of these top event pairs.					
				Closed - Response provided by NSD-NRC-96-4680.					
3048	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4680
				720.317 Operator actions LPM-MAN03 and LPM-MAN04 are each shown in Chapters 26 and 28 with probabilities of 8.3E-2. However, LPM-MAN03 is shown with a probability of 2.2E-3 in Chapters 30 and 33 (Table 33-6, page 33-45), and LPM-MAN04 is shown with a probability of 6.5E-3 in Chapters 30 and 33 (Table 33-6, page 33-43). Are some of these values incorrect or are all of them used (under different conditions)? If the latter interpretation is correct, please provide the rules used to specify when each value should be used.					
				Closed - Response provided by NSD-NRC-96-4680.					
3049	NRR/SPSB	19.1	RAI-OI		5/24/96	Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4680
				720.318 The fault tree of Figure 11-51 (22AP fault tree with "P" indicating loss of offsite power) includes subtree IC22AB ("B" indicates station blackout). According to the apparent AP600 PRA naming convention, one would expect that subtree IC22AP should be used. Note that the cut sets for IC22AP are very different than those for IC22AB and this can affect a large number of systems/top events. Which subtree should be used? Please explain.					
				Closed - Response provided by NSD-NRC-96-4680.					
3050	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Freeland	Closed	Action W	NSD-NRC-96-4688
				720.319 Table 26-2e (page 26-42). The sub-trees involved with tree IC22AP are AESOUTBP and MESOUTBP. Also, file IC22AP.WLK includes basic events ADBEP002BSA and ADBEP012BSA. Again, this seems to contradict the naming convention. Is the apparent mismatch intentional? If so, should the IC22AP event description use V002B and V012B instead of V002A and V012A? Please explain.					
				Closed - Response provided by NSD-NRC-96-4688.					
3051	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Sancaktar	Closed	Action W	NSD-NRC-96-4680
				720.320 Events TRANS--AA, TRANS--BB, TRANS--CC and TRANS--DD are found in Westinghouse files ADU.WLK, 43AL.WLK, 43ML.WLK, 44AL.WLK and 44ML.WLK. However, the staff was unable to find these events in the WCAP-13275 fault trees. What are these events? Are they basic events or do they involve logic (i.e., are they fault trees)? If they involve logic, please provide the logic and show how they are used.					
				Closed - Response provided by NSD-NRC-96-4680.					
3052	NRR/SPSB	19.1	RAI-OI		5/8/96	Bueter/Freeland	Closed	Action W	NSD-NRC-96-4680
				720.321 Operator action FWN-MAN03 (probability = 1.03E-3) appears in the Westinghouse SFW-IC1P.WLK file. However, this event is not found in the related WCAP-13275 fault trees (pages 921 and 967). On the other hand, basic event FWN-MAN02 (probability = 1.65E-4) does appear in these fault trees. The cut sets for SFW-IC1P generated from the WCAP-13275 fault trees (using IRRAS) match the associated cut sets in the Westinghouse SFW-IC1P.WLK file, except that the SFW-IC1P.WLK results show FWN-MAN03 in place of FWN-MAN02. Based on the descriptions of the events, FWN-MAN03 appears to be more appropriate, since it is relevant to loss of power scenarios (FWN-MAN02 is relevant to loss of feedwater scenarios). Is this correct? Please explain.					
				Closed - Response provided by NSD-NRC-96-4680.					

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3055	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action N	NSD-NRC-96-4856

720.322 Westinghouse stated on page 56-43 that normal RHR pipe rupture scenarios are included in the shutdown LOCA analysis and not in the flooding analysis. The staff notes that RHR pipe rupture was the dominant flooding scenario in the AP600 original flooding analysis. Upon review of the shutdown PRA, the staff found that RHR pipe ruptures are analyzed in the shutdown PRA using event trees. The event trees indicate that operation of the passive systems, including gravity injection, is not affected by any rupture of RHR piping. The staff accepts this method for analyzing RHR pipe ruptures, if Westinghouse can verify that passive system operation is not affected by any rupture of RHR piping. Therefore, the staff is asking Westinghouse to:

a. Document in the Shutdown Flooding PRA that passive system operation is not affected by any rupture of RHR piping for both hot/cold shutdown and midloop/vessel flange operation.

b. Document in the Shutdown Flooding PRA that losses of IRWST inventory from containment can not occur as a result of any rupture of RHR piping for both hot/cold shutdown and midloop/vessel flange operation.

Closed - Westinghouse responded to this question in letter NSD-NRC-96-4856 (10/23/96).

3056	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter/Stevenson	Closed	Action N	NSD-NRC-96-4856

720.323 The flooding scenario following the rupture of the fire water linein Annex Building 135'-3" disables both non-1E dc switchgear rooms, and eventually disables the 1E batteries in the auxiliary building basement if no mitigation is taken. This scenario is included in both the shutdown and at power analyses.

The shutdown analyses stated that the DAS would be failed by the flooding in the switchgear rooms. Distribution panel EDS3-EA-1 (Table 27-4) is included in the failed equipment list. The power analysis stated that the PCS (PLS) would be failed by flooding the switchgear room. Distribution panels EDS1-EA1 and EDS1-EA2 (Table 28-4) are included in the failed equipment list. Thus, it appears that both DAS and PLS will be failed in these flooding sequences.

Since power dependency is explicitly modeled in the logic models the PLS failure due to power failure should be logically included in the requantification. Use of a factor of 100 for scenarios 5 and 6 in the shutdown PRA to account for failures of the DAS and PLS is acceptable, but please identify and explain what values are assigned to the DAS and ALL-IND-FAIL basic events during the evaluation of sequences 15 and 16 in the at-power analysis.

The flooding scenarios in the focused PRA are developed from the scenarios in the base-line flooding PRA. In four of the five scenarios in Table 52-39 the flood damages no safety equipment, the only differences are damage to non-safety equipment. Comparison of the conditional CDF (CCDF) given the initiating event indicate that sequences 1 and 3 have the same CCDF and sequences 2 and 4 have the same CCDF. Since the focused study does not credit non-safety equipment, please explain why all four are not the same (SBO) scenario.

Closed - Westinghouse responded to this question in letter NSD-NRC-96-4856 (10/23/96).

3235	NRR/SPSB	19.1	RAI-OI	?	7/23/96	Bueter	Closed	Closed	

This database item has been removed. It was a duplicate of item #3055.

3237	NRR/SPSB	19.1	RAI-OI	?	7/23/96	Bueter	Closed	Closed	

This database item has been removed. It was a duplicate of item #3056.

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3241	NRR/SPSB	19.1	RAI-OI		10/24/96	PRA-1/Flood/Bueter	Closed	Action W	NSD-NRC-96-4856
				RAI Related to DSER Open Item 19.1.3.2-21: The flooding scenarios in the focused PRA are developed from the scenarios in the base-line flooding PRA. In four of the five scenarios in Table 52-39 the flood damages no safety equipment, the only differences are damage to non-safety equipment. Comparison of the conditional CDF (CCDF) given the initiating event indicate that sequences 1and 3 have the same CCDF and sequences 2 and 4 have the same CCDF. Since the focused study does not credit non-safety equipment, please explain why all four are not the same (SBO) scenario.					
				Closed - Westinghouse responded to this question in letter NSD-NRC-96-4856 (10/23/96).					
3242	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-1/Bueter	Action W	Action W	
				720.324 As part of the AP600 PRA review, the staff is performing confirmatory re-quantification of selected accident sequences. To compare with Westinghouse's results, lists of top minimum cutsets for each of the sequences quantified by Westinghouse are needed. Each list should provide an adequate number of cutsets to be used for a meaningful comparison of results (e.g., top 50 cutsets or, if less than 50, top cutsets contributing to 99% of the sequence frequency). Please provide such lists.					
3243	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-1/Bueter	Action W	Action W	
				720.325 An important insight, reported by Westinghouse in Chapter 59 (Results) of Revision 6 of the PRA, is that the contribution of the steam generator tube rupture (SGTR) event to the at power core damage frequency (CDF) is very small (about 1.5%). If true, given the low total CDF estimate for the AP600 design, this is a significant improvement with respect to operating pressurized water reactors (PWRs). One of the reasons, reported by Westinghouse, for the small contribution of SGTR to CDF is that "the first line of defense is the startup feedwater system (SFWS) and chemical and volume control system (CVCS)." Please provide documentation showing that operation of CVCS only provides adequate flow for inventory control and that there is sufficient time to stabilize the plant before core uncovery occurs. Such documentation should clearly state all major assumptions made in the analysis.					

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3244	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-1/Boeter	Action W	Action W		

720.326 Please provide the following information concerning the steam generator tube rupture (SGTR) event tree model.

a. The description of event CVCS in Section 4.10.2 (page 4-29), entitled "Event Tree Model and Nodes," is not referring to the function (i.e., inventory control) CVCS is assumed to serve in the SGTR event tree. Please explain.

b. Event SGISO (failure to isolate the ruptured steam generator (SG)), as modeled by Westinghouse, does not include the possibility of an unisolable leak (e.g., stuck open SG power-operated relief valves (PORVs)/safety valves or atmospheric dump valves (ADVs)). If an unisolable path exists from the ruptured SG to the atmosphere, the differential pressure between the primary and the secondary side will remain high since the ruptured SG could be at or near atmospheric pressure. This scenario would require decreasing the primary pressure down to the atmospheric pressure to terminate the leak prior to depletion of the available RCS inventory. Please explain why this scenario is not modeled in the SGTR event tree. If your answer is that unisolable leaks cannot occur, include appropriate documentation to support this assumption.

c. Please list and describe the specific AP600 design features that reduce the probability of SGTR events resulting in containment bypass with respect to operating reactors. Such features should improve SGTR diagnosis, increase the time available for operator actions, lead to less reliance on operator actions and reduce the likelihood of challenging the secondary side safety valves. Please refer to applicable event tree models and related analyses.

d. It is stated in page 6-13 (Chapter 6, Success Criteria Analysis, of the PRA) that "the passive response paths on the SGTR event tree pessimistically model active SG isolation, which would not be required, since turbine trip would provide an alternative to active SG isolation." However, this is not a "pessimistic" modeling of the "passive response paths." On the contrary, credit is taken for SG isolation in all "passive response paths," as indicated by the multiplication of the frequency of these paths by the probability of failure to isolate the ruptured SG (events CIB and CIB/SGHL). Please clarify.

e. Following the SGTR event, an Emergency Safeguard Features (ESF) actuation signal is generated due to low pressurizer pressure. The ESF signal is supposed to trip the RCPs and actuate the CMTs. However, a statement made in page 4-27 implies that the event can be terminated by use of nonsafety systems and operator actions only. Please explain.

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f. It seems that there are discrepancies between the PRA modeling of the SGTR accident sequences and the AP600 Emergency Response Guidelines (see Guideline AE-3, Rev. 1, July 28, 1995). For example, Table 2-1 of the ERGs shows CMT and PRHR actuation and need for operator action to isolate them when certain conditions are met. Please provide documentation explaining how applicable emergency procedures are incorporated into the PRA models of SGTR accident sequences.

g. The following statement is made (see Chapter 4, page 4-28 of Revision 2 of the PRA): "Analyses show that no overfilling occurs and no automatic depressurization is actuated, even if multiple tubes have ruptured in the steam generator." Please provide documentation justifying the reason for not modeling in the PRA multiple SGTR events. This should include, in addition to the frequency of the initiating event, time windows available for required operator actions to isolate the faulted SG and stabilize the plant.

h. Please provide documentation justifying the reason for not modeling in the PRA SGTR coincident with loss of offsite power.

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3257	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-1/Bueter / Schulz	Action W	Action W		

720.327 Followon RAIs related to DSER Open Item 19.1.3.1-1. In a previous RAI Westinghouse was asked to evaluate the impact of several issues raised, by the staff on the estimated PRHR tube rupture frequency.
The staff reviewed Westinghouse's response and identified the need for the following additional information:
a. It is stated that "The Technical Specifications will allow plant operation with a small PRHR HX leak and will require that the plant be shutdown before a PRHR HX leak could degrade into a tube rupture." What are the criteria (and supporting analyses) that Westinghouse is proposing to use in deciding when to shut the plant down before a PRHR HX leak could degrade into a tube rupture. Do these criteria take into account the much higher stresses that would be established in the PRHR HX tubes in case of an accident that requires the PRHR to operate? These higher stresses could cause the pre-existing defect (which causes the leak) to reach its "critical" size and become a rupture, thus adversely affecting the availability of the PRHR when demanded to operate to mitigate an accident. Please explain.
b. According to Revision 4 of the SAR (see pp. 16.1-459 through 16.1-465), it appears that the plant will be allowed to operate for an as-yet unspecified period of time even if the PRHR is declared inoperable. The implication of Action D.2, p. 16.1-464, is that this period of time may be indefinite if it is verified that the startup feedwater system (SFWS), in addition to the steam generators, is operable. Please clarify. If the Technical Specifications allow for T/M unavailability of the PRHR due to leaks, such unavailability should be included in the fault tree model.
c. Although several design features which reduce the likelihood of primary side corrosion are listed, none address the issue of secondary side corrosion which could accelerate under stagnant conditions by allowing local concentrations of ions or oxygen. Please list (with adequate explanation) the AP600 design and operational features that aim at preventing secondary side corrosion (e.g., how proper chemistry is ensured?). How do such features compare to features used to prevent secondary side corrosion in steam generator tubes?
d. Item (e) of Westinghouse's response lists several PRHR HX leak detection features. Please clarify the location of the pressure transmitter, its function and the type of information it provides about the leak. Also, please provide documentation showing that the RCS leak detection instruments stated in your response (i.e., containment sump level, containment radiation, and RCS mass balance) can be used to quantify reliably small leaks, such as those that would be allowed by your proposed technical specification.
e. Westinghouse argues that choosing a PRHR HX tube rupture event frequency of 5E-4/yr (a factor of 10 lower than the EPRI PRA KAG-recommended ALWR SGTR frequency of 5E-3/yr) is conservative. Some of these arguments seem to be valid. However, it is not clear that a factor of 10 reduction is justified, let alone conservative. One could attempt to rationalize the factor of 10 reduction by looking at the SGTR events that have occurred and screening out those events that are not applicable to the PRHR HX tubes. Due to these uncertainties in the assumed PRHR HX tube rupture frequency, please evaluate the sensitivity of PRA results to the PRHR HX tube rupture initiating event frequency and report the results in Chapter 59 of the PRA (Results and insights).
f. One of the arguments used to show that the PRHR HX tube rupture frequency is smaller than the frequency of SG tube ruptures, item (c), is that the primary side water has low oxygen content while the secondary side is "not really stagnant" and its temperature is normally low. Although, the lower oxygen content and low water temperature of the primary side do greatly reduce the problem of primary water stress corrosion cracking (PWSCC), it is less clear that the argument holds for the outside diameter stress corrosion cracking (ODSCC). The data for low temperature behavior of Alloy 690TT exposed to secondary water chemistry and crevice conditions are very limited or nonexistent. It is not clear what Westinghouse is referring to regarding the statement that the secondary side is "not really stagnant." Is there a circulating pump? If so, is the operation of this pump necessary to reduce the likelihood of corrosion on the secondary side of the tubes? Please explain.

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3258	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-1/Bueter	Action W	Action W		

720.328 Followon RAI related to DSER Open Item 19.1.3.1-2. Westinghouse's response to RAI #2, related to this open item, did not address the question. The question was: "The staff was unable to find in the revised PRA submittal a description of the analysis with enough details to understand how the contributions to intermediate, medium and large LOCA, reported in Section 3.5.3, were calculated. Please provide a clear description of the analysis (including assumptions, data and associated bases) used to calculate ADS spurious actuation frequencies and their contributions to the various LOCA initiating event frequencies." Please explain how the methodology, given in Section 26.5.3, for calculating the frequency of spurious ADS actuation from a 2 out of 2 signal train applies to the fault tree ADS-IC83 which uses a 2 out of 4 logic.

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3259	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-1/Bueter	Action W	Action W	\	

720.329 Followon RAI related to DSER Open Item 19.1.3.1-4. DSER Open Item 19.1.3-4 concerns LOCA sequences with impaired containment. These sequences (leading to endstate #2) were not quantified in Revision 0 (pre-DSER) of the PRA. The staff requested Westinghouse to either modify the event trees by modeling recovery actions or count these sequences as leading to core damage with open containment. Westinghouse responded by removing the top event CI (containment not impaired) from the event trees in the revised PRA. According to Westinghouse, top event CI is not needed because analyses show that sufficient water for long-term recirculation cooling of the core is available for at least 2.7 days when containment isolation fails. Westinghouse argued that the use of a 24 hour mission time for long-term cooling was adequate for all accident scenarios.

In a follow-up RAI the staff asked Westinghouse to either show (e.g., through a bounding analysis) that the residual risk (beyond 24 hours) is not significant or extend the event tree models beyond 24 hours (to a point in time where it can be argued that the residual risk is not significant). Although statements made in Westinghouse's response to the follow-up RAI seem to agree with the staff regarding the need to look beyond 24 hours (e.g., "core damage is assumed...if core damage is anticipated following 24 hours without further system or operator action"), the residual risk issue was not addressed. If long-term cooling must continue (e.g., beyond the estimated 2.7 days), what actions are needed to be performed by the operator and what systems must be available to perform these actions? How important are such actions and systems to plant risk? Please provide documentation, including important assumptions.

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3260	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-1/Bueter	Action W	Action W		

720.330 Followon RAIs related to DSER Open Item 19.1.3.1-6. DSER Open Item 19.1.3-6 concerns the mission time (assumed to be 24 hours) for long-term cooling in sequences such as those where the reactor is initially maintained at high pressure (i.e., non-LOCA sequences with the start-up feedwater or the passive RHR available). Examples are:

a. Sequences ending with startup feedwater system operating: Operator action is needed to replenish the condensate storage tank (CST).

b. Sequences ending with passive RHR operating: The IRWST water starts boiling (Westinghouse analyses show that it reaches saturation in about one to two hours). If the evaporated IRWST inventory does not return to the IRWST, which is probable, the heat exchanger will be uncovered at some time (estimated by Westinghouse to be beyond 24 hours) and the IRWST inventory must be replenished or the plant must be depressurized to continue core cooling by recirculation. What actions are needed to be performed by the operator to bring the plant to cold shutdown conditions and what systems must be available to perform these actions? How important are such actions and systems to plant risk? Please provide documentation, including important assumptions.

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3261	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-1/Bueter	Action W	Action W		

720.331 Followon RAIs related to DSER Open Item 19.1.3.1-6. Another example of sequences, categorized as successful in Revision 2 of the PRA, which need additional development or explanation are sequences with an open path outside containment (e.g., sequences initiated by a steam line break or a stuck open secondary side valve with consequential SGTR) and normal RHR available for long-term core cooling. These "success" sequences, as modeled in Rev 2, end with normal RHR operating. This scenario eventually requires replenishing the IRWST or sump inventory (because it is lost through the open path outside containment). This is true (although to a lesser extent) also in sequences when IRWST injection and passive sump recirculation is used instead of normal RHR. Can recirculation (either using the normal RHR pumps or by gravity) be established for long-term cooling when a considerable amount of inventory has been lost (and in some sequences continues to be lost during passive recirculation) through the open path to the atmosphere? What actions are needed to be performed by the operator and what systems must be available to perform these actions? How important are such actions and systems to plant risk? Please provide documentation, including important assumptions.

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3262	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-1/Bueter	Actio.a W	Action W	\	

720.332 Followon RAI related to DSER Open Item 19.1.3.1-10. The staff requested Westinghouse to assess and document the applicability of generic failure data to the AP600 design. While check valves are not unique to the AP600, the conditions under which they will be operating in the plant are substantially different from those in current generation nuclear plants. The concern is that they will have to open on demand under very low differential pressures after long periods of being held closed by fluid at RCS temperature, pressure and chemistry. Westinghouse responded that this is not an issue anymore because some check valves in the IRWST injection line have been replaced with squib valves which "reduces the number of check valves and eliminates the high differential pressure normal operating environment that the valves in the IRWST injection and recirculation lines would experience in the previous design." However, Westinghouse's response does not fully address the fact that these valves will have to open on demand under very low differential pressures (because gravity is being used instead of pumps). Useful information could be obtained by looking at failure histories of check valves at operating nuclear power plants that must open on demand under small differential pressures, such as the check valves used as vacuum breakers at the turbine exhaust lines for BWR HPCI and RCIC systems (the lines that go from the turbine exhaust to the suppression pool). Please address this question in your next response. Also, as part of the insights section (Chapter 59), please include sensitivity studies that assess the impact of potentially higher failure rates for such check valves to risk.

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3263	NRR/SPSB	19.1	RAI-OI		9/19/96	PRA-1/Bueter	Action W	Action W		

720.333 Followon RAI related to DSER Open Item 19.1.3.1-13. The staff requested Westinghouse to explain why in calculating the common cause failure (CCF) probability of the IRWST injection line check valves, MGL factors from Revisions 5 and 6 of EPRI's Utility Requirements Document (URD) were used. A beta factor of 0.026 is recommended in Revisions 5 and 6 of the URD which is much lower than the value recommended in previous revisions of the URD (i.e., 0.17) as well as in previous PRAs (e.g., System 80+). Westinghouse responded that the reduced value of the beta factor for check valves reported in Revisions 5 and 6 of EPRI's URD, as compared to the value recommended in previous revisions of the URD, was due to better understanding of individual events involving failure of check valves at nuclear power plants. It is further stated in Westinghouse's response that "EPRI found no common cause failures to open of check valves (other than failure modes unique to testable check valves)." Please explain what you mean by "failure modes unique to testable check valves" and why such failure modes do not apply to check valves used in the AP600 design. An NRC-sponsored evaluation of LER and NPRDS events, which occurred between 1980 and 1993 at operating nuclear power plants, has found about twenty (20) events involving common cause failure of check valves. Such events should be reviewed for applicability to the AP600 design. Please state the AP600 design and operational features which ensure that such events cannot occur with AP600 check valves.

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Selection: [item no] between 3427 And 3427 Sorted by Item #

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3427	NRR/SPSB	19.1	RAI-OI		10/30/96	Ohkawa	Closed	Action W	NSD-NRC-96-4808	

SRXB

Question 720.279

In Q720.11, the staff asked for documentation describing how the results of MAAP 4 calculations compare against the results of best estimate thermohydraulic codes, like RELAP. The staff also asked Westinghouse to document the margins from core damage given by the success criteria as calculated by MAAP 4 for each of the initiating event groups. The staff understands that this comparison will be performed using the NOTRUMP computer code. However, the staff further understands that NOTRUMP was not used for design basis calculations for ATWS and large LOCA events, and that MAAP cannot model ATWS and large LOCA scenarios appropriately.

The following is a clarification to Q720.11. Westinghouse should provide the results of comparison calculations for the following very small and small LOCA success path scenarios using NOTRUMP and MAAP. Westinghouse should also run comparison calculations for the following ATWS and large LOCA success path scenarios using MAAP and the corresponding design basis accident computer code. The selection of these scenarios (with the exception of ATWS) was based on Westinghouse's October 20, 1993 response to Q720.109. These success paths are assumed to lead to peak clad temperatures less than 2200 F and core uncovery.

a. Two inch small LOCA in the direct vessel injection line assuming only the following equipment is available: reactor coolant pump trip, full depressurization using one Stage 1 line and one out of two lines of the fourth stage of the ADS, 1 out of 2 accumulators, 1 out of 2 gravity injection lines, containment integrity, and reactor pressure vessel water recirculation.

b. One inch small LOCA in the pressurizer SRVs assuming only the following equipment is available: reactor coolant pump trip, 1 out of 2 CMTs, full depressurization using one Stage 1 line and one out of two lines of the fourth stage of the ADS, 1 out of 2 gravity injection lines, containment integrity, and reactor pressure vessel water recirculation.

c. Pressurizer level instrumentation line break (less than 3/4 in.) assuming only the following equipment is available: reactor coolant pump trip, 1 out of 2 CMTs, full depressurization using three out of four lines of the second and third stages of the ADS, one line of gravity injection, containment integrity, and reactor pressure vessel water recirculation.

d. Very small LOCA in the pressurizer level instrument Lines (less than 3/4 in.) assuming only the following equipment is available: full depressurization using 2 out of 2 accumulators, full depressurization using four out of four second and third stage lines of the ADS, one out of one gravity injection line, containment integrity, and reactor pressure vessel water recirculation.

e. Large LOCA in the direct vessel injection line assuming only the following equipment is available: 1 out of 2 core accumulators, 1 out of 2 gravity injection lines, reactor pressure vessel water recirculation, and containment integrity.

f. ATWS assuming only the following equipment is available: turbine trip via DAS, manual boration, two out of two pressurizer safety valves, and passive RHR.

For each scenario above, provide the following code output from the PRA and DBA code calculations:

a. Time-dependent plots of the collapsed liquid level and the mixture level in the core,

b. The total time period in which the core is uncovered,

c. Time-dependent plots of the peak clad temperature for the hottest and average fuel rods.

Item No.	Branch	DSER Section/ Question	Type	Title/Description Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
				d. A time-dependent plot of the reactor system power, e. Time-dependent plots of the secondary system pressure for both steam generators, f. For each of the three phases of ADS blowdown (subcooled blowdown, two-phase blowdown, and superheated blowdown), a table listing the time of onset and completion of each phase along with the mass remaining in vessel during the depressurization transient, g. The mass of coolant remaining in-vessel prior to reflood or core recovery, and h. A table listing the actuation times for each passive safety feature. The response should include a comparative analysis of the differences between the values predicted by MAAP versus the values predicted by NOTRUMP, including an explanation of the source of the differences and a discussion of their significance. Closed - Response provided in letter dated 8/30/96.						
3895	NRR/SPSB	19.1	RAI-OI	720.334 The information documented in the submittal (Chapter 57, August 9, 1996, Internal Fire Analysis Draft Markup) does not state clearly the major assumptions made in modeling containment fires. The containment is a single fire area which is made up of several compartments, called fire "zones" (see Table 57-5). It appears that the several fire zones, included in the single containment fire area, are treated in the analysis similarly to the fire areas for fires outside the containment. However, it is not clear whether and how fire propagation between fire zones is modeled and what is the technical basis for distinguishing the different fire scenarios. Please provide this information, including relevant assumptions, in Chapter 57 of the PRA.	10/2/96	PRA-1/Fire/Bueter	Action W	Action W		
3896	NRR/SPSB	19.1	RAI-OI	720.335 One item of concern in the certification of advanced reactor designs is the impact of smoke, hot gases, and fire suppressants on safe shutdown equipment (especially due to sensitive electronics) and on operator actions. The issue is amplified when these elements migrate into other fire areas. Please address this issue in the internal fire PRA	10/2/96	PRA-1/Fire/Bueter	Action W	Action W		

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Selection: [DSER Section] like '19.*' And [NRC Branch] like 'NRR/SPSB' Sorted by Item #

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3897	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W		
				720.336 Burning liquids in the AP600 turbine building could fall on the floor at elevation 100 feet. It is not clear where they would go. Is it possible that the oil could enter the Auxiliary Building? Experience (the Vandellos turbine building fire) has shown that burning oil can spread away from the point of origin. Is it possible that an important scenario, which involves damage to other fire areas within the Auxiliary Building, was not analyzed because of the analysis groundrule preventing treatment of scenarios involving fire spread to multiple zones? Please explain and identify the specific design features that prevent this from happening.						
3944	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W		
				720.337 Westinghouse claims that a conservative "bounding" assessment of the impact of fire-induced "hot shorts" was performed. The staff, however, cannot conclude that Westinghouse's analysis is bounding (based on the information provided in the submittal) because (a) the probability of a hot short (from NUREG/CR-2258) is based on judgment, (b) it is assumed that the probability of multiple hot short events is state-of-knowledge independent, and (c) the analysis does not refer to the specific AP600 PRA I&C models and logic diagrams to recognize any important features, and/or operational requirements, that are incorporated into the design to prevent fire-induced hot shorts from causing spurious actuations which in turn could have a significant impact on plant safety. Please explain the mechanism of fire-induced spurious actuations using the AP600 PRA I&C models, the location of the various I&C cabinets, the location of power source interfaces and assumptions made on cable characteristics and routing. Also, please list important design features, and/or operational requirements, that prevent fire-induced hot shorts from causing spurious actuations.						
3945	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W		
				720.338 Successful injection of core makeup tanks (CMTs) requires trip of all reactor coolant pumps (RCPs). Please address in your analysis the impact of an inadvertent RCP start (after initial trip) and whether this can occur in the same scenario with other fire-induced failures of safety equipment, such as spurious actuation of ADS valves, and/or with fire-induced control room indications.						

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3946	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W	
				720.339 Fire-induced failure of containment isolation valves was not treated in the analysis. It was assumed that such failure has no effect on core damage frequency (see item h, page 57-15) because "the PRA core damage success criteria are specified assuming failure of containment isolation." However, based on information presented in Appendix A of the AP600 PRA, it does not appear that containment isolation failure was assumed in determining success criteria for sump recirculation. Furthermore, the frequency of a core damage scenario with containment isolation failure should be investigated to determine its contribution to offsite consequences. Please explain.					
3947	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W	
				720.340 The barrier failure probabilities used in the analysis (see Table 57-3) assume certain inspection program for the barriers, which includes a sampling scheme and timing. Please include this information in Chapter 57 (internal fires) of the AP600 PRA.					
3948	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W	
				720.341 The first paragraph of Section 57.2 implies that probabilistic criteria allow screening of compartments with high fuel loading which do not contain PRA-credited equipment, regardless of propagation potential. However, the analysis does consider rooms where the only concern appears to be fire spread (e.g., the lube oil room in the turbine building). Is the statement in Section 57.2 correct? Please explain.					
3949	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W	
				720.342 The basis for defining the fire scenarios in Table 57-4 is not always clear, given the groundrules established in qualitative analysis Step 10. For example, what is the basis for distinguishing between scenarios 1 and 2 for Fire Area 1200 AF 01? Both do not seem to involve spurious signals. Does one involve propagation out of the area? Scenarios involving propagation out of the fire area should indicate explicitly which adjacent fire area is being treated (especially since the second bullet on page 57-4 states that simultaneous propagation to multiple areas is not treated). Please explain.					

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3950	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W	
				720.343 Note 2 in Table 57-8 indicates that some components modeled in the focused PRA are failed for some initiators. Does this refer to the damage listed in the 4th column of the table, or are there additional component losses not explicitly identified? Please explain.					
3951	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W	
				720.344 Does the Remote Shutdown Workstation (RSW) panel have identical controls and displays of plant status information needed during accidents as the Main Control Room (MCR) panels? If the answer is no, please list the major differences and explain how they affect safety system redundancy and reliability, including operator actions.					
3952	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W	
				720.345 Could a fire in the Main Control Room (MCR) affect the transferring of control to the Remote Shutdown Workstation (RSW) panel? Could control be inadvertently transferred back to the MCR? If the answer to these questions is no, please explain by referring to design features and characteristics (e.g., fiber optic switches and location of power sources to the light transmitters and receivers) and to emergency operating procedures and criteria for transferring control to the RSW. If the answer to any of the above two questions is yes, please model the failure to transfer control in the PRA.					
3953	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W	
				720.346 The Main Control Room (MCR) evacuation scenario related to fire in the overhead mimic panel (scenario CR5) appears to be relevant for all control room panels, not just the overhead mimic panel. If all panels are included, the contribution from CR5-like scenarios should be around a factor of 30 higher. Please explain why fires in other control room panels are not postulated to lead to MCR evacuation and plant shutdown via the Remote Shutdown Workstation.					

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3954	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W		

720.347
The frequency of fires in the AP600 Main Control Room (MCR) was assumed to be a factor of 10 smaller than the frequency of fires in a conventional control room. This was based on the observation that most of the cables in the AP600 MCR are low voltage as compared with conventional control room cables. Although it appears reasonable to postulate some reduction in fire frequency as compared with conventional control rooms, is there any data to support the reduction factor used? It is mentioned (page 57-26) that Westinghouse cable heatup calculations have shown that ignition is very improbable because low-voltage cables do not produce enough energy to heat up the cables. Do, the above mentioned Westinghouse calculations, account for insulation aging or the presence of dust? How many of the 12 MCR fires in the NSAC/178L database were initiated by electrical faults leading to ignition of the insulation? Please provide a breakdown of causes. Also, for each event, please provide: an event description, the basis for determining that the fire was not severe and the suppression time.

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Item No.	Branch	DSER Section/ Question	Type	Title/Description Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
3955	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W	!	

720.348
The analysis of scenarios CR4 and CR4A (which treat the spurious actuation of both divisions of the ADS Stage 1 valves due to a fire in the Dedicated Control Panel) and Scenario CR4B (which treats the spurious opening of the Stage 4 valves) does not explain the mechanisms of spurious actuation using PRA I&C models and SAR I&C logic diagrams and does not state assumptions made. Furthermore, this analysis does not identify important features, and/or operational requirements, that are incorporated into the design to prevent fire-induced hot shorts from causing spurious actuations which in turn could have a significant impact on plant safety. Please provide this information. In your response please include answers to the following questions:

* Is Scenario CR4B properly labeled as a sensitivity case? Or should its results be added into the total CDF for the MCR?

* Can a fire that has grown past the incipient stage in the panel affect all ADS valves? If so, is there a technical basis for analyzing only a subset of fire effects?

* The effective spurious actuation probability for all three MCR scenarios (CR4, CR4A and CR4B) is 0.01. On the other hand, for scenarios outside the MCR, a value of 0.06 is used for a single spurious actuation of an ADS Stage 4 valve (leading to an medium LOCA) and a value of 0.0036 is used for the spurious actuation of both ADS Stage 4 valves (leading to a large LOCA). Is there a difference between the MCR and ex-MCR scenarios necessitating the different approaches to quantify the likelihood of spurious actuations?

3956	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W		

720.349
The analysis assumes that MCR fires will not affect multiple cabinets, at least until control is transferred to the remote shutdown workstation. What design features are provided to ensure that fires do not propagate from one cabinet/panel to another?

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
3957	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W		

720.350
It is not clear which model was used to estimate the non-suppression probability. The analysis text refers to EPRI's HCR model, but the reference supplied is for ASEP (see p. 57-33, Ref. 57-6).

a) Please explain how the non-suppression probability of 0.0034 (used in the analysis) was obtained.

b) Aside from questions of its applicability to the analysis of fire suppression activities, the ASEP model deals with diagnosis (and non-response), as does EPRI's HCR model. Some time is required to actually extinguish the fire. Analysis of suppression time data indicates a mean suppression time of about 8 minutes. Does the AP600 analysis address the time required to extinguish the fire? Please explain.

c) Westinghouse's interpretation of the Sandia cabinet fire tests appears to differ from Sandia's interpretation. In questions to the utility regarding the South Texas fire risk assessment, the Sandia team stated that "Sandia sponsored large scale enclosure tests have shown that cabinet fires generate such intense smoke that within 6-8 minutes control of the plant from the control room would be virtually impossible. These tests were conducted with control room ventilation rates of up to ten room changes per hour." Please explain the basis for selecting a 15 minute time window (before control room evacuation is required).

d. Are there procedures dealing with control room evacuation? If so, what are the criteria used for determining when evacuation should/must take place?

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
3958	NRR/SPSB	19.1	RAI-OI		10/2/96	PRA-1/Fire/Bueter	Action W	Action W		

720.351
A fire in the MCR might cause spurious indications as well as spurious equipment operation. Such spurious indications could prompt incorrect operator actions ("errors of commission"). Please discuss the likelihood and potential consequences of such fire-induced errors. In your discussion please list important design features and operational requirements which help prevent such "errors of commission."

Item No.	Branch	DSER Section/ Question	Type	Title/Description Status Detail	Last Mod Date	Resp Eng	(W) Status	NRC Status	Letter No. /	Ltr Date
3959	NRR/SPSB	19.1	RAI-OI		10/17/96	PRA-1/Fire/Bueter	Action W	Action W		

720.352
The Auxiliary Building contains the MCR as well as various I&C, battery and electrical equipment areas. Do any of the later areas share a common ventilation system and/or air intake system with the control room? If the answer is yes, please explain what barriers (including operator actions) prevent smoke, hot gases and fire suppressants from reaching the MCR and how such barriers can be defeated.

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Selection: [DSER Section] like '5*' And [NRC Branch] like 'NRR/PERB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Ltr Date
515	NRR/PERB	~~5.2.4.8~~ 2.3.1-1	DSER-Ot		10/25/95	Closed	~~Action N~~	NTD-NRC-95-4433	4/3/95

Westinghouse should add COL Action Item 2.3.1-1 to the SSAR, requiring that the COL applicant provide site-specific information. (Regional Climatology)

Closed - Combined License item included in SSAR Revision 2, section 2.3.6.1.

Resolved

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Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Ltr Date
516	NRR/PERB	2.3.2-1	DSER-OI		10/18/95	Closed	~~Action W~~ Resolved	NTD-NRC-95-4433	4/3/95
				Westinghouse should add COL Action Item 2.3.2-1 to the SSAR, requiring that the COL applicant provide site-specific information. (Local meteorology)					
				Closed - Combined License item included in SSAR Revision 2, section 2.3.6.2.					
519	NRR/PERB	2.3.4-1	DSER-OI		8/20/95	Closed	Resolved	NTD-NRC-95-4433	4/3/95
				Westinghouse should provide additional information in the SSAR related to X/Q values.					
				Closed - Information item included in SSAR Rev 2, section 2.3.4.					
520	NRR/PERB	2.3.5-1	DSER-OI		10/2/96	Closed	~~Action W~~ Resolved		
				Westinghouse should provide the methodology used to determine the average annual long-term relative concentration at the site boundary for evaluation of the AP600 radioactive waste treatment system design.					
				Closed - Section 2.3.5 of Revision 5 indicates that the specified valve was selected to envelop atmospheric conditions at most U.S. sites.					
521	NRR/PERB	2.3.5-2	DSER-OI		8/20/95	Closed	Resolved	NTD-NRC-95-4433	4/3/95
				Westinghouse should add COL Action Item 2.3.5-1 to the SSAR for COL applicant to provide the long-term diffusion estimates.					
				Closed - Combined License item included in SSAR Revision 2, section 2.3.6.5					
522	NRR/PERB	2.3.6-1	DSER-OI		8/20/95	Closed	Resolved	ET-NRC-93-4027	12/9/93
				Westinghouse should provide the methodology used to determine the set of bounding control room relative concentrations, including considerations given to potential radioactive material release points and pathways to the main control room following a DBA.					
				Closed - Response provided in Revision 1 to RAI 470.3.					

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Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Ltr Date
1839	NRR/PERB	2.3.1-1	DSER-COL		10/18/95	Closed	~~Action N~~	NTD-NRC-95-4433 4/3/95
				2.3.1-1 The COL applicant should provide the identified site-specific regional meteorological information.				Resolved
				Closed - Combined License item included in SSAR Revision 2, section 2.3.6.1.				
1840	NRR/PERB	2.3.2-1	DSER-COL		10/18/95	Closed	~~Action N~~	NTD-NRC-95-4433 4/3/95
				2.3.2-1 The COL applicant should provide the identified site-specific local meteorological information.				Resolved
				Closed - Combined License item included in SSAR Revision 2, section 2.3.6.2.				
1841	NRR/PERB	2.3.3-1	DSER-COL		8/20/95	Closed	~~Proposed~~	NTD-NRC-95-4433 4/3/95
				2.3.3-1 The COL applicant should provide the onsite meteorological measurements program for staff review.				Resolved
				Closed - Combined License item included in SSAR Revision 2, Section 2.3.6.3.				
1842	NRR/PERB	2.3.5-1	DSER-COL		8/20/95	Closed	~~Proposed~~	NTD-NRC-95-4433 4/3/95
				2.3.5-1 The COL applicant should provide the site-specific long-term diffusion estimates.				Resolved
				Closed - Combined License item included in SSAR Revision 2, section 2.3.6.5.				
518	NRR/TERB PERB	2.3.3-1-	DSER-OI		9/28/95	Closed	Resolved	NTD-NRC-95-4433 4/3/95
				Westinghouse should add COL Action Item 2.3.3-1 to the SSAR for COL applicant to provide the onsite meteorological measurements program for staff review.				
				Closed - Combined License item included in SSAR Revision 2, Section 2.3.6.3.				

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Selection: [NRC Branch] like 'NRR/PERB' Sorted by DSER Section

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail / Last Mod Date	(W) Status	NRC Status	Letter No. / Ltr Date
2033	NRR/PERB	13.	DSER-OI50	6/3/96	Action W	Action W	
				37. Habitability of Technical Support Center The staff is concerned with the acceptability of the habitability requirements specified by Westinghouse for the TSC under accident conditions. Westinghouse has proposed that a detailed task analysis be performed post-certification to determine disposition of TSC staff when the facility is not habitable. The staff believes that this analysis should be performed pre-certification. (See DSER Open Item 13.3-4)			
1218	NRR/PERB	13.3-1	DSER-OI	8/20/95	Closed	Resolved	NTD-NRC-95-4464
				Westinghouse should add COL Action Item 13.3-1 to the SSAR for the COL applicant to address site-specific aspects of emergency planning.			
				Closed -A COL information item to address the site specific aspects of emergency planning was added to the SSAR, Section 13.3 (Revision 3).			
1948	NRR/PERB	13.3-1	DSER-COL	8/20/95	Closed	Resolved	NTD-NRC-95-4464
				13.3-1 The COL applicant should address emergency planning issues.			
				Closed -A COL information item to include the emergency planning issues was added to the SSAR, Section 13.3 (Revision 3).			
1219	NRR/PERB	13.3-2	DSER-OI	9/16/96	Closed	Action W	N
				Westinghouse should incorporate information on emergency response facilities.			
				Closed - A cross reference was provided in Chapter 13.3 (Revision 9) that directs the reader to the locations in the SSAR where the OSC, TSC, onsite decontamination facility and any other emergency response facilities are located.			
1220	NRR/PERB	13.3-3	DSER-OI	8/7/96	Closed	Action W	N
				Westinghouse should describe the size of the technical support center (TSC).			
				Action W - The conformance of the TSC with NUREG-0696 will be addressed in Chapter 18.11 Conformance of the TSC with NUREG-0696 is addressed in Section 18.8 of the SSAR, Revision 9.			
1221	NRR/PERB	13.3-4	DSER-OI	8/7/96	Closed	Action W	N
				Westinghouse should demonstrate the ability of the TSC to meet habitability requirements.			
				Action W - The conformance of the TSC to meet the habitibility requirements of NUREG-0737 when electrical power is available will be addressed in Chapter 18.11 Conformance of the TSC with NUREG-0737 is addressed in Section 18.8 of the SSAR, Revision 9.			
1222	NRR/PERB	13.3-5	DSER-OI	9/3/96	Resolved	Action W	NSD-NRC-96-4805
				Westinghouse should demonstrate the ability of the main control room to support the appropriate number of staff when the TSC is unavailable.			
				Action W - The ERG development will provide the task analysis necessary to determine the number of staff required to support main control room operations and the required TSC functions. The capability of the MRC to support this staffing level will be provided. Resolved - Per DCP/NRC0589, this item will be closed with submittal of th at-power ERGs.			
1223	NRR/PERB	13.3-6	DSER-OI	7/23/96	Closed	Action W	N
				Westinghouse should reference RG 1.101.			
				Action W - Westinghouse will reexamine the applicability of RG 1.101 to the AP600. If deemed appropriate, RG 1.101 will be included as an applicable reference to Section 13.3 of the SSAR. As indicated in Section 13.3 of the SSAR, emergency planning is the responsibility of the Combined License Applicant. No reference to RG 1.101 will be added.			

[Disagree]

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Item No.	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Ltr Date
R1553	NRR/PERB	20.4-30	DSER-OI		9/16/96	Closed	Resolved		

To address Issue III.A.1.2, Westinghouse should provide for the onsite support center (OSC) in the AP600 design because Section 18.2.1.1.2.6 of the SSAR describes the functions and location of the OSC. This should be reflected in Item (2)(xxv) of Section 1.9.3 of the SSAR to demonstrate resolution of this issue for the AP600 design.

Closed - Issue III.A.1.2 has been specifically addressed in the Rev. 7 of Section 1.9.4 of the SSAR, and included in Table 1.9-2, Listing of Unresolved Safety Issues and Generic Safety Issues, according to what was agreed with the NRC. The item is closed.

NRC Status Update provided in September 5, 1996 letter:
SSAR Revision 7, (4/96) of Section 1.9.3(2)(xxv) on page 1.9-22 of the SSAR specifically addresses issue III.A.1.2, Emergency Response Facilities - provides for a technical support center (TSC) and operational support center (OSC) - and included III.A.1.2 in Table 1.9-2 (Sheet 20 of 55, page 1.9-143), "Listing of Unresolved Safety Issues and Generic Safety Issues." Resolved

R1554	NRR/PERB	20.4-31	DSER-OI		9/16/96	Closed	Resolved		

Westinghouse should address the responsibility of the COL applicant in the resolution of Issue III.A.3.3.

Closed - SSAR Table 1.9-2, sheet 21, Revision 7, indicates that Issue III.A.3.3 is not a design issue since it is covered by NRC regulations or guidelines on operation. The communications system design is addressed in the SSAR section 9.5.2. Subsection 9.5.2.5 addresses off site communications interfaces. COL applicant requirements related to Issue III.A.3.3 that are not interfaces with the design certification for AP600 are addressed in the combined license application process and are not included in the SSAR.

NRC Status Update provided in September 5, 1996 letter:
SSAR Revision 8, (6/96) of Section 9.5.2.5.2 on page 9.5-17 of the SSAR indicates that "the emergency response facility communication system, including the crisis management radio system, will be addressed by the Combined License applicant. Resolved

1532	NRR/PERB	20.4-9	DSER-OI		6/5/96	Closed	Action W		

For Issue II.B.2, Westinghouse should explicitly discuss the relationship between shielding and the source term used for accident analysis in Chapter 15 of the SSAR. Also, Westinghouse should provide the SSAR sections that discuss shielding and source terms, and should define the related responsibilities of the COL applicant.

Closed - Issue II.B.2 has been specifically addressed in the Rev. 7 of Section 1.9.4 of the SSAR. The item is closed.

1604	NRR/PERB	20.7-46	DSER-OI		9/11/96	Closed	Action W	NSD-NRC-96-4818	

For Generic Letter 89-15, Westinghouse should identify emergency response data for the AP600 design.

Action W - The participation in the emergency response data system (ERDS) program is a COL applicant responsibility. WCAP-13559 will be revised to reflect the role of the AP600 ERGs in identifying key plant parameters which could be used by a COL applicant in the development and participation in this program.
Closed - WCAP-13559 Rev. 1 issued September 11, 1996

515	NRR/PERB	5.2.4-8	DSER-OI		10/25/95	Closed	Action N	NTD-NRC-95-4433	4/3/95

Westinghouse should add COL Action Item 2.3.1-1 to the SSAR, requiring that the COL applicant provide site-specific information. (Regional Climatology)

Closed - Combined License item included in SSAR Revision 2, section 2.3.6.1.

AP600 Open Item Tracki ıg System Database: Executive Summary

Date: 11/4/96

Selection: [NRC Branch] lil e 'NRR/PERB' Sorted by DSER Section

Item No	Branch	DSER Section/ Question	Type	Title/Description / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Ltr Date
519	NRR/PERB	2.3.4-1	DSER-OI		8/20/95	Closed	Resolved	NTD-NRC-95-4433	4/3/95
				Westinghouse should provide additional information in the SSAR related to X/Q values.					
				Closed - Information item included in SSAR Rev 2, section 2.3.4					
520	NRR/PERB	2.3.5-1	DSER-OI		10/2/96	Closed	Action W		
				Westinghouse should provide the methodology used to determine the average annual long-term relative concentration at the site boundary for evaluation of the AP600 radioactive waste treatment system design.					
				Closed - Section 2.3.5 of Revision 5 indicates that the specified value was selected to envelop atmospheric conditions at most U.S. sites.					
1842	NRR/PERB	2.3.5-1	DSER-COL		8/20/95	Closed	Proposed	NTD-NRC-95-4433	4/3/95
				2.3.5-1 The COL applicant should provide the site-specific long-term diffusion estimates.					
				Closed - Combined License item included in SSAR Revision 2, section 2.3.6.5					
521	NRR/PERB	2.3.5-2	DSER-OI		8/20/95	Closed	Resolved	NTD-NRC-95-4433	4/3/95
				Westinghouse should add COL Action Item 2.3.5-1 to the SSAR for COL applicant to provide the long-term diffusion estimates.					
				Closed - Combined License item included in SSAR Revision 2, section 2.3.6.5					
522	NRR/PERB	2.3.6-1	DSER-OI		8/20/95	Closed	Resolved	ET-NRC-93-4027	12/9/93
				Westinghouse should provide the methodology used to determine the set of bounding control room relative concentrations, including considerations given to potential radioactive material release points and pathways to the main control room following a DBA.					
				Closed - Response provided in Revision 1 to RAI 470.3.					
1989	NRR/PERB	20.4-12	DSER-COL		9/16/96	Closed	Resolved		
				20.4-12 The COL applicant should address the dedicated telephone lines and short-range radio communication systems for the emergency support facilities in Issue III.A.3.3.					
				Closed - Issue III.A.3.3 appears as a non Design Certification issue Table 1.9-2, Listing of Unresolved Safety Issues and Generic Safety Issues. The Itch can be considered closed.					
				NRC Status Update provided in September 5, 1996 letter: SSAR Revision 7 (4/96) of Table 1.9-2, "Listing of Unresolved Safety Issues and Generic Safety Issues," (Sheet 21 of 55) on page 1.9-144, indicates Item III.A.3.3, Communications as not a design issue. However, the resolution of Item 1554, above, indicates communications will be addressed by the Combined License applicant. Resolved					

UPDATE AS OF: 11/13/96

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
216	NRR/HHFB	13.1-1	DSER-OI		6/18/96	Closed	Closed ✓	R-5 (5/31/95) SSAR CHAP 13
CHAP 13 - RELATED COL ITEM				Westinghouse should add COL Action Item 13.1-1 to the SSAR for the COL applicant to address the organizational structure of the COL applicant.				
				Closed - The COL information item to include the management structure of the COL organization was added to the SSAR, Ssection 13.1, Revision 3 Identified as closed in OIT database markup by Jim Bongarra, provided on 6/10/96.				
217	NRR/HHFB	13.2-1	DSER-OI		6/18/96	Closed	Closed ✓	NTD-NRC-95-4464 R-5 (5/31/95) SSAR CHP. 13
				Westinghouse should add COL Action Item 13.2-1 to the SSAR for the COL applicant to address personnel training by the COL applicant.				
				Closed -The COL information item to include the management structure of the COL organization was added to the SSAR, Section 13.2 (Revision 3) Identified as closed in OIT database markup by Jim Bongarra, provided on 6/10/96.				
225	NRR/HHFB	13.5.1-1	DSER-OI		9/19/96	Closed	Action W	PENDING RESOLUT. OF CHAP 18, SECT 5 PROCEDS
IB: RELATED TO OI # 1526				Westinghouse should add COL Action Item 13.5.1-1 to the SSAR for the COL applicant to address administrative procedures for the plant.				
				Closed - A COL information item was added to Chapter 13.5, Revision 3, of the SSAR to address administrative proceedures for the plant 6/10/96 - NRC believes issue remains open pending resolution of the procedures section of Chapter 18.				
226	NRR/HHFB	13.5.2-1	DSER-OI		9/19/96	Closed	Action W	PENDING RESOLUT. OF CHAP 18, SECT 5 PROCEDS
IB: RELATED TO OI # 1526				Westinghouse should add COL Action Item 13.5.2-1 to the SSAR for the COL applicant to address operating and maintenance procedures for the plant.				
				Closed - A COL information item was added to Section 13.5, Revision 3, of the SSAR to address the development of operating and maintainance procedures for the plant. 6/10/96 - NRC believes issue remains open pending resolution of the procedures section of Chapter 18.				

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
302	NRR/HHFB	18.2.3.1-1	DSER-OI		7/26/96	Closed	~~Action W~~ ACT. N	REV 9 SSAR CH 18 (8/9/96)

4/

Westinghouse should identify the starting points for each human factor engineering (HFE) activity (i.e., those aspects of the analysis or design that are inputs to the HFE program, rather than the result of HFE analyses and evaluations). For example, if functions have been allocated to plant personnel, not as part of the HFE analysis, the allocations should be identified.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95:

Action W -- Send a draft of the associated document and/or revision to the applicable SSAP sections.

Action W
Per NRC letter of 3/22 and conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95: Action W -- Revise SSAR section 18.8.2 to include details of initial assumptions and starting points for the HFE design process and to clarify inputs to the HFE design process, any assumptions and the initial function allocations and control room resource selections (URD forms input to the HFE process and basis for these assumptions). Draft of these revised SSAR sections will be sent to the NRC. Revision to MMIS Development Plan will be needed to ensure consistency.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96.

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
303	NRR/HHFB	18.2.3.2-1	DSER-OI		7/26/96	Closed	Resolved ~	REV. 9 SSAR ch. 18. (8/9/96)

4/

Westinghouse should provide information regarding the human system interface (HSI) team composition. Westinghouse should

- identify team members with procedures background
- identify team memebers with safety system engineering background
- identify team memebers with RAMI background
- provide the specific qualifications of the team members

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95:

Action N -- Send clarification on the requirement to have a safety system engineer on the HFE design team. Clarification on the qualification requirements of the safty system engineer (Certificate from the Board of Certified Safety Professionals in System safety???).

Resolved

Per NRC letter of 3/2/96. Formal SSAR revision required for closure.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95: Action N -- Send clarification on the requirement to have a safety system engineer on the HFE design team. Clarification on the qualification requirements of the safety system engineer (Certificate from the Board of Certified Safety Professionals in System safety???)

Westinghouse has prepared a draft revision to SSAR section 18.4 that addresses the DSER open items, except for the clarification information needed from the NRC on the System Safety Engineer. As soon as this information is provided, it will be added to the draft SSAR section 18.4 and the draft section will be sent to the NRC.

Action N -- NRC to review 18.4 markup and provide feedback.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
304	NRR/HHFB	18.2.3.2-2	DSER-OI		7/26/96	Closed	Resolved ✓	ESV-9 SSAR CH-18 (5/9/96)	

#1

Westinghouse should provide information regarding the job descrip- tions and assignments of HSI personnel.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95:

Action W – Names of assigned personnel are not needed. Send a draft of the associated document and/or revision to the applicable SSAR sections.

Resolved

Per NRC letter of 3/2/96. Formal SSAR revision required for closure.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95: Names of assigned personnel are not needed. Send a draft of revision to the applicable SSAR sections. A revision ot the MMIS Development Plan will be needed for consistency (post 5/31, pre 8/1).

Westinghouse sent (via fax) a draft revision to SSAR 18.4 to the NRC HHFB.

Action N-NRC action is to review and provide feedback.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1305	NRR/HHFB	18.2.3.3-1	DSER-OI		7/26/96	Closed	~~Action W~~ Rec'd 10/8/96	REV 9, SSAR CH-18, (8/9/96)

#1

Westinghouse should provide information regarding the HFE process and procedures. Westinghouse should provide WCAP-12601, WCAP-9817, OCS-GES-011, and any additional documents that describe the aspects of the HFE design process identified in this criterion, such as the "Design Reviews and Configuration Control Documents" identified in Westinghouse's response to Q620.51.

Meeting of 3/9/95:

Westinghouse will make available (place in the Rockville office) to the NRC an example of a system that went through the process (design process) such as the one we passed around at the meeting (AWARE Intermediate Design Review Report). The AP600 MMIS Development Plan will also be made available after it is revised.

Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

Action W

Subcriteria 1c. and 1d. need to be addressed. SSAR revision to 18.8.2 is needed. Needs to be consistenet with MMIS Development Plan.

Meeting of 3/9/95: Westinghouse will make available (place in the Rockville office) to the NRC an example of a system that went through the process (design process) such as the one we passed around at the meeting (AWARE Intermediate Design Review Report). The AP600 MMIS Development Plan will also be made available after it is revised. Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

4/18/95 – NRC Conference call (J Bongarra, J O'Hara, J Higgins,S Kerch, J Easter, K Kloes): NRC had reviewed WCAP 12601 and 9817 which was made available in the Rockville office. NRC questions as transmitted by 4/10/95 fax were addressed. Action N: NRC action to re-evaluate based on the 4/18/95 discussions. NRC stated that additional information will likely be needed to eventually close open items 18.2.3.3-n. In the case of 18.2.3.3-1, the first four bullets under the criteria may require additional information, although the NRC would provide further feedback. Solution may be to revise Q620.14 and or Q620.15 (map to respective procedure in WCAP 12601) to address these first four bullets and then to revise the MMIS Development Plan to be consistent.

Action N: NRC action to re-evaluate based on the 4/18/95 discussions. Following NRC feedback/clarification, Westinghouse will send a draft of document addressing this open item.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1306	NRR/HHFB	18.2.3.3-2	DSER-OI		7/26/96	Closed	~~Action W~~ RESOLVED	REV. 9, SSAR CH. 18 (8/9/96)

#1

Westinghouse should provide information regarding the HFE process management tools. Westinghouse should provide WCAP-12601, WCAP-9817, OCS-GES-011, and any additional documents that describe the tools and techniques to be used by the team during the HFE design process as identified in this criterion.

Meeting of 3/9/95:

Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

Action W:

Need to address the tracking of design review action item chits and the use of the human factors checkilist. Refer to NRC letter of 3/22/96.

Meeting of 3/9/95: Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

4/18/95 -- NRC Conference call (J.Bongarra, J.O'Hara, J.Higgins,S.Kerch, J.Easter, K.Kloes): NRC had reviewed WCAP 12601 and 9817 which was made available in the Rockville office. NRC questions as transmitted by 4/10/95 fax were adressed. Action N: NRC action to re-evaluate based on the 4/18 discussions. NRC stated that additional information may be needed to eventually close open items 18.2.3.3-n; NRC to provide further feedback. In the case of 18.2.3.3-2, solution may be to revise Q620.15 to provide additional details on the tools and techniques (e.g., review forms) that are used by the HFE design team to ensure they fullfill their responsibilities. Revise the MMIS Development Plan to be consistent.

Action N: NRC action to re-evaluate based on the 4/18/95 discussions. Following NRC feedback/clarification, Westinghouse will send a draft of document addressing this open item.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: {NRC Branch} like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1307	NRR/HHFB	18.2.3.3-3	DSER-OI		7/26/96	Closed	~~Resolved~~ ACT.N	RSV 9. SSAR CH-18 (8/9/96)	

#1

NB RSV 9 = deficient

Westinghouse should provide information regarding the integration of design activities. Westinghouse should provide WCAP-12601, WCAP-9817, OCS-GES-011, and any additional documents that describe the integration of the design activities of the HFE design process as identified in this criterion.

Meeting of 3/9/95:

Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

Resolved

Per NRC letter of 3/22/96. SSAR revision needed for closure.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96.

Meeting of 3/9/95. Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

4/18/95 -- NRC Conference call (J Bongarra, J O'Hara, J Higgins,S Kerch, J Easter, K Kloes): NRC had reviewed WCAP 12601 and 9817 which was made available in the Rockville office. NRC questions as transmitted by 4/10/95 fax were adressed. Action N: NRC action to re-evaluate based on the discussions. NRC stated that additional information may be needed to eventually close open items 18.2.3.3-n. In the case of 18.2.3.3-3, solution may be to revise the MMIS Development Plan by adding a section 4.5 titled "Integration of HFE and Other Plant Design Activities" and describe examples of integration and how it is done (e.g., SSD sections 7, 8; allocations; FBTA output and verification of I & C needs; ERG's, ERG I & C task analysis;). Another option would be to include this info in Q620.15 revision and then later in the development plan for consistency.

Action N: NRC action to re-evaluate based on the 4/18/95 discussions. Following NRC feedback/clarification, Westinghouse will send a draft of document addressing this open item by 6/23/95.

AP600 Open Item Tracking System DataBase: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1308	NRR/HHFB	18.2.3.3-4	DSER-OI		7/26/96	Closed	~~Resolved~~ ACT-N	REV. 9, SSAR CH. 18 (8/9/96)	

#1

NB: REV 9 = DEFICIENT

Westinghouse should provide information regarding the HFE program milestones. Westinghouse should provide WCAP-12601, WCAP-9817, OCS-GES-011, and any additional documents that describe the HFE program milestones as identified in this criterion.

Meeting of 3/9/95:

Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

Resolved

Per NRC letter of 3/22/96. Formal SSAR revision needed for closure.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96.

Meeting of 3/9/95. Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

4/18/95 -- NRC Conference call (J Bongarra, J O'Hara, J Higgins,S Kerch, J Easter, K Kloes): NRC had reviewed WCAP 12601 and 9817 which was made available in the Rockville office. NRC questions as transmitted by 4/10/95 fax were adressed. Action N: NRC action to re-evaluate based on the discussions. NRC stated that additional information may be needed to eventually close open items 18.2.3.3-n. In the case of 18.2.3.3-4, solution may be to revise the MMIS Development Plan by adding a subsection to section 3.0 titled "Relative Schedule of HFE Program Milestones" (use the simplified MMIS Design block diagram that was presented during March 9 meeting) and revise the Scheduled FOAKE Tasks and Committments subsection to reflect the current FOAKE schedule (use the high level bar graph schedule)

Action N: NRC action to re-evaluate based on the 4/18/95 discussions. Following NRC feedback/clarification, Westinghouse will send a draft of document addressing this open item by 6/23/95.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1309	NRR/HHFB	18.2.3.3-5	DSER-OI		7/26/96	Closed	Resolved	RAV 9 SSAR CH 18 (8/9/96)	

#1

Westinghouse should provide HFE documentation. Westinghouse should provide WCAP-12601, WCAP-9817, OCS-GES-011, and any additional documents that describe the HFE documentation and associated procedures as identified in this criterion.

Meeting of 3/9/95

Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

Closed

NRC considers this open item "resolved" per NRC letter of 3/22/96, but they do not specify any further actions that are needed such as a SSAR revision. I believe that no further action is required.

Meeting of 3/9/95. Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

4/18/95 – NRC Conference call (J Bongarra, J O'Hara, J Higgins,S Kerch, J Easter, K Kloes). NRC had reviewed WCAP 12601 and 9817 which was made available in the Rockville office. NRC questions as transmitted by 4/10/95 fax were adressed. Action N: NRC action to re-evaluate based on the discussions. NRC stated that additional information may be needed to eventually close open items 18.2.3.3-n. In the case of 18.2.3.3-5, further clarification is needed from NRC.

Action N: NRC action to re-evaluate based on the 4/18/95 discussions. Following NRC feedback/clarification, Westinghouse will send a draft of document addressing this open item by 6/23/95.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1310	NRR/HHFB	18.2.3.3-6	DSER-OI		7/26/96	Closed	~~Resolved~~ ACT-N	RGV 9, SSAR CH 18, (8/9/96)	

#1

NB: RGV 9 = DEFICIENT

Westinghouse should provide information regarding the compliance of the HFE subcontractor with HFE requirements. Westinghouse should provide WCAP-12601, WCAP-9817, OCS-GES-011, and any additional documents that describe how the subcontractor's compliance with HFE requirements is verified as identified in this criterion.

Meeting of 3/9/95.

Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

Resolved

Per NRC lwetter of 3/22/96. Formal SSAR revsion is needed.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96.

Meeting of 3/9/95. Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, 9817 and the MMIS Development Plan and provide us feedback.

4/18/95 -- NRC Conference call (J Bongarra, J O'Hara, J Higgins,S Kerch, J Easter, K Kloes): NRC had reviewed WCAP 12601 and 9817 which was made available in the Rockville office. NRC questions as transmitted by 4/10/95 fax were adressed. We stated that HFE considerations were given to subcontractors through (1) the fact that WCAP 12601 is given to all subcontractors and all must follow its procedures in content and format. Ex. AP3.1 sections 2g, 5, 6b and 7 are examples of HF considerations ; and (2) through the fact that general design criteria are given to all subcontractors that are effected by them - Ex. I & C General Design Criteria, section 7. The technical document control procedures govern the distribution and release of AP600 documents (AP 6.1, 6.2 and 6.3). Provide this answer in revision to Q620.15 as Jim suggested or add a subsection to section 4.0 of the MMIS Development Plan.

Action W is to make the I & C General Design Criteria Document available in the Rockville office for their review and also proof that it went to applicable subcontractors.

4/25/95 -- Fax sent to J Bongarra and J O'Hara that provides a response to this open item. The I&C General Design Criteria document was placed in the Rockville office (by A.Sterdis, attending an NRC meeting in Rockville).

Action N: The NRC to review the response and determine whether it is acceptable/provide feedback.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96. This includes SSAR 18.2.3.5, HFE in Subcontractor Efforts.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1311	NRR/HHFB	18.2.3.4-1	DSER-OI		9/19/96	Closed	Action N ✓	Rev. 9. SSAR CH 18 (8/9/96)

#1

NB: Rev 9 = deficient

Westinghouse should provide information regarding the HFE issues tracking system availability. Westinghouse should submit WCAPs-9565, 12601, and 9817, as well as any additional documents that describe the tracking system and checklists as identified in this criterion.

Meeting of 3/9/95:

Westinghouse described our design issues tracking system. Tracking of HFE related design issues is not a separate entitiy but is part of the overall AP600 design process and design issues tracking. Processes for tracking design issues, including HFE issues, are (1.) the DCP process as described in WCAP 12601, AP3.2; (2.) the design review process as described in WCAP 12601, AP 3.5 and WCAP 9817 (human factors checklist); (3.) Use of SSDs - AP 3.1 ansd AP3.14 of WCAP 12601. Also a writers guide exists for SSDs. The Interface Requirements or the Human Factors Requirements of the SSDs will be used to document and track HFE related issues not currently addressed by the design and identified prior to DCP or design review. Final closure of these issues is verified in the validation of the HSI versuses their functional requirements. (This description also applies to open items 18.2.3.4-2 thru 4-4.)

Action W:

Per NRC letter of 3/22/96, the NRC stated that they found our HFE issues Tracking System described in the draft of 18.4.4 as acceptable, but they wanted to know when they could visit us and verify its implementation. At this point, the red team decided that our system (as described in the draft of 18.4.4) had some problems and might not pass an inspection from the NRC. Internal meetings are planned to discuss modifications to the tracking system.

Meeting of 3/9/95: Westinghouse described our design issues tracking system. Tracking of HFE related design issues is not a separate entitiy but is part of the overall AP600 design process and design issues tracking. Processes for tracking design issues, including HFE issues, are (1.) the DCP process as described in WCAP 12601, AP3.2; (2.) the design review process as described in WCAP 12601, AP 3.5 and WCAP 9817 (human factors checklist); (3.) Use of SSDs - AP 3.1 ansd AP3.14 of WCAP 12601. Also a writers guide exists for SSDs. The Interface Requirements or the Human Factors Requirements of the SSDs will be used to document and track HFE related issues not currently addressed by the design and identified prior to DCP or design review. Final closure of these issues is verified in the validation of the HSI versuses their functional requirements. (This description also applies to open items 18.2.3.4-2 thru 4-4.) Also consider using the URD compliance database as another method used to track design issues.

4/18/95 -- NRC Conference call (J.Bongarra, J.O'Hara, J.Higgins,S.Kerch, J.Easter, K.Kloes): NRC had reviewed WCAP 12601 and 9817 which was made available in the Rockville office. NRC questions as transmitted by 4/10/95 fax were adressed. NRC stated to be sure to include in the revision to Q620.15 a description of the cutoff point for closure of design review action item chits (shipment of the product -- if any oustanding chits, then per NQA-1 the customer must be informed.)

Instead of revision 2 to Q620.15, Westinghouse will sent a draft of SSAR section 18.4.4 (HFE Issue Tracking) to the NRC HHFB.

Action N-NRC action is to review this draft and provide feedback.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96. This includes SSAR 18.2.4, Human Factors Engineering Issues Tracking.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1312	NRR/HHFB	18.2.3.4-2	DSER-OI		9/19/96	Closed	Action N ✓	Rev. 9, SSAR CH. 18 (8/9/96)

#1

NB: Rev. 9 = deficient

Westinghouse should provide information regarding the HFE issues tracking system method. Westinghouse should submit WCAPs-9565, 12601, and 9817, as well as any additional documents that describe the method for handling HFE issues as identified in this criterion.

Action W:

Per NRC letter of 3/22/96, the NRC stated that they found our HFE issues Tracking System described in the draft of 18.4.4 as acceptable, but they wanted to know when they could visit us and verify its implementation. At this point, the red team decided that our system (as described in the draft of 18.4.4) had some problems and might not pass an inspection from the NRC. Internal meetings are planned to discuss modifications to the tracking system.

Meeting of 3/9/95: Westinghouse described our design issues tracking system. Tracking of HFE related design issues is not a separate ent tiy but is part of the overall AP600 design process and design issues tracking. Processes for tracking design issues, including HFE issues, are (1.) the DCP process as described in WCAP 12601, AP3.2; (2.) the design review process as described in WCAP 12601, AP 3.5 and WCAP 9817 (human factors checklist); (3.) Use of SSDs - AP 3.1 ansd AP3.14 of WCAP 12601. Also a writers guide exists for SSDs. The Interface Requirements or the Human Factors Requirements of the SSDs will be used to document and track HFE related issues not currently addressed by the design and identified prior to DCP or design review. Final closure of these issues is verified in the validation of the HSI versuses their functional requirements. (This description also applies to open items 18.2.3.4-2 thru 4-4.) Also consider using the URD compliance database as another method used to track design issues.

4/18/95 -- NRC Conference call (J Bongarra, J O'Hara, J Higgins,S Kerch, J Easter, K Kloes): NRC had reviewed WCAP 12601 and 9817 which was made available in the Rockville office. NRC questions as transmitted by 4/10/95 fax were adressed. NRC stated to be sure to include in the revision to Q620.15 a description of the cutoff point for closure of design review action item chits (shipment of the product -- if any outstanding chits, then per NQA-1 the customer must be informed.)

Instead of revision 2 to Q620.15, Westinghouse sent a draft of SSAR section 18.4.4 (HFE Issues Tracking) to the NRC HHFB.

Action N- NRC action is to review this draft and provide feedback.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96. This includes SSAR 18.2.4, Human Factors Engineering Issues Tracking.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1313	NRR/HHFB	18.2.3.4-3	DSER-OI		9/19/96	Closed	Action N	Rev 9 SSAR CH 18 (8/9/96)

#1

NB Rev 9 - deficient

Westinghouse should provide information regarding the HFE issues tracking system documentation. Westinghouse should submit WCAPs-9565, 12601, and 9817, as well as any additional documents that describe the method for documenting HFE issues as identified in this criterion.

Action W:

Per NRC letter of 3/22/96, the NRC stated that they found our HFE issues Tracking System described in the draft of 18.4.4 as acceptable, but they wanted to know when they could visit us and verify its implementation. At this point, the red team decided that our system (as described in the draft of 18.4.4) had some problems and might not pass an inspection from the NRC. Internal meetings are planned to discuss modifications to the tracking system.

Meeting of 3/9/95: Westinghouse described our design issues tracking system. Tracking of HFE related design issues is not a separate entitiy but is part of the overall AP600 design process and design issues tracking. Processes for tracking design issues, including HFE issues, are (1.) the DCP process as described in WCAP 12601, AP3.2; (2.) the design review process as described in WCAP 12601, AP 3.5 and WCAP 9817 (human fa tors checklist); (3.) Use of SSDs - AP 3.1 ansd AP3.14 of WCAP 12601. Also a writers guide exists for SSDs. The Interface Requirements or the Human Factors Requirements of the SSDs will be used to document and track HFE related issues not currently addressed by the design and identified prior to DCP or design review. Final closure of these issues is verified in the validation of the HSI versuses their functional requirements. (This description also applies to open items 18.2.3.4-2 thru 4-4.) Also consider using the UP!D compliance database as another method used to track design issu

4/18/95 -- NRC Conference call (J.Bongarra, J.O'Hara, J.Higgins,S.Kerch, J.Easter, K.Kloes): NRC had reviewed WCAP 12601 and 9817 which was made available in the Rockville office. NRC questions as transmitted by 4/10/95 fax were adressed. NRC stated to be sure to include in the revision to Q620.15 a description of the cutoff point for closure of design review action item chits (shipment of the product -- if any oustanding chits, then per NQA-1 the customer must be informed.)

Instead of revision 2 to Q620.15, Westinghouse sent a draft of SSAR section 18.4.4 (HFE Issues Tracking) to the NRC HHFB.

Action N-NRC action is to review this draft and provide feedback.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96. This includes SSAR 18.2.4, Human Factors Engineering Issues Tracking.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1314	NRR/HHFB	18.2.3.4-4	DSER-OI		9/19/96	Closed	~~Action N~~ Resolved	RGU 9, SSAR CH 18, (8/9/96)

#1

Westinghouse should provide information regarding responsibility for the HFE issues tracking system. Westinghouse should submit WCAPs-9565, 12601, and 9817, as well as any additional documents that describe the responsibilities of personnel involved in the tracking and resolution of HFE issues as identified in this criterion.

Resolved

Per NRC letter of 3/22/96. Closure requires formal revision to the SSAR.

Revised AP600 human factors engineering program plan included as SSAR 18.2 in Revision 9, 7/31/96. This includes SSAR 18.2.4, Human Factors Engineering Issues Tracking.

Meeting of 3/9/95. Westinghouse described our design issues tracking system. Tracking of HFE related design issues is not a separate entitiy but is part of the overall AP600 design process and design issues tracking. Processes for tracking design issues, including HFE issues, are (1.) the DCP process as described in WCAP 12601, AP3.2; (2.) the design review process as described in WCAP 12601, AP 3.5 and WCAP 9817 (human factors checklist); (3.) Use of SSDs - AP 3.1 ansd AP3.14 of WCAP 12601. Also a writers guide exists for SSDs. The Interface Requirements or the Human Factors Requirements of the SSDs will be used to document and track HFE related issues not currently addressed by the design and identified prior to DCP or design review. Final closure of these issues is verified in the validation of the HSI versuses their functional requirements. (This description also applies to open items 18.2.3.4-2 thru 4-4.) Also consider using the URD compliance database as another method used to track design issues.

4/18/95 – NRC Conference call (J.Bongarra, J.O'Hara, J.Higgins,S.Kerch, J.Easter, K.Kloes): NRC had reviewed WCAP 12601 and 9817 which was made available in the Rockville office. NRC questions as transmitted by 4/10/95 fax were adressed. NRC stated to be sure to include in the revision to Q620.15 a description of the cutoff point for closure of design review action item chits (shipment of the product – if any oustanding chits, then per NQA-1 the customer must be informed.)

Instead of revision 2 to Q620.15, Westinghouse sent a draft of SSAR section 18.4.4 (HFE Issues Tracking) to the NRC HHFB.

Action N-NRC action is to review this draft and provide feedback.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1315	NRR/HHFB	18.2.3.5-1	DSER-OI		7/26/96	Closed	~~Action W~~ Resolved	RGU 9 SSAR CH 18, (8/9/96)

#1

Westinghouse should provide information regarding the HFE program elements and documentation. Westinghouse should describe the programmatic relationship between the HFE program and PRA/HRA related activities, as well as the HFE program documentation for OER, HRA, and T&E activities.

Action W: Revise SSAR section 18.8.2.1 (MMIS Design Process) to include details of initial assumptions and starting points for the HFE design process and to clarify the initial function allocations and control room resource selections (URD forms input to the HFE process and basis for these assumptions). Include HRA, OER, and test & evaluation results as an input to the design process (refer to DSER eval section for this open item). Reference the HRA-HFE Integration Implementation Plan document in the SSAR section. Draft of these revised SSAR sections will be sent to the NRC. MMIS Development Plan needs to be consistent.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1316	NRR/HHFB	18.3.3.1-1	DSER-OI		10/25/96	Closed	Resolved ✓	NTD-NRC-96-4845	

#2

Westinghouse should provide a comparison to predecessor plants and systems. Westinghouse should describe how they will apply the low-pressure reference plant concept to the OER, and then apply it appropriately in the performance of a review of operating experience.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95

Action W – NRC says that rev. 1 to RAI Q620.9 does not completely clarify. Westinghouse to review "HFE Insights For Advanced Reactors Based Upon Operating Experience" transmitted to Westinghouse on 2/13/95. Place this item on 3/8 agenda.

Meeting of 3/9/95:

Action W: Westinghouse to perform an OER that addresses open items 18.3.3.1-1 thru 1-3, 2-1 thru 2-3. In the OER report we will clarify that OER did not reflect the low-pressure plant as the predecessor reference plant. We will describe the scope of the plant experience reviewed. The low pressure reference plant was used as the starting point for AP600 ERG development, but is not the predecessor plant for the OER. In general, Westinghouse PWR experience will be reviewed.

Also refer to Meeting Open Item, dbase item number 2063.

Action N

Resolved - Draft OER report provided by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. OER is referenced in SSAR 18.3. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 2.
Comments recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14645.
Closed with WCAP submittal on 10/17/96. rkn 10/25

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1317	NRR/HHFB	18.3.3.1-2	DSER-OI		10/25/96	Closed	~~Action W~~ Act: N	NTD-NRC-96-4845	

#2

NB: REV 9 = DEFICIENT

Westinghouse should provide information regarding industry HFE issues. Before preparing the final SSAR, Westinghouse should ensure that the OER addresses the human factors aspects of all issues identified in Appendix B of the PRM and additional HFE-related operating experience issues (e.g., NRC Bulletins and Generic Letters) identified in Chapter 20 of this report.

Meeting of 3/9/95

Action W: Westinghouse to perform an OER that addresses open items 18.3.3.1-1 thru 1-3, 2-1 thru 2-3.

Action N

Resolved - Draft Operating Experience Review (OER) report provided by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. OER is referenced in SSAR 18.3. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 2
Comments recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14645.
Closed with WCAP submittal on 10/17/96. rkn 10/25

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1318	NRR/HHFB	18.3.3.1-3	DSER-OI		10/25/96	Closed	~~Action W~~ RESOLVED	NTD-NRC-96-4845	

#2

Westinghouse should describe how they have included related HSI technologies in the OER.

Meeting of 3/9/95

Action W: Westinghouse to perform an OER that addresses open items 18.3.3.1-1 thru 1-3, 2-1 thru 2-3. In the OER report, where there is no nuclear plant experience for the HSI technology being applied to AP600, reference the reports that document research performed for operating experience in other industries. Reference to be done by title, author, date. (The committment to perform these reviews for areas where we are intending to apply new technologies is in revision 1 to RAI 620.9).

Action W

Resolved - Draft OER report provided by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. OER is referenced in SSAR 18.3. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 2
Comments recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14645.
Closed with WCAP submittal on 10/17/96. rkn 10/25

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1319	NRR/HHFB	18.3.3.1-4	DSER-OI		10/25/96	Closed	Action N	NTD-NRC-96-4845	

#2 NB: REV 9 = DEFICIENT

Westinghouse should provide information regarding the results of operator interviews. Westinghouse should provide the content and results of the operator interviews to the staff and demonstrate how they address this criterion.

Meeting of 3/9/95.

Action W: Westinghouse to perform an OER that addresses open items 18.3.3.1-1 thru 1-3, 2-1 thru 2-3.

Action N

Resolved - Draft OER report submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. OER is referenced in SSAR 18.3. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 2
Comments recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14645.
Closed with WCAP submittal on 10/17/96. rkn 10/25

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1320	NRR/HHFB	18.3.3.2-1	DSER-OI		10/25/96	Closed	Resolved	NTD-NRC-96-4845	

#2

Westinghouse should provide information regarding the operating event report (OER) issue analysis. Westinghouse should describe how the OER will address issues related to human performance and problems and sources of human error. In addition, Westinghouse should describe how the HFE design addresses the issues raised by the OER.

Meeting of 3/9/95.

Action W: Westinghouse to perform an OER that addresses open items 18.3.3.1-1 thru 1-3, 2-1 thru 2-3.

Action N

Resolved - Draft OER report submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. OER is referenced in SSAR 18.3. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 2.
Comments recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14645.
Closed with WCAP submittal on 10/17/96. rkn 10/25

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1321	NRR/HHFB	18.3.3.2-2	DSER-OI		10/25/96	Closed	Resolved ✓	NTD-NRC-96-4845

#2

Westinghouse should provide documentation of its analysis of operating experience. Westinghouse should provide an OER report that adequately documents the results of the reviews and how the findings are (or will be) addressed by the AP600 design.

Meeting of 3/9/95

Action W: Westinghouse to perform an OER that addresses open items 18.3.3.1-1 thru 1-3, 2-1 thru 2-3. The OER report needs to discuss the HSI OER relative to SPDS, AWARE, COMPRO.

Action N

Resolved - Draft OER report submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. OER is referenced in SSAR 18.3. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 2
Comments recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14645.
Closed with WCAP submittal on 10/17/96. rkn 10/25

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1322	NRR/HHFB	18.3.3.2-3	DSER-OI		10/25/96	Closed	Action N ✓	NTD-NRC-96-4845

#2 NB: Rev 9 = deficient

Westinghouse should provide information regarding the incorpora- tion of issues into the tracking system. Westinghouse should describe how each operating experience issue determined to be appropriate for incorporation into the design is entered into the system.

Meeting of 3/9/95

Action W: Westinghouse to perform an OER that addresses open items 18.3.3.1-1 thru 1-3, 2-1 thru 2-3. Westinghouse needs to provide a discussion (at end of OER report) of how we continue to address OER committment). Informal day to day communications summarizing Generic Letters, Information Notices, daily Site Sevice manager reports, etc. Formal process would require a review and disposition of those that are issued between design certification and plant order. Also, describe how those OER HFE issues not currently addressed by the AP600 design are entered into the tracking system.

Action N

Draft OER report submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. OER is reference in SSAR 18.3. Tracking system is described in SSAR 18.2.4. Formal OER WCAP transmittal will be made following receipt of NRC comments.

Element 2
Comments recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14645.
Closed with WCAP submittal on 10/17/96. rkn 10/25

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1323	NRR/HHFB	18.4.3.1-1	DSER-OI		10/14/96	Closed	Resolved	NSD-NRC-96-4231	

#3

Westinghouse should provide information regarding the source materials for the requirements analysis methodology. Westinghouse should identify the industry standards, guidelines, or practices used to perform the functional requirements analysis.

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95. Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W. Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1324	NRR/HHFB	18.4.3.2-1	DSER-OI		10/14/96	Closed	~~Action W~~ ACT N	NSD-NRC-96-4831	

#3

SSAR

NB: REV 9 + WCAP-14644 under review by STAFF

Westinghouse should provide information regarding the functional analysis methods. Westinghouse should describe the process for addressing function analysis completeness and accuracy.

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete eleme.it level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95: Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W: Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1325	NRR/HHFB	18.4.3.2-2	DSER-OI		10/14/96	Closed	~~Action W~~ ACT-N	NSD-NRC-96-4831	

#3

1363 Comment # should be 1324

Westinghouse should provide a detailed description of modified functions. Westinghouse should expand the comparison between the predecessor plant and the AP600 to include an analysis of plant safety functions and processes.

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95. Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064

Action W: Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received @ 5/22. Westinghouse will provide a draft response to this document

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments

Element 3.
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1326	NRR/HHFB	18.4.3.2-3	DSER-OI		10/14/96	Closed	~~Action W~~ Accn	NSD-NRC-96-4831	

6

Westinghouse should identify and describe the basis for the modified functions and processes.

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

See #1334 Comments

Action W

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W. Document (sent by the NRC on 5.15.95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved f... RC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1327	NRR/HHFB	18.4.3.2-4	DSER-OI		10/14/96	Closed	~~Action W~~ ACT N	NSD-NRC-96-4831	

#3

SEE #1324 COMMENT

Westinghouse should provide information regarding the method- ological concerns with plant process descriptions. Westinghouse should address methodological concerns to provide assurance that there are no generic problems with the analysis method. Specifically, (a) the RCS mass inventory FBTA should be completed, (b) the topical report referenced on page 4 should be included, (c) the basic goal for high mass inventory should be addressed, (d) omission of the "ultimate cooling" injection supply should be explained and justified, and (e) the function of listed valves should be provided.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95:

Action W – Send the revised RCS Mass Inventory FBTA and send the RCS Pressure Control FBTA.

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items, 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items, 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W: Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3.
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1328	NRR/HHFB	18.4.3.2-5	DSER-OI		10/14/96	Closed	~~Action W~~ ACTN	NSD-NRC-96-4831	

03

SEE #1324 COMMENT

Westinghouse should provide detailed descriptions for all modified plant processes.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95:

Action N -- NRC to review the material presented on 2/2/95 by Terry Schulz (AP600 functions and associated processes, comparison with current Westinghouse PWRs) and provide feedback (new status).

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W: Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1329	NRR/HHFB	18.4.3.2-6	DSER-OI		10/14/96	Closed	~~Action W~~ ACRN	NSD-NRC-96-4831	

#3

See #1324 Comment

Westinghouse should provide a commitment for updating the functional analysis as part of the function analysis methodology.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95:

Action W – Send a draft of the associated document and/or revision to the applicable SSAR sections.

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4.) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4.) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W: Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1330	NRR/HHFB	18.4.3.2-7	DSER-OI		10/14/96	Closed	~~Action W~~ ACT N	NSD-NRC-96-4831	

#3

SE #1324 comment

Westinghouse should provide information regarding the function requirements verification. Westinghouse should verify that all of the processes necessary for achieving safe operation are identified and all of the requirements of each process are identified.

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4 ..) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4 ..) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064

Action W. Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1331	NRR/HHFB	18.4.3.3-1	DSER-OI		10/14/96	Closed	Resolved	NSD-NRC-96-4831	

#3

Westinghouse should provide information regarding the basis for initial function allocations. Westinghouse should describe the basis for the initial allocations, as well as the process that will address the level of automation (e.g., fully automatic, fully manual, or automatic with manual backup) for each unchanged function with unchanged allocation.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95:

Action W – Send a draft of the associated document and/or revision to the applicable SSAR sections. Place on 3/8 agenda to discuss further with NRC.

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items, 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items, 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W: Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1332	NRR/HHFB	18.4.3.3-2	DSER-OI		10/14/96	Closed	Resolved	NSD-NRC-96-4831	

#3

Westinghouse should describe how the program will develop the rationale and level of automation for each unchanged function or process with modified allocation.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95:

Action W – Send a draft of the associated document and/or revision to the applicable SSAR sections. Place on 3/8 agenda to discuss further with NRC.

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4 ...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4 ...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W: Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1333	NRR/HHFB	18.4.3.3-3	DSER-OI		10/14/96	Closed	Resolved	NSD-NRC-96-4831	

#3

Westinghouse should provide information regarding the function allocation for modified processes. Westinghouse should describe the process that will address the rationale, allocation, and level of automation for modified plant processes.

Per conference call with NRC (J Bongarra, G Galletti, J O'Hara, J Higgins) of 2/23/95:

Action W -- Send a draft of the associated document and/or revision to the applicable SSAR sections. Place on 3/8 agenda to discuss further with NRC.

Meeting of 3/9/95:

Action N --- Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95:

Action N --- Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W: Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3.
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1334	NRR/HHFB	18.4.3.3-4	DSER-OI		10/14/96	Closed	Resolved	NSD-NRC-96-4831	

#3

Westinghouse should provide the function allocation results. Westinghouse should describe the analyses that will confirmthat the personnel can properly perform tasks allocated to them while maintaining operator situation awareness, workload, and vigilance.

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95:

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W: Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1335	NRR/HHFB	18.4.3.3-5	DSER-OI		10/14/96	Closed	Resolved	NSD-NRC-96-4831	

#3

Westinghouse should provide information regarding the use of the OER for modified process function allocation. Westinghouse should describe the use of the OER in the identification and evaluation of function allocations for those modified processes that have been identified as problematic, based on operating experience and how past problems will be addressed.

Meeting of 3/9/95

Action N --- Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95

Action N --- Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W: Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. The OER is referenced in SSAR 18.3. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1336	NRR/HHFB	18.4.3.3-6	DSER-OI		10/14/96	Closed	Resolved ✓	NSD-NRC-96-4831	

#3

Westinghouse should provide information regarding the use of the OER for unchanged process function allocation. Westinghouse should describe how unchanged functions with unchanged function allocations that have been identified as problematic based on operating experience will be addressed.

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W. Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1337	NRR/HHFB	18.4.3.3-7	DSER-OI		10/14/96	Closed	Resolved	NSD-NRC-96-4831	

#3

Westinghouse should provide information regarding the effect of new control function allocations. Westinghouse should describe how function allocations will be reviewed to evaluate the effect of new control function allocations on unchanged control function allocations.

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W

Meeting of 3/9/95

Action N — Westinghouse has asked that element three be reviewed at the complete element level. NRC to revisit the criteria for element 3 (15 open items; 18.4...) and re-propose a focused set of issues based on our discussion. Refer to new meeting open item which is dabase Item Number 2064.

Action W. Document (sent by the NRC on 5/15/95) that refocuses the element 3 open items was received on 5/22. Westinghouse will provide a draft response to this document.

Draft WCAP-14644 submitted by NSD-NRC-96-4722 on 5/14/96. Chapter 18 of the SSAR to be revised to reference this document.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3.
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1338	NRR/HHFB	18.5.3-1	DSER-OI		10/14/96	Closed	Action N	NSD-NRC-96-4831	

B4

Westinghouse should provide information regarding the scope of task analysis. Westinghouse should identify the threshold for defining critical or high-risk tasks, how the PRA will be used to identify the tasks, and the PRA levels to be included (e.g., Levels 1 and 2).

Conference call with NRC 3/21/95 (J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch):

Westinghouse explained that there are no critical/high-risk tasks that have been identified in the AP600 PRA. A sensitivity study was done where all operator actions in the PRA cutsets were set to 1 (ie., operator actions fail or no operator actions occur). The results still produced acceptable core damage frequencies (Ref. RAI Q720.133).

Action W: Applicable section(s) of chapter of the SSAR will be revised to state this. We will define threshold criteria for "Risk Important Tasks". This criteria will be consistent with the D-RAP criteria.

The information addressing this open item will be included in the AP600 HRA-HFE Integration Implementation Plan.

Action W

Conference call with NRC 3/21/95 (J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch):

The NRC asked us what we meant by "deleting all manual actions". We explained that we meant that there were no operator actions (ie., that all operator actions in the PRA cutsets were set to 1.). The information addressing this open item will be included in the AP600 HRA-HFE Integration Implementation Plan.

4/19/95 - Fax of draft response to 18.7.3-2 and 18.5.3-1 was sent to J Bongarra, G Galletti, J O'Hara, & J Higgins. If acceptable, this response will be incorporated into the HRA-HFE Integration Implementation Plan.

Action W: NRC reviewed response and provided feedback via fax of 8/22/95. Westinghouse needs to address whether task analysis will be performed on representative maintenance, test, inspection and surveillance tasks. (NRC response sent 9/5/95). New draft of the Task Analysis plan is in red team review (4/8/96).

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. This includes SSAR 18.5, Task Analysis, and SSAR 18.11, Human Factors Verification and Validation.

Item will be closed when WCAP-14651 is revised to reflect NRC comments.

Element 4
Item will be closed when WCAP-14651 is revised to reflect NRC comments.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1339	NRR/HHFB	18.5.3-2	DSER-OI		10/14/96	Closed	Action N ✓	NSD-NRC-96-4831	

#4

Westinghouse should provide information regarding the critical task evaluation. Westinghouse should identify all critical human actions as discussed in their response to Q720.133, and describe how task analysis will be used in the evaluation of the critical tasks in operational sequences.

Conference call with NRC 3/21/95
(J.Bongarra, G.Galletti, T.Kenyon, J.O'Hara, J.Higgins, A.Sterdis, J.Easter, E.Roth, S.Kerch)

Action W: Westinghouse explained that there are no critical/high-risk tasks that have been identified in the AP600 PRA. A sensitivity study was done where all operator actions in the PRA cutsets were set to 1 (ie., operator actions fail or no operator actions occur). The results still produced acceptable core damage frequencies (Ref. RAI Q720.133). Applicable section(s) of chapter of the SSAR will be revised to state this. We will define threshold criteria for "Risk Important Tasks". This criteria will be consistent with the D-RAP criteria. The Risk Important Tasks and our plan to deal with them will be identified in the AP600 HRA-HFE Integration Implementation Plan.

The information addressing this open item will be included in the AP600 HRA-HFE Integration Implementation Plan.

Action W

Conference call with NRC 3/21/95: (J.Bongarra, G.Galletti, T.Kenyon, J.O'Hara, J.Higgins, A.Sterdis, J.Easter, E.Roth, S.Kerch) Action W: Westinghouse explained that there are no critical/high-risk tasks that have been identified in the AP600 PRA. A sensitivity study was done where all operator actions in the PRA cutsets were set to 1 (ie., operator actions fail or no operator actions occur). The results still produced acceptable core damage frequencies (Ref. RAI Q720.133). Applicable section(s) of chapter of the SSAR will be revised to state this. We will define threshold criteria for "Risk Important Tasks". This criteria will be consistent with the D-RAP criteria. The Risk Important Tasks and our plan to deal with them will be identified in the AP600 HRA-HFE Integration Implementation Plan.

Westinghouse sent (via a fax) a draft of the HRA/HFE Integration Implementation Plan and a draft of the Task Analysis Description to the NRC HHFB on 5/24/95. The NRC reviewed the information and provided feedback via fax of 8/22/95. Westinghouse needs to resolve the issue of critical human actions and risk important tasks. (NRC response sent 9/5/95)

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. This includes SSAR 18.5, Task Analysis, and SSAR 18.11, Human Factors Verification and Validation.

Item will be closed when WCAP-14651 is revised to reflect NRC comments.

Element 4
Item will be closed when WCAP-14651 is revised to reflect NRC comments.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1340	NRR/HHFB	18.5.3-3	DSER-OI		8/23/96	Resolved	~~Resolved~~	ACT. W	

#4

NB
RESOLUTION
INCOMPLETE
RE: ITAAC ISSUE

Westinghouse should provide information regarding the task analysis methods. Westinghouse should indicate how time factors, workload, task support requirements, workplace factors, staffing, and communication will be addressed in the task analysis. Westinghouse should also describe how the cognitive task analyses and "traditional" methods will be integrated to analyze crew tasks, what decision criteria will be used to judge whether tasks need the cognitive task analysis, and the total set of task analysis data that will result from the completion of all task analysis methods.

Conference call with NRC 3/21/95
(J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch)

Action W: Westinghouse's response to include the description of Operational Sequence Analyses (OSAs). The OSAs will focus on time available versus time estimates. We will rely on the HFE V&V fro realistic estimate of workload. We will evaluate how best to incorporate this information, ie., revise applicable sections of chapter 18 of the SSAR or write a document that is referenced in the SSAR.

Resolved

Conference call with NRC 3/21/95. (J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch) Action W: Westinghouse's response to include the description of Operational Sequence Analyses (OSAs) and workload analysis. The OSAs will focus on time available versus time estimates. We will evaluate how best to incorporate this information, ie., revise applicable sections of chapter 18 of the SSAR or write a document that is referenced in the SSAR.

Westinghouse sent (via a fax) a draft of a Task Analysis Description document to the NRC HHFB on 5/24/95. The NRC reviewed the document and provided feedback via fax of 8/22/95, considers issue resolved. Final closure will require a revision to SSAR section 18.8.2.1 and and ITAAC. (NRC response sent 9/5/95)

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. This includes SSAR 18.5, Task Analysis.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1341	NRR/HHFB	18.5.3-4	DSER-OI		8/23/96	Resolved	~~Resolved~~ ACT W	

#4

See #1340

Westinghouse should provide information regarding the task analysis job design. Westinghouse should identify the relevant job design factors (such as the number of crew member skills), and indicate how they will be addressed in the task analysis.

Conference call with NRC 3/21/95.
(J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch)

Action W: Westinghouse will write a COL Action Item (Information Item) that states that the identification of "job design factors", such as crew member skills, is a COL applicant responsibility. This information is used to develop an operator training program.

Westinghouse will clearly state the assumptions used in the Operational Sequence Analyses.

Resolved

Conference call with NRC 3/21/95. (J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch) Action W: Westinghouse will write a COL Action Item (Information Item) that states that the identification of "job design factors", such as crew member skills, is a COL applicant responsibility. This information is used to develop an operator training program. Westinghouse will clearly state the assumptions used in the Operational Sequence Analyses.

Westinghouse sent (via a fax) a draft of a Task Analysis Description document to the NRC HHFB on 5/24/95. The NRC reviewed the document and provided feedback via fax of 8/22/95, considers issue resolved. Final closure will require a revision to SSAR section 18.8.2.1 and an ITAAC. (NRC response sent 9/5/95)

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. This includes SSAR 18.5, Task Analysis.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1342	NRR/HHFB	18.5.3-5	DSER-OI		8/23/96	Resolved	~~Resolved~~ ACT W	

#4

See #1340

Westinghouse should provide information regarding the task analysis methodology source materials. Westinghouse should identify source documents to serve as the basis for determining the types of information previously identified in Criterion 3 (Refer to open item 18.5.3-3).

Conference call with NRC 3/21/95.
(J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch)

Action W: A clear statement of the documents that were considered is needed in chapter 18 of the SSAR.

Resolved

Conference call with NRC 3/21/95. (J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch) Action W: A clear statement of the documents that were considered is needed in chapter 18 of the SSAR. Rev. 4 to SSAR.

Westinghouse sent (via a fax) a draft of a Task Analysis Description document to the NRC HHFB on 5/24/95. The NRC reviewed the document and provided feedback via fax of 8/22/95. Final closure will require a revision to SSAR section 18.8.2.1 and an appropriate ITAAC. (NRC response sent 9/5/95)

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. This includes SSAR 18.5, Task Analysis.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1343	NRR/HHFB	18.6.3-1	DSER-OI		8/23/96	Closed	~~Action W~~ ACRS		

#5

Westinghouse should provide information regarding the number and qualifications of personnel. Westinghouse should provide additional information on how the HFE design and implementation process will address the number and qualifications of personnel required during the full range of plant conditions and tasks, including operational tasks, plant maintenance, and plant surveillance and testing.

Conference call with NRC 3/21/95:
(J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch)

Action W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in the closure path. State that staffing levels outside of the operations staff, such as maintenance, is the responsibility of the COL applicant (COL Information Item needed). The same approach will be applied to all the staffing open items. Westinghouse is to clearly identify to the NRC where in the draft revision each open item is addressed. This will be done by utilizing this database, ie., in the database for each open item provide the map of the open item to the paragraph(s) in the draft revision where the open item is addressed.

Action W

Conference call with NRC 3/21/95: (J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch) Action W: Westinghouse to revise the applicable chapter 18 SSAR sections (Revision 4 to SSAR) to reflect the statements and process described in the closure path. State that staffing levels outside of the operations staff, such as maintenance, is the responsibility of the COL applicant (COL Information Item needed). The same approach will be applied to all the staffing open items. Westinghouse is to clearly identify to the NRC where in the draft revision each open item is addressed.

Action W: A draft revision to SSAR section 18.7 (Staffing) needs to be sent to NRC, addressing all element 5 open items. The NRC action will then be to review and provide feedback.

4/8/96: A draft of 18.7 has finished red team review; comments have been incorporated or resolved. The draft is now in word processing.

Resolved: Per a discussion with the NRC on 5/22, staffing will be addressed as a COL responsibility. Closure will depend upon the revised submittal of Chapter 18.

Revised Chapter 18.6 of the AP600 SSAR submitted in Revision 9, 7/31/96. This includes combined license applicant responsibility for staffing. Item will be closed when supporting WCAP on staffing is transmitted.

Element 5
With SSAR Ch 18 submittal and WCAP-14694 this is closed.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1344	NRR/HHFB	18.6.3-2	DSER-OI		8/23/96	Closed	~~Action W~~ ACCN		

#5

Westinghouse should provide information regarding the staffing level analysis. Westinghouse should discuss how the staffing design meets the requirements of 10 CFR 50.54(m), and describe the analyses conducted to determine whether these requirements were appropriate for the AP600. Westinghouse should also describe the process that will be used to validate staffing requirements against the task analysis and against the physical design of the AP600 operations and control centers, as well as how the availability of plant information from individual operator workstations will be used in the analysis of staffing levels. Westinghouse should also discuss the availability of operators considering other ongoing activities, and how that relates to staffing. In addition, Westinghouse should provide more information on the required interaction between operators for diagnosis, planning, and control activities, and interaction between personnel for administrative, communications, and reporting activities. Finally, Westinghouse should discuss how the actions required in 10 CFR 50.47 (and NUREG-0654) and staffing requirements in Sections 13.1.2 and 13.1.3 of NUREG-0800 and 10 CFR 50.54 will be taken into account in the staffing level decisions made for the AP600.

Conference call with NRC 3/21/95
(J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch)

Action W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in the closure path. State that staffing levels outside of the operations staff, such as maintenance, is the responsibility of the COL applicant (COL Information Item needed). The same approach will be applied to all the staffing open items. Westinghouse is to clearly identify to the NRC where in the draft revision each open item is addressed. This will be done by utilizing this database, ie., in the database for each open item provide the map of the open item to the parragraph(s) in the draft revision where the open item is addressed.

Action W

Conference call with NRC 3/21/95: (J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch) Action W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in the closure path. State that staffing levels outside of the operations staff, such as maintenance, is the responsibility of the COL applicant (COL Information Item needed). The same approach will be applied to all the staffing open items. Westinghouse is to clearly identify to the NRC where in the draft revision each open item is addressed.

Action W: A draft revision to SSAR section 18.7 (Staffing) needs to be sent to NRC, addressing all element 5 open items. The NRC action will then be to review and provide feedback.

4/8/96: A draft of 18.7 has finished red team review; comments have been incorporated or resolved. The draft is now in word processing.

Resolved: Per a discussion with the NRC on 5/22, staffing will be addressed as a COL responsibility. Closure will depend upon the revised submittal of Chapter 18.

Revised Chapter 18.6 of the AP600 SSAR submitted in Revision 9, 7/31/96. This includes combined license applicant responsibility for staffing. Item will be closed when supporting WCAP on staffing is transmitted.

Element 5.
With SSAR Ch 18 submittal and WCAP-14694 this is closed.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1345	NRR/HHFB	18.6.3-3	DSER-OI		8/23/96	Closed	~~Action W~~ PCTN		

#5

Westinghouse should provide information regarding the staffing analysis iteration. Westinghouse should escribe in more detail the iterative nature of the staffing level analysis. Inaddition, Westinghouse should discuss how the task analysis will be modified if a determination is made that the staffing level is inadequate or if meeting the staffing level requirement adds substantial specialized automatic control of equipment, agiven that it is not clear that the task analysis is crew member-based

Conference call with NRC 3/21/95
(J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch)

Acvtion W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in th closure path.

Action W

Conference call with NRC 3/21/95: (J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch) Action W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in the closure path.

Action W: A draft revision to SSAR section 18.7 (Staffing) needs to be sent to NRC, addressing all element 5 open items. The NRC action will then be to review and provide feedback.

4/8/96: A draft of 18.7 has finished red team review; comments have been incorporated or resolved. The draft is now in word processing.

Resolved: Per a discussion with the NRC on 5/22, staffing will be addressed as a COL responsibility. Closure will depend upon the revised submittal of Chapter 18.

Revised Chapter 18.6 of the AP600 SSAR submitted in Revision 9, 7/31/96. This includes combined license applicant responsibility for staffing. Item will be closed when supporting WCAP on staffing is transmitted.

Element 5
With SSAR Ch 18 submittal and WCAP-14694 this is closed

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1346	NRR/HHFB	18.6.3-4	DSER-OI		8/23/96	Closed	~~Action W~~ ACR-N		

#5

Westinghouse should provide information regarding the compliance of staffing with the HFE PRM elements. Westinghouse should provide additional information, particularly for those elements of Criterion 4, "Basis for Staffing," of this section, that are not specifically addressed for operations personnel, and for all the elements of Criterion 4, "Basis for Staffing," of this seciton as they relate to non-operations personnel.

Conference call with NRC 3/21/95:
(J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch)

Action W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in the closure path.

Action W

Conference call with NRC 3/21/95: (J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch) Action W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in the closure path.

Action W: A draft revision to SSAR section 18.7 (Staffing) needs to be sent to NRC, addressing all element 5 open items. The NRC action will then be to review and provide feedback.

4/8/96: A draft of 18.7 has finished red team review; comments have been incorporated or resolved. The draft is now in word processing.

Resolved: Per a discussion with the NRC on 5/22, staffing will be addressed as a COL responsibility. Closure will depend upon the revised submittal of Chapter 18.

Revised Chapter 18.6 of the AP600 SSAR submitted in Revision 9, 7/31/96. This includes combined license applicant responsibility for staffing. Item will be closed when supporting WCAP on staffing is transmitted.

Element 5
With SSAR Ch 18 submittal and WCAP-14694 this is closed.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1347	NRR/HHFB	18.6.3-5	DSER-OI		8/23/96	Closed	~~Action W~~ Act-N		

#5

Westinghouse should provide information regarding the staffing methodology source materials. W inghouse should identify the industry standards, guidelines, and practices on which the staffing implementation plan is based.

Conference call with NRC 3/21/95:
(J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch)

Action W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in the closure path. Based on the discussions with the NRC on staffing and the information to be provided to address each staffing open item, this item will be covered. We need to ensure that the staffing COL Action Item identifies the COL applicant responsibility and states the staffing assumptions that were made in design certification.

Action W

Conference call with NRC 3/21/95: (J Bongarra, G Galletti, T Kenyon, J O'Hara, J Higgins, A Sterdis, J Easter, E Roth, S Kerch) Action W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in the closure path. Based on the discussions with the NRC on staffing and the information to be provided to address each staffing open item, this item will be covered. We need to ensure that the staffing COL Action Item identifies the COL applicant responsibility and states the staffing assumptions that were made in design certification.

Action W: A draft revision to SSAR section 18.7 (Staffing) needs to be sent to NRC, addressing all element 5 open items. The NRC action will then be to review and provide feedback.

4/8/96: A draft of 18.7 has finished red team review; comments have been incorporated or resolved. The draft is now in word processing.

Resolved: Per a discussion with the NRC on 5/22, staffing will be addressed as a COL responsibility. Closure will depend upon the revised submittal of Chapter 18.

Revised Chapter 18.6 of the AP600 SSAR submitted in Revision 9, 7/31/96. This includes combined license applicant responsibility for staffing. Item will be closed when supporting WCAP on staffing is transmitted.

Element 5:
With SSAR Ch 18 submittal and WCAP-14694 this is closed.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1348	NRR/HHFB	18.7.3-1	DSER-OI		10/14/96	Closed	~~Resolved~~ PCT W/	NSD-NRC-96-4831	

#6

Westinghouse should provide information regarding the human reliability analysis (HRA)-HFE integration implementation plan.

NB THIS ITEM RELATED TO ITAAC policy ISSUE

Resolved

3/31/95 - Phone conversation between Westinghouse and J Bongarra. Jim stated that generally speaking the resolution paths for all element 6 open items are acceptable. Action W: To develop and submit a draft of the HRA-HFE Integration Implementation Plan by May 31. The appropriate section of the SSAR will also be revised (Revision 4), referencing this implementation plan.

The draft HRA/HFE Integration Implementation Plan was sent (via fax) to the NRC HHFB on 5/24/95. All element 6 (HRA) open items are addressed by this document. The NRC reviewed the document and provided feedback via fax of 9/28/95, NRC considers this issue resolved. (see NRC response sent 10/3/95)

Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted in Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted.

Element 6.
Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted on Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1349	NRR/HHFB	18.7.3-2	DSER-OI		10/14/96	Closed	~~Action N~~ PCT: W	NSD-NRC-96-4831	

#6

Ref #1348

Westinghouse should provide information regarding the process used for identifying critical human actions. Westinghouse should describe the process that will identify critical human actions for the Level 1 and Level 2 PRA, including both internal and external events, following the completion of sensitivity analyses.

Action N

3/31/95 - Phone conversation between Westinghouse and J Bongarra. Jim stated that generally speaking the resolution paths for all element 6 open items are acceptable. Action W: To develop and submit a draft of the HRA-HFE Integration Implementation Plan by May 31. The appropriate section of the SSAR will also be revised (Rev. 4), referencing this implementation plan.

4/19/95 - Fax of draft response to 18.7.3-2 and 18.5.3-1 was sent to J Bongarra, G Galletti, J.O'Hara, & J Higgins. If acceptable, this response will be incorporated into the HRA-HFE Integration Implementation Plan.

NRC reviewed this draft and provided feedback via fax of 9/28/95. Westinghouse and NRC still need to resolve the issue of critical human actions and risk important tasks.

The NRC HHFB to coordinate a conference call with the NRC Risk Analysis (PRA) people and Westinghouse to discuss.

(See NRC response sent 10/3/95)

4/8/96: A revised draft of the HRA/HFE Integration Implementation Plan should be ready for red team review by 4/12/96.

Resolved: Draft WCAP-14651, Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan, was submitted to the NRC as an attachment to NSD-NRC-96-4722 on 5/14/96. Appropriate reference to the document will be made in Chapter 18 of the SSAR.

Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted in Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted.

Element 6:
Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted on Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
350	NRR/HHFB	18.7.3-3	DSER-OI		10/14/96	Closed	~~Resolved~~ ACT W	NSD-NRC-96-4831	

16

Westinghouse should describe the process they will use to address the task analyses for critical human actions.

see #1348

Resolved

3/31/95 - Phone conversation between Westinghouse and J Bongarra. Jim stated that generally speaking the resolution paths for all element 6 open items are acceptable. Action W: To develop and submit a draft of the HRA-HFE Integration Implementation Plan by May 31. The appropriate section of the SSAR will also be revised, referencing this implementation plan.

The draft HRA/HFE Integration Implementation Plan was sent (via fax) to the NRC HHFB on 5/24/95. All element 6 (HRA) open items are addressed by this document. The NRC reviewed the document and provided feedback via the fax of 9/28/95, NRC considers this issue resolved.

Action W (per NRC) - see NRC response sent 10/3/95

Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted in Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted

Element 6:
Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted on Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1351	NRR/HHFB	18.7.3-4	DSER-OI		10/14/96	Closed	~~Resolved~~ Act W	NSD-NRC-96-4831	

Westinghouse should provide information regarding the detailed examination of critical actions. Westinghouse should describe the process that will (a) provide additional information on the impact of HFE function allocations yet to be performed on the HRA, (b) provide detailed evaluations of critical actions to reduce or eliminate sources of error, and (c) clarify the possible inconsistency between the operator role assumptions in the HFE design and the HRA.

See #1348

Resolved

3/31/95 - Phone conversation between Westinghouse and J Bongarra. Jim stated that generally speaking the resolution paths for all element 6 open items are acceptable. Action W: To develop and submit a draft of the HRA-HFE Integration Implementation Plan by May 31. The appropriate section of the SSAR will also be revised, referencing this implementation plan.

The draft HRA/HFE Integration Implementation Plan was sent (via fax) to the NRC HHFB on 5/24/95. All element 6 (HRA) open items are addressed by this document. The NRC reviewed the document and provided feedback via the fax of 9/28/95, NRC considers this issue resolved.

Action W (per NRC) - see NRC response sent 10/3/95.

Closed - Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted in Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted.

Element 6.
Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted on Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1352	NRR/HHFB	18.7.3-5	DSER-OI		10/14/96	Closed	~~Action W~~ Act-W	NSD-NRC-96-4831	

#6

Westinghouse should provide information regarding the use of PRA/HRA insights. Westinghouse should provide examples of how the HRA/PRA insights were used to improve design and limit risk to human actions and errors and describe the process whereby this effort will continue as part of the HFE design.

see #1348

Action W

3/31/95 - Phone conversation between Westinghouse and J Bongarra. Jim stated that generally speaking the resolution paths for all element 6 open items are acceptable, however, the closure path to this one does not answer the question. Jim said that we need to provide specific examples. Also, he said to refer to the specific PRM criteria, RAI Q720.117 and the Evaluation section of the DSER for this open item for further guidance. (Ex. of influence on the MMI design?) Action W: To develop and submit a draft of the HRA-HFE Integration Implementation Plan by May 31. The appropriate section of the SSAR will also be revised, referencing this implementation plan.

The draft HRA/HFE Integration Implementation Plan was sent (via fax) to the NRC HHFB on 5/24/95. All element 6 (HRA) open items are addressed by this document. The NRC reviewed the document and provided feedback. Westinghouse needs to address the questions raised in the NRC fax of 9/28/95. (see NRC response sent 10/3/95)

Resolved: Draft WCAP-14651, Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan, was submitted to the NRC as an attachment to NSD-NRC-96-4722 on 5/14/96. Appropriate reference to the document will be made in Chapter 18 of the SSAR.

Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted in Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted.

Element 6:
Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted on Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1353	NRR/HHFB	18.7.3-6	DSER-OI		10/14/96	Closed	~~Resolved~~ ACT-W	NSD-NRC-96-4831	

#6

SOC #1348

Westinghouse should provide information regarding the HRA validation. Westinghouse should describe the process for validation of HRA assumptions and possible revision of the HRA if necessary.

Resolved

3/31/95 - Phone conversation between Westinghouse and J Bongarra. Jim stated that generally speaking the resolution paths for all element 6 open items are acceptable. Action W: To develop and submit a draft of the HRA-HFE Integration Implementation Plan by May 31. The appropriate section of the SSAR will also be revised (Revision 4), referencing this implementation plan.

The draft HRA/HFE Integration Implementation Plan was sent (via fax) to the NRC HHFB on 5/24/95. All element 6 (HRA) open items are addressed by this document. The NRC reviewed the document and provided feedback via fax of 9/28/95, NRC considers the issue resolved.

Action W (per NRC) - see NRC response sent 10/3/95.

Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted in Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted.

Element 6
Revised SSAR 18.7, Integration of Human Reliability Analysis with Human Factors Engineering submitted on Revision 9, 7/31/96. Item will be closed when revised WCAP-14651 is submitted.

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

1354	NRR/HHFB	18.8.1.3-1	DSER-OI		7/26/96	Closed	Action W		

#7

NB: RESOLUTION INCOMPLETE — THIS ITEM REMAINED TO ITAAC POLICY ISSUE

Westinghouse should provide information regarding the HSI design process guidance. Westinghouse should describe how evaluation results will be communicated to designers, incorporated into design guidance, and reflected in final design documentation. The process by which implementation guidance will be developed must also be described.

Meeting of 3/10/95

Action N: NRC will review our design process as described in the SSAR, RAIs and in WCAP 12601, and WCAP 9817 and provide us feedback. The NRC will review the SSD procedures of WCAP 12601 to determine if they cover issues like "providing guidance to HSI designers for addressing / utilizing design inputs such as the FBTA results". Note that the procedures will be at a higher level, not specifically referring to the FBTA or other specific HFE analyses or reports. The staff will also review the Alarm System Design Guidelines and the Interim Report on Technical Principles for Computer Based Displays of Data (both on file in Rockville office). Informal feedback from NRC was that the display document does provide the intended guidance.

Meeting of 3/10/95: NRC reviewed our design process as described in the SSAR, RAIs and in WCAP 12601, and WCAP 9817 and provided feedback via a letter dated 7/25/95.

Action W: Review and address NRC feedback issues.

Revised SSAR Chapter 18 submitted in Revision 9, 7/31/96. This includes SSAR 18.8, Human System Interface Design and SSAR 18.2, Human Factors Engineering Program Management.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1355	NRR/HHFB	18.8.1.3-2	DSER-OI		7/26/96	Closed	Action W ✓		

Westinghouse should provide information regarding the task-related HSI requirements. Westinghouse should describe the process by which possible omissions in controls and displays are eliminated form the final design. The means by which features of controls and displays are initially defined must also be described.

Meeting of 3/10/95.

Same as the "Action N" note in the open item description field for dbase item number 1354.

Meeting of 3/10/95. NRC reviewed our design process as described in the SSAR, RAIs and in WCAP 12601, and WCAP 9817 and provided feedback via a letter dated 7/25/95.

Action W: Review and address NRC feedback issues.

Revised SSAR Chapter 18 submitted in Revision 9, 7/31/96. This includes SSAR 18.8, Human System Interface Design and SSAR 18.2, Human Factors Engineering Program Management.

1356	NRR/HHFB	18.8.1.3-3	DSER-OI		7/26/96	Closed	~~Resolved~~ ACT-W		

Westinghouse should provide information regarding HSI characteristics. Westinghouse should describe how potential problems associated with high workload will be identified early in the design process, and how the concerns noted in the evaluation above will be addressed. Westinghouse should also describe how the design of workstations (inside and outside the MCR) ensure support of optimal operator performance under a range of conditions.

Meeting of 3/10/95.

Same as the "Action N" note in the open item description field for dbase item number 1354.

Meeting of 3/10/95. NRCreviewed our design process as described in the SSAR, RAIs and in WCAP 12601, and WCAP 9817 and provided feedback. The NRC reviewed the SSD procedures of WCAP 12601 with respect to covering issues like "providing guidance to HSI designers for addressing / utilizing design inputs such as the FBTA results". Note that the procedures will be at a higher level, not specifically referring to the FBTA or other specific HFE analyses or reports. The staff also reviewed the Alarm System Design Guidelines and the Interim Report on Technical Principles for Computer Based Displays of Data (both on file in Rockville office). Feedback from NRC was that the display document does provide the intended guidance.

6/7/95. Fax of a response to this open item was sent to J. Bongarra. NRC reviewed the response and provided feedback indicating that the response is acceptable. See NRC letter dated 7/25/95. SSAR revision required for closure.

Revised SSAR Chapter 18 submitted in Revision 9, 7/31/96. This includes SSAR 18.8, Human System Interface Design and SSAR 18.2, Human Factors Engineering Program Management.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1357	NRR/HHFB	18.8.1.3-4	DSER-OI		7/26/96	Closed	Action W ✓		

#1

see #1354

Westinghouse should provide information regarding design feature selection. Westinghouse should describe the process used to evaluate design alternatives identified in the staff's evaluation.

Meeting of 3/10/95:

Action W: Westinghouse to review the level of detail for design certification relative to the MMI key features. Specifically need to address whether or not the "mission statements" or pupose(s) are worth certifying. If mission statements are not certified then the key features aren't certified even from a conceptual level. Will need to clearly identify those missions that we are covering. We will indicate those key features that we do not want certified and their mission statements. Schedule will need to be quick because it will impact NRC scope of review.

5/11: Phoncon with J Bongarra — I told Jim that we wanted the HSI design reviewed at the implementation plan level (as they have done) and that there were no design features that we wanted reviewed at a more detailed or complete level.

Meeting of 3/10/95: NRC reviewed our design process as described in the SSAR, RAIs and in WCAP 12601, and WCAP 9817 and provided feedback via letter of 7/25/95.

Action W: Review and address NRC feedback issues.

Revised SSAR Chapter 18 submitted in Revision 9, 7/31/96. This includes SSAR 18.1, Human System Interface Design and SSAR 18.2, Human Factors Engineering Program Management.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1358	NRR/HHFB	18.8.1.3-5	DSER-OI		8/23/96	Resolved	~~Resolved~~ ACT-W		

#1

see #1354

Westinghouse should provide information regarding the detailed guidelines for HSI design. Westinghouse should provide the requested handbook and guidelines as samples of the results of the process.

Meeting of 3/10/95:

Same as the "Action N" note in the open item description field for dbase item number 1354.

NRC reviewed the quideline documents and found them acceptable. See NRC letter dated 7/25/95. ITAAC required for closure.

Revised SSAR Chapter 18 submitted in Revision 9, 7/31/96. This includes SSAR 18.8, Human System Interface Design and SSAR 18.2, Human Factors Engineering Program Management.

Element 7. SSAR Rev 9 Ch 18 and WCAP-14396 Rev 1 submittals. ITA[illegible] req'd to close.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1359	NRR/HHFB	18.8.1.3-6	DSER-OI		8/23/96	Resolved	~~Resolved~~ ACT-W	

#7

SEE #1354

Westinghouse should provide information regarding the detailed HSI design analysis. Westinghouse should describe in more detail the analysis methods by which design issues not covered by available guidance are identified and resolved. In particular, Westinghouse should describe the means by which evaluaiton results are translated into design guidance (see Criterion 1, "HSI Design Process Guidance," in this section.

Meeting of 3/10/95:

Same as the "Action N" note in the open item description field for dbase item number 1354.

NRC reviewed the quideline documents and found them acceptable. See NRC letter dated 7/25/95. ITAAC required for closure.

Revised SSAR Chapter 18 submitted in Revision 9, 7/31/96. This includes SSAR 18.8, Human System Interface Design and SSAR 18.2, Human Factors Engineering Program Management.

Element 7. SSAR Rev 9 Ch 18 and WCAP-14396 Rev 1 submittals. ITAAC req'd to close.

1360	NRR/HHFB	18.8.1.3-7	DSER-OI		8/23/96	Resolved	~~Resolved~~ ACT-W	

#7

SEE #1354

Westinghouse should provide information regarding the HSI evaluation. Westinghouse should describe the rationale for the HSIs, design elements, and procedures selected for evaluation, and for the points in the design process at which the evaluations are to occur. Westinghouse should also describe the process for identifying and resolving conflicts in guidance, as well as the rationale for design decisions that conflict with guidance.

Meeting of 3/10/95:

Same as the "Action N" note in the open item description field for dbase item number 1354.

NRC reviewed the quideline documents and found them acceptable. See NRC letter dated 7/25/95. ITAAC required for closure.

Revised SSAR Chapter 18 submitted in Revision 9, 7/31/96. This includes SSAR 18.8, Human System Interface Design and SSAR 18.2, Human Factors Engineering Program Management.

Element 7. SSAR Rev 9 Ch 18 and WCAP-14396 Rev 1 submittals. ITAAC required to close.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1361	NRR/HHFB	18.8.1.3-8	DSER-OI		8/23/96	Resolved	~~Resolved~~ ACT W		

#7

350 #1354

Westinghouse should describe how the HSI design will be documented. Westinghouse should describe how the final HSI design will be documented, incorporating the bases given in the criterion.

Meeting of 3/10/95:

Same as the "Action N" note in the open item description field for dbase item number 1354.

NRC reviewed the quideline documents and found them acceptable. See NRC letter dated 7/25/95. ITAAC required for closure.

Revised SSAR Chapter 18 submitted in Revision 9, 7/31/96. This includes SSAR 18.8, Human System Interface Design and SSAR 18.2, Human Factors Engineering Program Management.

Element 7. SSAR Rev 9 Ch 18 and WCAP-14396 Rev 1 submittals. ITAAC req'd to close.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1362	NRR/HHFB	18.8.2.3-1	DSER-01		7/25/96	Closed	~~Action W~~ PET-N	

SPDS

Westinghouse should describe how the safety parameter display system (SPDS) design will be implemented to meet all pertinent HSI design criteria. Westinghouse should provide assurance that the SPDS design will meet all of the pertinent criteria as part of the HSI. Westinghouse should describe how the SPDS will privide a rapid and concise display of critical plant variables to control room operators. Westinghouse should describe how the SPDS implementation will be convenient to control room personnel. Westinghouse should describe how the SPDS function will continuously display plant safety information. Westinghouse should describe how the SPDS will achieve a high degree of reliability. Westinghouse should describe how the SPDS will be suitably isolated from electrical or electronic interference with safety systems. Westinghouse should describe how human factors principles will be incorporated into the SPDS. Westinghouse should describe how the SPDS will display sufficient information to determine plant safety status with respect to safety functions. Westinghouse should describe how procedures and operator training, addressing actions both with and without the SPDS, will be implemented.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action N -- Send us any further shortcomings from a review of our rev. 1 response to RAI 620.48 compared against the DSER issue 18.8.2.3 criteria (3/8 meeting in Monroeville)

Action W -- After receiveing the deficiency list from NRC, respond to it

Meeting of 3/8/95

Action W -- Westinghouse to adress the comments provided by the NRC staff during 3/8 meeting. Refer to meeting notes/minutes for the details. In general, one word answers (yes or no) as found in RAI 620.48 were insufficient. Each of the 10 CFR 50.34 requirements (1a - 1e, 2 - 9) and the additional information that was needed was discussed. Westinghouse to justify difference between our critical safety function parameters on the SPDS and those specified by NUREG 1342 and the generic letter. Need to address the critical safety functions listed on page 8 of NUREG 0737. Refer to meeting notes/minutes for further detail.

Action W

Meeting of 3/8/95: Action W -- Westinghouse to address the comments provided by the NRC staff during 3/8 meeting. Refer to meeting notes/minutes for the details. In general, one word answers (yes or no) as found in RAI 620.48 were insufficient. Each of the 10 CFR 50.34 requirements (1a - 1e, 2 - 9) and the additional information that was needed was discussed. Westinghouse to justify difference between our critical safety function parameters on the SPDS and those specified by NUREG 1342 and the generic letter. Need to address the critical safety functions listed on page 8 of NUREG 0737. Refer to meeting notes/minutes for further detail. Westinghouse will fax to the NRC HHFB a response to the open item. This response will be sent as a draft RAI revision 2 to Q620.48. The NRC action will be to review the response and provide feedback. The formal documentation to close this item will be a revision to SSAR section 18.9.2.2.6 or the formal revision 2 to RAI Q620.48, both of which would incorporate NRC feedback as result of reviewing the draft RAI revision.

6/7/95: Fax of document providing responses to the 9 criteria identified in the open item was sent to J.Bongarra. NRC reviewed this document and provided feedback via fax of 9/21/95. Six of the nine SPDS criteria are considered resolved.

Action W: To respond to remaining questions in fax of 9/21/95. (see NRC response letter sent 9/28/95)

Revised SSAR Chapter 18 submitted in Revision 9, 7/31/96. This includes SSAR 18.8, Human System Interface Design.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1363	NRR/HHFB	18.9.3-1	DSER-OI		7/26/96	Closed	~~Action W~~ ACT-N	

#8

Westinghouse should clarify the scope of the procedure development program.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- Send the revised writeup to applicable section of SSAR chapter 18

Action W

Westinghouse sent a draft revision of SSAR section 18.9.8 to the NRC. This section will reference 13.5.3 which will state that the development of procedures is a combined license applicant responsibility. The revised 13.5.3 will be sent as part of the formal revision 3 to the SSAR.

NRC to reviewed draft of 18.9.8; see NRC fax of 2/20/96.

ACTION W: to respond to concerns of the fax; was discussed in conference call of 3/21/96.

Closed - Procedure development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1364	NRR/HHFB	18.9.3-2	DSER-OI		8/13/96	Closed	~~Action W~~ ACT-N	NSD-NRC-96-4794

#8

Westinghouse should provide the technical basis for procedure development. Westinghouse should describe how (or whether) methods, in addition to LP ERG comparison, will be used for procedure development.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action N -- Jim Bongarra will interface with NRC Rx systems branch who attended the 2/2/95 meeting in Rockville (AP600 ERG presentation) and decide what the NRC status is, ie. CLOSED or give us feedback on what our action needs to be. Feedback given to Westinghouse in 2/23 conference call was that the material presented at 2/2 meeting (basis of ERG development) was acceptable and the action-W is to deliver the ERGs and documents by May 31.

Action W

Feedback given to Westinghouse in 2/23 conference call was that the material presented at 2/2 meeting (basis of ERG development) was acceptable and the action-W is to deliver the ERGs and documents by May 31, 1995.

Status update provided by phone (D. Jackson 8/21).
Action W is to complete analytical basis for AE-1, AES-1.2, AE-2, and supporting documentation for shutdown ERG.

Review at-power, Low power/shutdown ERGs and background for at-power and low power ERGs, and the draft of SSAR section 18.9.8 sent on 8/18/95. See NRC fax of 2/20/96.

ACTION W: to respond to concerns of the fax; was discussed in conference call of 3/21/96.

Closed - In Response to letter NSD-NRC-96-4794

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1365	NRR/HHFB	18.9.3-3	DSER-OI		9/3/96	Resolved	Action W	NSD-NRC-96-4805	

#8

Westinghouse should provide information regarding the writer's guide. Westinghouse should describe how the writer's guide will address the unique features of a paper- and computer-based presentation of procedures.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W – NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Action W

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw: Action W – NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Westinghouse sent (via fax or fedex) to the NRC a draft revision to SSAR 18.9.8 on 8/18/95 which will provide the response to this open item.

Action N: NRC to review draft of 18.9.8 ; see NRC fax of 2/20/96.

ACTION W: to respond to concerns of the fax; was discussed in conference call of 3/21/96.

Element 8: With submittal of SSAR Rev 9 ch 18 and WCAP-14690, the MMIS portion of this item is closed. Need to determine what is required to close ERG portion of item.

Resolved - Per DCP/NRC0589, this item will be closed with submittal of th at-power ERG's.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1366	NRR/HHFB	18.9.3-4	DSER-OI		9/3/96	Resolved	Action W	NSD-NRC-96-4805	

#6

Westinghouse should provide information regarding the contents of procedures. Westinghouse should describe and provide a rationale for the differences, if any, between the paper- and computer-based presentations of the items in this criterion (or in NUREG-0899).

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Action W:

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw: Action W -- NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Westinghouse sent (via fax or fedex) to the NRC a draft revision to SSAR 18.9.8 on 8/18/95 which provided the response to this open item.

Action N: NRC to review draft of 18.9.8 , see NRC fax of 2/20/96.

ACTION W: to respond to concerns of the fax, was discussed in conference call of 3/21/96.

Element 8: With submittal of SSAR Rev 9 ch 18 and WCAP-14690, the MMIS portion of this item is closed. Need to determine what is required to close ERG portion of this item.

Resolved - Per DCP/NRC0589, this item will be closed with submittal of th at-power ERG's.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1367	NRR/HHFB	18.9.3-5	DSER-OI		8/23/96	Closed	~~Action W~~ ACT-W	NSD-NRC-96-4794	

#8

NB: THIS ITEM RELATED TO WSC SUBMISSION OF REV. TO AT-POWER ERG's

Westinghouse should provide information regarding the symptom- based emergency operating procedures (EOPs). Westinghouse should submit the AP600-specific ERGs so that the staff can verify that the EOPs will be symptom-based.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to send the ERGs and background documents to NRC.

Action W

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to send the ERGs and background documents to NRC. These will be sent via a phased approach with phase 1 ERGs to be sent 5/31/95.

Status update provided by phone (D. Jackson 8/21):
Action W is to complete analytical basis for AE-1, AES-1.2, AE-2, and supporting documentation for shutdown ERG.
Action N - Review at-power , Low power/shutdown ERGs and background for at-power and low power ERGs.

Closed - In Response to letter NSD-NRC-96-4794.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1368	NRR/HHFB	18.9.3-6	DSER-OI		9/3/96	Resolved	Action W	NSD-NRC-96-4805	

1 of 8

See #1367

Westinghouse should provide information regarding the V&V procedure. Westinghouse should clarify the relationship of the EOP V&V to the M-MIS evaluation issues. The V&V process for hardcopy procedures should also be described.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Action W

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw: Action W -- NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Westinghouse sent (via fax or fedex) to the NRC a draft revision to SSAR 18.9.8 on 8/18/95 which provided the response to this open item.

NRC to review draft of 18.9.8 , see NRC fax of 2/20/96.

ACTION W: to respond to concerns of the fax; was discussed in conference call of 3/21/96.

Element 8: With submittal of SSAR Rev 9 ch 18 and WCAP-14690, the MMIS portion of this item is closed. Need to determine what is required to close ERG portion.

Resolved - Per DCP/NRC0589, this item will be closed with submittal of th at-power ERG's.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1369	NRR/HHFB	18.9.3-7	DSER-OI		9/3/96	Resolved	Action W	NSD-NRC-96-4805	

1-8

see #1367

Westinghouse should provide information regarding the computer- based procedures. Westinghouse should describe the process by which human engineering issues associated with computer-based procedures will be resolved (e.g., concept testing, and other analyses).

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Action W

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw: Action W – NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Westinghouse sent (via fax or fedex) to the NRC a draft revision to SSAR 18.9.8 on 8/18/95 which provided the response to this open item.

NRC to review draft of 18.9.8 ; see NRC fax of 2/20/96.

ACTION W: to respond to concerns of the fax; was discussed in conference call of 3/21/96.

Element 8: With submittal of SSAR Rev 9 on 18 and WCAP-14690, the MMIS portion of this item is closed. Need to determine what is required to close ERG portion.

Resolved - Per DCP/NRC0589, this item will be closed with submittal of the at-power ERG's.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1370	NRR/HHFB	18.9.3-8	DSER-OI		9/3/96	Resolved	Action W	NSD-NRC-96-4805	

18

See #1367

Westinghouse should provide information regarding procedure maintenance. Westinghouse should describe the administrative procedures that will ensure that hardcopy procedures remain current and consistent with the computer-based procedures.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw

Action W -- NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Action W

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw. Action W – NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Westinghouse sent (via fax or fedex) to the NRC a draft revision to SSAR 18.9.8 on 8/18/95 which provided the response to this open item.

NRC to review draft of 18.9.8, see NRC fax of 2.20.96.

ACTION W: to respond to concerns of the fax; was discussed in conference call of 3.21/96.

Element 8: With submittal of SSAR Rev 9 ch 18 and WCAP-14690, the MMIS portion of this item is closed. Need to determine what is required to close ERG portion.

Resolved - Per DCP/NRC0589, this item will be closed with submittal of th at-power ERG's.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1371	NRR/HHFB	18.9.3-9	DSER-OI		9/3/96	Resolved	Action W	NSD-NRC-96-4805	

4 8

see #1367

Westinghouse should provide information regarding procedure use. Westinghouse should describe provisions for access to, and use of, hardcopy procedures, as backups either in the control room or at locations outside the control room. Westinghouse should also describe how disruption of ongoing activity by automatically accessed procedures will be minimized.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W – NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Action W

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw: Action W – NRC agreed to resolution path "in principle" and we need to send revision to SSAR section.

Westinghouse sent (via fax or fedex) to the NRC a draft revision to SSAR 18.9.8 on 8/18/95 which provided the response to this open item.

NRC to review draft of 18.9.8 ; see NRC fax of 2/20/96.

ACTION W: to respond to concerns of the fax, was discussed in conference call of 3/21/96.

Element 8: With submittal of SSAR Rev 9 ch 18 and WCAP-14690, the MMIS portion of this item is closed. Need to determine what is required to close ERG portion.

Resolved - Per DCP/NRC0589, this item will be closed with submittal of th at-power ERG's.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1372	NRR/HHFB	18.9.3-10	DSER-OI		8/23/96	Closed	~~Action W~~ ACT-N		

48

Westinghouse should provide information regarding the source material for procedure development. Westinghouse should describe the sources or experience drawn upon in developing guidance for the design of the computer-based procedures.

Conference call with NRC 3/21/95:
(J.Bongarra, G.Galletti, T.Kenyon, J.O'Hara, J.Higgins, A.Sterdis, J.Easter, E.Roth, S.Kerch)

Action W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in the closure path. The NRC's intent of this open item is limited to the computerization of procedures.

Action W

Conference call with NRC 3/21/95: (J.Bongarra, G.Galletti, T.Kenyon, J.O'Hara, J.Higgins, A.Sterdis, J.Easter, E.Roth, S.Kerch) Action W: Westinghouse to revise the applicable chapter 18 SSAR sections to reflect the statements and process described in the closure path. The NRC's intent of this open item is limited to the computerization of procedures.

Westinghouse sent (via fax or fedex) to the NRC a draft revision to SSAR 18.9.8 on 8/18/95 which provided the response to this open item.

NRC to review draft of 18.9.8 , see NRC fax of 2/20/96.

ACTION W: to respond to concerns of the fax, was discussed in conference call of 3/21/96.

Element 8
With submittal of SSAR Rev 9 ch 18 and WCAP-14690, this item is closed.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1373	NRR/HHFB	18.10.3-1	DSER-OI		7/26/96	Closed	Resolved ✓		

#9

Westinghouse should provide information regarding the training program mission. Westinghouse should provide additional information regarding the process that will address the rationale behind the selection of the identified positions for developing training programs, as well as information on the other related areas identified in this criterion.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to 1. issue document, 2. prepare for March NRC meeting by list of COL applicant responsibility, and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W, refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sc[illegible] to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

Action W - see NRC response sent 11/21/95.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1374	NRR/HHFB	18.10.3-2	DSER-OI		7/26/96	Closed	Resolved ✓		

#9

Westinghouse should describe training requirements. Westinghouse should describe how the AP600 training program development will ensure consistency with the regulatory documents cited in this criterion.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by list of COL applicant responsibility, and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W, refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11/21/95.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1375	NRR/HHFB	18.10.3-3	DSER-OI		7/26/96	Closed	Resolved	

Westinghouse should describe the SAT training approach. Westinghouse should provide additional information on the SAT approach that it is using, particularly with regard to the evaluation elements of the SAT process. Additionally, Westinghouse should provide information on how cognitive task analysis will supplement the information obtained using a traditional SAT approach.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by list of COL applicant responsibility, and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W, refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11/21/95.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

Item No	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1376	NRR/HHFB	18.10.3-4	DSER-OI		7/26/96	Closed	Resolved	

Westinghouse should discuss organizational roles related to training. Westinghouse should specifically define the roles of all organizations in developing and implementing the AP600 training programs.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by list of COL applicant responsibility, and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W, refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11/21/95.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1377	NRR/HHFB	18.10.3-5	DSER-OI		7/26/96	Closed	Resolved		

Westinghouse should discuss the qualifications of training personnel. Westinghouse should provide additional information on the qualifications of organizations and personnel to be involved in the development and conduct of training.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W – NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by list of COL applicant responsibility, and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSEP items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W, refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11.21.95.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1378	NRR/HHFB	18.10.3-6	DSER-OI		7/26/96	Closed	Resolved ✓		

49

Westinghouse should describe the training scope. Westinghouse should provide additional information on how the AP600 training program will address the scope of training. This information should include categories of personnel (e.g., senior reactor operator) to be trained, as well as specific plant conditions (normal, upset, and emergency), operational activities (e.g., operations, maintenance, testing, and surveillance), and HSI components (e.g., MCR, emergency operations facility, remote shutdown panel, local control stations).

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by proving list of COL applicant responsibilty (1378, 1381, 1383, 1384?), and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W; refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11/21/95.

Closed - The training program development is addressed in revised SSAR Chapters 1., and 18 submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1379	NRR/HHFB	18.10.3-7	DSER-OI		7/26/96	Closed	Resolved		

Westinghouse should describe how Human Factors Engineering Program Review Model (HFE PRM) elements are incorporated into the training planning objectives. Westinghouse should describe how training issues will be identified from the seven elements for use in deriving learning objectives, namely, Operating Experience Review, Function Analysis and Allocation, Task Analysis, Human Reliability Assessment, HSI Design, Plant Procedures, and Verification and Validation.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W – NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for Ma h NRC meeting by proving list of COL applicant responsibility (1378, 1381, 1383, 1384?), and 3. revise SSAR section.

Meeting of 3/8/95

Action W: Draft COL Action Item: Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W; refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section ... I provide feedback.

Action W - see NRC response sent 11/21/95.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1380	NRR/HHFB	18.10.3-8	DSER-C1		7/26/96	Closed	Resolved ✓		

Westinghouse should describe how information from other sources is incorporated into the training learning objectives. Westinghouse should describe how the trianing development process will allow a determination to be made of whether learning objectives will be derived from the final safety analysis report, system description manuals and operating procedures, facility license and license amendments, licensee event reports, and other documents identified by the staff as being important to training.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by proving list of COL applicant responsibility (1378, 1381, 1383, 1384?), and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W, refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11/21/95.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1381	NRR/HHFB	18.10.3-9	DSER-OI		7/26/96	Closed	Resolved		

Westinghouse should describe details for training presentation techniques. Westinghouse should describe how learning objectives will be conveyed to the trainee, and how the other items of this criterion are addressed.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W – NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by proving list of COL applicant responsibility (1378, 1381, 1383, 1384?), and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W, refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11.21.95.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1382	NRR/HHFB	18.10.3-10	DSER-OI		7/26/96	Closed	Resolved		

Westinghouse should describe training resources. Westinghouse should discuss how the various facilities and resources needed to satisfy training design requirements will be identified.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W – NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by proving list of COL applicant responsibility (1378, 1381, 1383, 1384?), and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W, refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11/21/95.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1383	NRR/HHFB	18.10.3-11	DSER-OI		7/26/96	Closed	Resolved		

#8

Westinghouse should describe how training is evaluated. Westinghouse should define the processes by which to identify methods for evaluating trainee mastery of trianing objectives, as well as overall trainee proficiency. In addition, Westinghouse should specify how evaluation criteria will be defined.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by proving list of COL applicant responsibility (1378, 1381, 1383, 1384?), and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W; refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11.21.95.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

1384	NRR/HHFB	18.10.3-12	DSER-OI		7/26/96	Closed	Resolved		

#9

Westinghouse should discuss verification of the adequacy of training materials. Westinghouse should provide additional information on the methods that will be used to verify the accuracy and completeness of training course materials.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by proving list of COL applicant responsibility (1378, 1381, 1383, 1384?), and 3. revise SSAR secti

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W; refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11/21/95.

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1385	NRR/HHFB	18.10.3-14	DSER-OI		7/26/96	Closed	Resolved	

Westinghouse should discuss how the training program will be updated. Westinghouse should describe how the identified training program configuration management computer systems will be used to refine and update the content and conduct of training.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by proving list of COL applicant responsibility (1378, 1381, 1383, 1384?), and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W, refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11/21/95

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1386	NRR/HHFB	18.10.3-15	DSER-OI		7/26/96	Closed	Resolved	

Westinghouse should describe training source materials. Westinghouse should describe how the training program is developedusing the requirements and guidance of 10 CFR 50.120, "Training and Qualification of Nuclear Power Plant Personnel"; 10 CFR Part 55, "Operators' Licenses," and ANSI/ANS 3.1-1981, "Selection, Qualfication, and Training of Personnel for Nuclear Power Plants."

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by proving list of COL applicant responsibility (1378, 1381, 1383, 1384?), and 3. revise SSAR section.

Meeting of 3/8/95:

Action W: Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W; refer to dbase item number 2061 and 2062.

Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered.

Action N: NRC to review markup section and provide feedback.

Action W - see NRC response sent 11/21/95

Closed - The training program development is addressed in revised SSAR Chapters 13 and 18 submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1387	NRR/HHFB	18.11.3.1-1	DSER-OI		7/26/96	Closed	~~Resolved~~ ACT-W		

#10

NB: RESOLUTION OF THIS ITEM REMAINS OPEN PENDING ITAAC POLICY ISSUES

Westinghouse should clarify the general V&V scope regarding the TSC. Westinghouse should clarify the role of the TSC in Evaluation Issues 16 and 17.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W – NRC agreed to resolution path "in principle" and we need to issue document & SSAR revision.

Resolved

4/13/95 - Fax of the "Programmatic Level Description of the AP600 Human Factors Verification and Validation Plan" was sent to J.Bongarra and J.O'Hara. A mapping of each element 10 open item to its response/answer was also provided. Action N: Review the document and determine whether the element 10 open items 18.11's are adequately addressed.

Resolved: 5/17 phoncon with Jim Bongarra, Jim considers all the element 10 V&V open items resolved. Need to submit the revised 18.8.2.3 of chapter 18 of the SSAR as part of the formal SSAR revision.

Closed - The Human Factors Verification and Validation is addressed in revised SSAR Section 18.11, submitted in Rev. 9, 7/31/96.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1388	NRR/HHFB	18.11.3.1-2	DSER-OI		7/26/96	Closed	~~Resolved~~ ACT-W		

#10

See #1387

Westinghouse should describe V&V activities and sequences. Westinghouse should clarify (a) the role of human factors issue resolution, HSI task support verification, and final plant HFE HSI design verification in the V&V activities, and (b) the sequence of V&V activities.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W – NRC agreed to resolution path "in principle" and we need to issue document & SSAR revision.

Resolved

4/13/95 - Fax of the "Programmatic Level Description of the AP600 Human Factors Verification and Validation Plan" was sent to J.Bongarra and J.O'Hara. A mapping of each element 10 open item to its response/answer was provided. Action N: Review the document and determine whether the element 10 open items 18.11's are adequately addressed.

Resolved: 5/17 phoncon with Jim Bongarra, Jim considers all the element 10 V&V open items resolved. Need to submit the revised 18.8.2.3 of chapter 18 of the SSAR as part of the formal SSAR revision.

Closed - The Human Factors Verification and Validation is addressed in revised SSAR Section 18.11, submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1389	NRR/HHFB	18.11.3.1-3	DSER-OI		7/26/96	Closed	~~Resolved~~ ACTW		

#10

DCC #1387

Westinghouse should describe the V&V technical methodology source materials. Westinghouse should describe the guidance documentation used to develop the V&V program.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to issue document & SSAR revision.

Resolved

4/13/95 - Fax of the "Programmatic Level Description of the AP600 Human Factors Verification and Validation Plan" was sent to J Bongarra and J O'Hara. A mapping of each element 10 open item to its response/answer was provided. Action N: Review the document and determine whether the element 10 open items 18.11's are adequately addressed.

Resolved: 5/17 phoncon with Jim Bongarra, Jim considers all the element 10 V&V open items resolved. Need to submit the revised 18.8.2.3 of chapter 18 of the SSAR as part of the formal SSAR revision.

Closed - The Human Factors Verification and Validation is addressed in revised SSAR Section 18.11, submitted in Rev. 9, 7/31/96.

Item No	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1390	NRR/HHFB	18.11.3.2-1	DSER-OI		7/26/96	Closed	~~Resolved~~ ACTW		

#10

DCC #1387

Westinghouse should develop an implementation plan for HSI task support verification. The implementation plan should describe how all aspects of the HSI required to accomplish the human tasks and actions demanded by the AP600 design will be verified. Westinghouse should describe how the V&V methodology will verify that the HSI does not include information, displays, controls, etc., that do not support operator tasks.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to issue document & SSAR revision.

Resolved

4/13/95 - Fax of the "Programmatic Level Description of the AP600 Human Factors Verification and Validation Plan" was sent to J Bongarra and J O'Hara. A mapping of each element 10 open item to its response/answer was provided. Action N: Review the document and determine whether the element 10 open items 18.11's are adequately addressed.

Resolved: 5/17 phoncon with Jim Bongarra, Jim considers all the element 10 V&V open items resolved. Need to submit the revised 18.8.2.3 of chapter 18 of the SSAR as part of the formal SSAR revision.

Closed - The Human Factors Verification and Validation is addressed in revised SSAR Section 18.11, submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1391	NRR/HHFB	18.11.3.3-1	DSER-OI		7/26/96	Closed	~~Resolved~~ Act-W		

#10

see #1387

Westinghouse should describe HFE design verification methods. Westinghouse should commit to developing a methodology for HFE design verification and related criteria, taking into consideration the concerns identified in the staff's evaluation of this criterion. Westinghouse should describe how deviations identified in the criterion will be addressed in the V&V methodology.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to issue document & SSAR revision.

Resolved

4/13/95 - Fax of the "Programmatic Level Description of the AP600 Human Factors Verification and Validation Plan" was sent to J.Bongarra and J.O'Hara. A mapping of each element 10 open item to its response/answer was provided. Action N: Review the document and determine whether the element 10 open items 18.11's are adequately addressed.

Resolved - 5.17 phoncon with Jim Bongarra; Jim considers all the element 10 V&V open items resolved. Need to submit the revised 18.8.2.3 of chapter 18 of the SSAR as part of the formal SSAR revision.

Closed - The Human Factors Verification and Validation is addressed in revised SSAR Section 18.11, submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1392	NRR/HHFB	18.11.3.4-1	USER-OI		7/26/96	Closed	Resolved	DET-W	

#10

see #1387

Westinghouse should commit to developing a methodology for integrated system validation and related criteria. Westinghouse should describe the tools to be used in evaluating dynamic task performance in the V&V methodology. Westinghouse should describe how the V&V methodology will address the objectives listed as part of this criterion. Westinghouse should describe how the testing of critical human actions will be addressed in the V&V methodology. Westinghouse should describe how the V&V methodology will address the categories identified in Appendix A to RG 1.33 regarding procedure-related activities. Westinghouse should describe how the V&V methodology will evaluate performance under a range of operational conditions and upsets, and provide additional information about the Evaluation 17 test scenarios. Westinghouse should describe how the validation scenarios will be made realistic as part of the V&V methodology. Westinghouse should describe how the V&V methodology will address performance measures to test the achievement of all objectives, design goals, and performance requirements.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W – NRC agreed to resolution path "in principle" and we need to issue document & SSAR revision.

Action N – NRC to provide clarification on which procedures per RG 1.33 should be covered by V&V.

Meeting of 3/10/95

Clarification provided (in writing) by NRC to Westinghouse (Emilie). Brief discussion followed. Westinghouse to issue SSAR revision and document.

Resolved

4/13/95 - Fax of the "Programmatic Level Description of the AP600 Human Factors Verification and Validation Plan" was sent to J Bongarra and J O'Hara. A mapping of each element 10 open item to its response/answer was provided. Action N: Review the document and determine whether the element 10 open items 18.11's are adequately addressed.

Resolved: 5/17 phoncon with Jim Bongarra; Jim considers all the element 10 V&V open items resolved. Need to submit the revised 18.8.2.3 of chapter 18 of the SSAR as part of the formal SSAR revision.

Closed - The Human Factors Verification and Validation is addressed in revised SSAR Section 18.11, submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1393	NRR/HHFB	18.11.3.5-1	DSER-OI		7/26/96	Closed	Resolved ACT-W		

#10

see #1387

Westinghouse should develop an issue resolution verification methodology. Westinghouse should commit to developing a methodology for human factors issue resolution verification and related criteria. Westinghouse should describe how the V&V methodology will address issues that cannot be resolved until a plant is built, and how such issues will be incorporated into the process for final plant HFE/HSI design verification.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to issue document & SSAR revision.

Resolved

4/13/95 - Fax of the "Programmatic Level Description of the AP600 Human Factors Verification and Validation Plan" was sent to J.Bongarra and J.O'Hara. A mapping of each element 10 open item to its response/answer was provided. Action N: Review the document and determine whether the element 10 open items 18.11's are adequately addressed.

Resolved: 5/17 phoncon with Jim Bongarra, Jim considers all the element 10 V&V open items resolved. Need to submit the revised 18.8.2.3 of chapter 18 of the SSAR as part of the formal SSAR revision.

Closed - The Human Factors Verification and Validation is addressed in revised SSAR Section 18.11, submitted in Rev. 9, 7/31/96.

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1394	NRR/HHFB	18.11.3.6-1	DSER-OI		7/26/96	Closed	Resolved ACT-W		

#10

see # 1387

Westinghouse should develop a final plant HFE/HSI design verification methodology. Westinghouse should commit to developing a methodology for final plant HFE/HSI design verification and related criteria. Westinghouse should describe how the V&V methodology will address aspects of the design that cannot be addressed in design process V&V, and how they will be addressed as part of the final plant HFE/HSI design verification. Westinghouse should describe how the V&V methodology will address conformance of the in-plant HFE to the design that resulted from the HFE design process and V&V activities.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw:

Action W -- NRC agreed to resolution path "in principle" and we need to issue document & SSAR revision.

Resolved

4/13/95 - Fax of the "Programmatic Level Description of the AP600 Human Factors Verification and Validation Plan" was sent to J.Bongarra and J.O'Hara. A mapping of each element 10 open item to its response/answer was provided. Action N: Review the document and determine whether the element 10 open items 18.11's are adequately addressed.

Resolved: 5/17 phoncon with Jim Bongarra, Jim considers all the element 10 V&V open items resolved. Need to submit the revised 18.8.2.3 of chapter 18 of the SSAR as part of the formal SSAR revision.

Closed - The Human Factors Verification and Validation is addressed in revised SSAR Section 18.11, submitted in Rev. 9, 7/31/96.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1395	NRR/HHFB	18.12.3-1	DSER-OI		8/23/96	Resolved	~~Action W~~ ACT-N		

MIN INCENT

Westinghouse should submit an acceptable minimum inventory of fixed-position controls, display and alarms for transient mitigation. Westinghouse should describe how the task analysis will define a minimum inventoryof alarms, displays, and contr ls necessary to perform crew tasks. Westinghouse should describe the technical basis for the minimum inventory. Westinghouse should describe how an inventory will be identified of fixed-position controls, displays, and alarms necessary to permit execution of the operator tasks to place and maintain the plant in a safe-shutdown condition. Westinghouse should describe how additional detailed characteristics of these controls, displays, and alarms (e.g., ranges, scales, physical dimensions, and actual information presentation) will be identified, defined, and implemented.

Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw

Westinghouse to include this on the March meeting agenda.

Action N – Give Westinghouse feedback on our proposed resolution (proposed during 2/2/95 meeting in Rockville).

3/8/95 meeting

NRC requested Westinghouse consider that the detailed list remain completely in Tier 2. Tier 1 would include the process to select the final inventory.

ACTION W: If the inventory list is provided in chapter 7, then make the cross reference strong from chapter 18. Also, the list should include the process / criteria that was used to generate the list. Westinghouse position is that this list is an expansion of the RG 1.97 critieria and philosophy to address controls and displays. Should a Tier 1 list be required we will pursue use of critieria presented at the Feb 2 meeting versus the NRC criteria used on evolutionary plants. Also prepare a draft Tier 1 list. Need to take a stab at defining acceptable ITAAC and supporting SSAR information as to how the final inventory will be defined (Use PRA, EOPs, ERGs, FBTA). Caution from A. Sterdis -- There will be a strong push to be specific in defining these design ITAAC.

ACTION N: NRC staff to prepare a position paper for NRC senior management, proposing Tier 1 include the process / critieria. Goal is to produce the paper to support the next scheduled Senior management meeting of April 4.

Action W

2/2/95 Presentation of above made in Rockville, NRC staff to discuss and provide feedback.
2/9/95 Discussed during NRC/Westinghouse senior management meeting as one of the top 50 open items. Action N – to provide feedback on Westinghouse proposal for resolution.

2/27/95 Conference call with NRC (J. Bongarra, G. Galletti, J. O'Hara, J Easter, A.Sterdis & S.Kerch). 1. Agreed to following definition of "fixed position" – unique location in the control room/control panel for alarms, displays, controls where present information from the minimum inventory; continuously available not continously displayed; doesn't have to be class 1E; always displayed at the same location; dedicated location where the operator can retrieve information that is part of the minimum inventory. 2. Scope of min. inv. – failed to reach a mutual understanding on this; NRC stated that scope includes those controls and indications needed to execute the ERG high level operator actions including nonsafety system actions; disagreed on this. 3. Use of FBTA & ERG development task analysis I.P. C list. 4. When completed where does this go tier 1 or tier 2? Agreed to discuss at 3/8 meeting.

3/8/95 meeting: NRC requested Westinghouse consider that the detailed list remain completely in Tier 2. Tier 1 would include the process to select the final inventory. ACTION W: If the inventory list is provided in chapter 7, then make the cross reference strong from chapter 18. Also, the list should include the process / criteria that was used to generate the list. Westinghouse position is that this list is an expansion of the RG 1.97 critieria and philosophy to address controls and displays. Should a Tier 1 list be required we will pursue use of critieria presented at the Feb 2 meeting versus the NRC criteria used on evolutionary plants. Also prepare a draft Tier 1 list. Need to take a stab at defining acceptable ITAAC and supporting SSAR information as to how the final inventory will be defined (Use PRA, EOPs, ERGs, FBTA).

NRC staff prepared a position paper for NRC senior management, proposing Tier 1 include the process / critieria. Goal is to produce the paper to support

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail / Last Mod Date	(W) Status	NRC Status	Letter No. / Date
				the next scheduled Senior management meeting of April 4. 4/19/95 - Fax sent to J Bongarra and G Galletti of NRC that provided a preliminary (draft) description of how the total inventory list was developed and where in the tier 2 (SSAR) document it was found. A description of how the minimum inventory would be selected from the total inventory list (the criteria to be used) was also provided. This would be placed in the Tier 1 document. A very preliminary draft of a minimum inventory list, using this criteria, was provided for the NRC's information and use as backup to their position paper. The NRC (G Galletti) has submitted the position paper for NRC management review. NRC to: Determine whether the position paper is acceptable and the proposed Westinghouse appraoch is acceptable. Action W - see NRC response sent 8/21/95 Resolved - The minimum inventory is addressed in revised SSAR Section 18.12, submitted in Rev. 9, 7/31/96. An ITAAC will be prepared which will include the list of minimum inventory.			
1396	NRR/HHFB	18.13.3-1	DSER-OI	8/21/96	Action W	Action W	

ITAAC/DAC

Westinghouse should develop the ITAAC/DAC for certain elements of the HFE PRM. In each of the following areas, Westinghouse should provide ITAAC/DAC addressing a commitment to complete the implementation plan and provide the results to the staff for review:

- Element 3 - Functional Requirements Analysis/Allocation
- Element 4 - Task Analysis
- Element 5 - Staffing
- Element 6 - Human Reliability Analysis
- Element 7 - Human-System Interface Design
- Element 8 - Procedure Development
- Element 9 - Training Program Development

Westinghouse should also provide ITAAC/DAC addressing a V&V commitment to (a) develop a detailed implementation plan, and (b) complete the implementation plan and provide the results to the staff for review. ITAAC identifying the minimum inventory must also be developed.

Action W: Westinghouse will discuss with the NRC HHFB our approach to ITAACS/ Tier 1 document for chapter 18.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1397	NRR/HHFB	18.13.3-2	DSER-OI		8/23/96	Action W	Action W		

ITAAC/DAC

Westinghouse should provide the specified level of detail for the DCD, ITAAC, and DAC.

Westinghouse should:

1. Provide a complete set of ITAAC/DAC describing the (a) design commitments, (b) inspections, test, and analyses, and (c) acceptance criteria for Element 3, "Functional Requirements Analysis and Allocation"; Element 4, "Task Analysis"; Element 5, "Staffing"; Element 6, "Human Reliability Analysis" Element 7, "Human-System Interace Design"; Element 8, "Procedure Development"; and Element 9, "Training Program Development

2. Provide a complete set of ITAAC/DAC for all V&V activities, including HSI task support verification, human factors issue resolution verification, and final plant HFE/SHI design verification

3. Resolve the staff's concern regarding the use of HFE guidelines for verification

4. Provide ITAAC/DAC for the minimum inventory

Action W: Westinghouse will discuss with the NRC HHFB our approach to ITAAC/ Tier 1 document for chapter 18.

1524	NRR/HHFB	20.4-1	DSER-OI		10/30/96	Closed	~~Action W~~ Resolved		

#20

NB: THIS ITEM RELATED TO #1316 per DSER

Westinghouse did not address Issue I.A.1.4 in its May 28, 1993, letter. It should also address the responsibility of the COL applicant in this issue for the AP600 design.

(DSER page 20-108) As discussed in NUREG-0933, Issue I.A.1.4, addressed changes to 10 CFR 50.54, "Conditions of licensees," concerning shift staffing and working hours of licensed operators. The final rule that amended 10 CFR 50.54 was approved on April 28, 1983. This issue is resolved and new requirements were established.

The staff, however, considers this issue not relevant to the AP600 design because it is an operational issue outside the scope of AP600 design certification. The organizational structure of the site operator is discussed in Section 13.1 of this report. The COL applicant will be responsible for addressing this issue as part of the licensing process and is COL Action Item 20.4-1.

Westinghouse did not address this issue in its May 28, 1993, letter. It concluded, in Table 1.9-2 of that letter, that this issue was not relavant to the AP600 design because this issue was issued [sic] with no new requirements. Although Westinghouse is correct as to the design of the plant, the responsiblity of the COL applicant should be identified. The staff requests that Westinghouse address this issue for the AP600 design.

Closed - There is not a need to add a section to 1.9.4 for this issue since (as identified in DSER) this issue is an operational issue outside the scope of design certification. The requirement for a COL applicant to meet 10 CFR 50.54 (which was ammended in response to this issue) in combination with the COL action to describe its organizational structure (COL Action Item 13.1-1) satisfactorily resolve this issue.

1525	NRR/HHFB	20.4-2	DSER-OI		10/30/96	Closed	~~Action W~~ ACT-W		

#20

PENDING SUBMITTAL OF REVISION TO AT POWER ERG's

For Issue I.C.1, the staff concludes that the AP600 specific ERGs are needed to satisfy these requirements. Supporting analyses necessary to demonstrate the effectiveness of operator actions in response to transients and accidents should also be provided by Westinghouse.

Revision 1 of the at-power Emergency Response Guidelines was submitted by DCP/NRC0376 on 8/9/95. Normal, abnormal, maintenance and administrative plant procedures are the responsibility of the Combined License applicant as indicated in SSAR Section 13.5.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1526	NRR/HHFB	20.4-3	DSER-OI		10/30/96	Closed	Action N ✓	
				For Issue I.C.5, Westinghouse addressed the responsibility of the plant designer; however, the COL applicant will, also, be responsible for the site-specific information at the COL and operational phases. Westinghouse should address this reponsibility as well as the methods and criteria for the development, verification and validation, implementation, maintenance, and revision of procedures.				
				Closed - Issue I.C.5 has been specifically addressed in the Rev. 7 of Section 19.4 of the SSAR. The item is closed.				
1527	NRR/HHFB	20.4-4	DSER-OI		10/30/96	Closed	Action N ✓	
				Westinghouse did not address Issue I.C.9 in its May 28, 1993, letter. It should address the responsibility of the COL applicant in procedure development for this issue. The methods and criteria for the development, verification and validation, implementation, maintenance, and revision of procedures should be addressed.				
				Closed - The COL actions requested with this item are addressed via COL action items 13.5.1-1 and 13.5.2-1. COL action item 13.5.1-1 states the COL applicant should develop and describe its administrative procedures. COL action item 13.5.2-1 states the COL applicant should develop and describe the operating and maintenance procedures. See DSER Open items 13.5.1-1 and 13.5.2-1 for resolution. Westinghouse and COL applicant responsibilities with respect to methods and criteria for the development, verification and validation, implementation, maintenance, and revision of procedures are being addressed via Open Items and COL Action Items in Chapters 13 and 18.				
1541	NRR/HHFB	20.4-18	DSER-OI		10/30/96	Closed	Action N ✓	
				In its discussion of Issue II.J.3.1 in SSAR Section 1.9.3, Westinghouse should explain what it means by "properly," "clearly defined," "well-coordinated," and "appropriate" used in Section 1.9.3 of the SSAR, and should discuss the QA standards and organization it used for the AP600 design.				
				Closed - Issue II.J.3.1 has been included in Table 1.9-2, Listing of Unresolved Safety Issues and Generic Safety Issues, and classified as superseded. The Item is closed.				
1542	NRR/HHFB	20.4-19	DSER-OI		10/30/96	Closed	Action N ✓	
				To address Issue II.J.4.1, Westinghouse should address the responsibility of the COL applicant for procedure development.				
				Closed - The plant procedures for adequately reporting in accordance with 10 CFR Part 21 and 10 CFR 50.55(e) are outside the scope of AP600 design certification. The COL applicant will have the responsibility for having the proper reporting procedures and addressing this issue as part of the licensing process. This is considered a part of the plant procedures development by the COL applicant. Procedures development by the COL applicant are addressed by COL Action Items 13.5.1-1 and 13.5.2-1. These COL action items are addressed by DSER open items 13.5.1-1 and 13.5.2-1. This DSER open item is closed since the responsibility of the COL applicant for this issue is tracked by two other DSER open items.				
1557	NRR/HHFB	20.5-1	DSER-OI		10/30/96	Closed	Action N ✓	
				For Issue HF4.1, Westinghouse should address the regulatory "guidance and standards" that it used to write the emergency operating procedures (EOPs) for the AP600 design.				
				Closed - Issue HF4.1 has been removed from the Rev. 7 of Section 1.9.4 of the SSAR, and included in Table 1.9-2, Listing of Unresolved Safety Issues and Generic Safety Issues, according to what was agreed with the NRC. The Item is closed.				

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1558	NRR/HHFB	20.5-2	DSER-OI		10/30/96	Closed	Action N ✓		
#20				For Issue HF5.2, Westinghouse should identify and discuss the "current guidance and requirements on integrated human factors design" used to design the advanced alarm system. In addition, Westinghouse should explain the relationship of the computerized procedures and qualified display processing system to the alarm system.					
				Closed - Issue HF 5.2 has been revised in Rev. 7 of Section 1.9.4 of the SSAR to address these issues and refer to Chapter 18. The Item is closed.					
1650	NRR/HHFB	18.10.3-13	DSER-OI		8/23/96	Closed	Resolved ✓		
#9				Westinghouse should discuss how the effectiveness of training will be demonstrated. Westinghouse should identify the process by which appropriate methods will be developed and used to evaluate the overall effectiveness of the training programs. Per 2/16/95 conference call between Jim Bongarra, John O'Hara & Kerch, Easter, Roth, Mumaw: Action W – NRC agreed to resolution path "in principle" and we need to 1. issue document & SSAR revision, 2. prepare for March NRC meeting by proving list of COL applicant responsibility (1378, 1381, 1383, 1384?), and 3. revise SSAR section.					
				Resolved Meeting of 3/8/95. Action W. Draft COL Action Item. Training program development is the responsibility of the COL applicant. Creation of this COL item will close all 15 DSER items (18.10.3-1 thru 3-15) that it addresses. Consider existing words in chapter 13 SSAR and DSER. Action item should be in chapter 13 and cross referenced from chapter 18. Two new MEETING Open Items were created, both Action W, refer to dbase item number 2061 and 2062. Resolved: Draft SSAR revision for section 18.9.9 was sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered. Element 9 With submittal of SSAR Rev 9 ch 18 and WCAP-14655 Rev 1, this is closed.					
1947	NRR/HHFB	13.2-1	DSER-COL		9/19/96	Closed	~~Action W~~ ACT-N	NTD-NRC-95-4464	
#9				13.2-1 The COL applicant should describe its personnel training.					
				Closed -The COL information item to include personnel training of the COL organization was added to the SSAR, Section 13.2 (Revision 3)					
1950	NRR/HHFB	13.5.1-1	DSER-COL		9/19/96	Closed	~~Action W~~ ACT (N)	NTD-NRC-95-4464	
#8				13.5.1-1 The COL applicant should develop and describe its administrative procedures.					
				Closed - A COL information item was added to the SSAR, Section 13.5, (Revision 3) to address administrative proceedures for the plant.					

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
1951	NRR/HHFB	13.5.2-1	DSER-COL		9/19/96	Closed	~~Action W~~	NTD-NRC-95-4464	
#8				13.5.2-1 The COL applicant should develop and describe the operating and maintenance procedures.					
				Closed - A COL information item was added to Section 13.5 of the SSAR (Revision 3) to address the development of operating and maintainance procedures for the plant.					
1978	NRR/HHFB	20.4-1	DSER-COL		10/30/96	Closed	Action N ✓		
#20				20.4-1 The COL applicant should address shift staffing and working hours of licensed operators in Issue I.A.1.4 as part of the licensing process.					
				Closed - Issue I.A.1.4 is included in Table 1.9-2, Listing of Unresolved Safety Issues and Generic Safety Issues, and classified as resolved without any new requirements.					
1981	NRR/HHFB	20.4-4	DSER-COL		10/30/96	Closed	Action N ✓		
#20	COL ITEM RELATED TO OI #2043 & #1317			20.4-4 For Issue I.C.5, the COL applicant should develop the detailed procedures for the plant-specific design.					
				Closed - The COL actions requested with this item are addressed via COL action items 13.5.1-1 and 13.5.2-1. COL action item 13.5.1-1 states the COL applicant should develop and describe its administrative procedures. COL action item 13.5.2-1 states the COL applicant should develop and describe the operating and maintenance procedures. See DSER Open items 13.5.1-1 and 13.5.2-1 for resolution.					
1982	NRR/HHFB	20.4-5	DSER-COL		10/30/96	Closed	Action N ✓		
#20	SEE #1981 COMMENT			20.4-5 For Issue I.C.9, the COL applicant should develop the detailed procedures for the plant-specific design.					
				Closed - The COL actions requested with this item are addressed via COL action items 13.5.1-1 and 13.5.2-1. COL action item 13.5.1-1 states the COL applicant should develop and describe its administrative procedures. COL action item 13.5.2-1 states the COL applicant should develop and describe the operating and maintenance procedures. See DSER Open items 13.5.1-1 and 13.5.2-1 for resolution.					
1986	NRR/HHFB	20.4-9	DSER-COL		10/30/96	Closed	Action N ✓		
#20	NB THIS COL ITEM RELATED TO OI 20.4-8			20.4-9 For Issue II.J.3.1, the COL applicant should address the organization for the plant, the construction of the plant, and any modifications to the AP600 certified design.					
				Closed - Issue II.J.3.1 appears as superseded in Table 1.9-2, Listing of Unresolved Safety Issues and Generic Safety Issues. The Itch can be considered closed.					

AP6C0 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. / Date
1987	NRR/HHFB	20.4-10	DSER-COL		10/30/96	Closed	Action N ✓	

#30 NB
THIS COL ITEM Related to OI 20.4-14

20.4-10 For Issue II.J.4.1, the COL applicant should address plant procedures for adequate reporting in accordance with 10 CFR Part 21 and 10 CFR 50.55(e).

Closed - The COL applicant will have the responsibility for having the proper reporting procedures and addressing this issue as part of the licensing process. This is considered a part of the plant procedures development by the COL applicant. Procedures development by the COL applicant are addressed by COL Action Items 13.5.1-1 and 13.5.2-1. These COL action items are addressed by DSER open items 13.5.1-1 and 13.5.2-1.

1988	NRR/HHFB	20.4-11	DSER-COL		10/30/96	Closed	Action N ✓	

#20

20.4-11 For Issue II.K.1(26), the COL applicant should address the scope of examinations and criteria for licensing examinations, as well as new training requirements for operators.

Closed - Issue II.K.1(26) appears to superseded in Table 1.9-2, Listing of Unresolved Safety Issues and Generic Safety Issues. The Item can be considered closed.

2042	NRR/HHFB	18	DSER-OI50		2/28/96	Closed	Closed ✓	

46. Full Scope Simulator for CR Design Review
The staff believes that a full scope simulator for the control room design review may be required. While describing the validation of the integrated MMIS in chapter 18 of the SSAR (18.8.2.3.5), Westinghouse has used the term "a near full scope, high fidelity simulator consisting of integrated MMIS components and a high fidelity, dynamic simulation of plant behavior". I believe that the term "near full scope" has made this an issue. This was discussed at a meeting with the NRC on 2/2/95 as part of the presentation on the AP600 ERG development process.

Closed

Meeting of 3/8/95: NRC indicated that satisfaction of the PRM requirements will address the role of the operator. This item will be adressed by closure of the chapter 18 DSER issues. Action N --- NRC staff to prepare and issue a policy position paper. This open item is to remain on the top 50 list at least through June Commission paper issuance. The hope is that the policy identified in the June paper will be sufficient to remove this item from the list.

Discussed at 2/9/95 SMM --- Issue to be redefined to focus on role of the operator in a passive plant.

5/2/95 Status: No longer considered a key licensing issue by staff. Resolution of related DSER issues should lead to satisfactory resolution of this matter. Letter to be sent to W.

Closed: Phoncon of 5/18/95 with Jim Bongarra; Jim has closed this open item based upon the NRC letter of 5/12/95, DRC/DCP0189, Docket # 52-003, "AP600 Key Licensing Issue-Full Scope Simulator/Role of Operator".

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

SHARON

Item No.	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
2043	NRR/HHFB	18.	DSER-OI50		9/3/96	Resolved	Action N ACT W	NSD-NRC-96-4805	

#8

47. Content of ERGs
Westinghouse, in response to a staff request for an AP600 ERG submittal, stated that the low-pressure reference plant's ERGs in combination with a design differences report, identification of high level operator action strategies, and the AP600 system/event matrices are sufficient for design certification. The staff does not agree with this Westinghouse position because the passive safety system philosophy differs significantly from current plants. This was addressed in the August 1994 position paper to Westinghouse as well as in the draft safety evaluation report (DSER). (DSER open items 5.4.7.6-1, 15.3.4-3, 20.4-2, 20.4-21) Westinghouse has indicated that they will submit the ERGs by May 1995. Westinghouse met the staff on February 2 and presented and discussed the ERG development process.

NA
Revision to AT POWER ERGs due 12/31/96

Action W

DISCUSSED AT 2/9/95 SENIOR MANAGEMENT MEETING: 47. Staff to confirm that technical agreement has been reached and implementation is the only issue. May be removed at next meeting. Westinghouse believes item 47 is resolved and waiting for staff feedback.

Action W – NRC agreed to resolution path "in principle" and we need to send the ERGs and background documents to NRC. These will be sent via a phased approach with phase 1 ERGs to be sent 5/31/95.

Status update provided by phone (D. Jackson 8/21):
Action W is to complete analytical basis for AE-1, AES-1.2, AE-2, and supporting documentation for shutdown ERG (need to submit background information on S/D ERGs.
Action N - Review at-power, Low power shutdown ERGs and background for at-power and low power ERGs.

Resolved - Per DCP NRC0589, this item will be closed with submittal of th at-power ERG's.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
2044	NRR/HHFB	18.	DSER-OI50		10/4/96	Resolved	~~Action W~~ ACT-N	✓	

48. Minimum Inventory of Controls and Displays
Westinghouse has not submitted a minimum inventory of controls and displays for the AP600 (See DSER open item 18.12.3-1). This issue was discussed with the staff at the 2/2/95 meeting in Rockville. A resolution to this open item was proposed and the staff stated that they needed to discuss it among themselves. (For closure, this open item may first require a completed set of AP600 ERGs.)

See 18.12.3-1 for further status

Action N: To review rev. 9 of ch. 18, specifically section 18.12

8/96: SSAR Rev. 9, which included a revision to Ch. 18, was submitted to NRC. This included section 18.12 on "minimum inventory"

2/2/95: Presentation of above made in Rockville, NRC staff to discuss and provide feedback.
2/9/95: Discussed during NRC/Westinghouse senior management meeting as one of the top 50 open items. Action N -- to provide feedback on Westinghouse proposal for resolution

2/27/95: Conference call with NRC (J. Bongarra, G. Galletti, J. O'Hara, J Easter, A.Sterdis & S.Kerch). 1. Agreed to following definition of "fixed position" -- unique location in the control room/control panel for alarms, displays, controls where present information from the minimum inventory; continuously available not continously displayed; doesn't have to be class 1E; always displayed at the same location; dedicated location where the operator can retrieve information that is part of the minimum inventory. 2. Scope of min. inv. -- failed to reach a mutual understanding on this; NRC stated that scope includes those controls and indications needed to execute the ERG high level operator actions including nonsafety system actions; disagreed on this 3. Use of FBTA & ERG development task analysis I & C list. 4. When completed where does this go tier 1 or tier 2? Agreed to discuss at 3/8 meeting

3/8/95 meeting: NRC requested Westinghouse consider that the detailed list remain completely in Tier 2. Tier 1 would include the process to select the final inventory. ACTION W: If the inventory list is provided in chapter 7, then make the cross reference strong from chapter 18. Also, the list should include the process / criteria that was used to generate the list. Westinghouse position is that this list is an expansion of the RG 1.97 critieria and philosophy to address controls and displays. Should a Tier 1 list be required we will pursue use of critieria presented at the Feb 2 meeting versus the NRC criteria used on evolutionary plants. Also prepare a draft Tier 1 list. Need to take a stab at defining acceptable ITAAC and supporting SSAR information as to how the final inventory will be defined (Use PRA, EOPs, ERGs, FBTA). Caution from A. Sterdis -- There will be a strong push to be specific in defining these design ITAAC

ACTION N: NRC staff to prepare a position paper for NRC senior management, proposing Tier 1 include the process / critieria. Goal is to produce the paper to support the next scheduled Senior management meeting of April 4

4/19/95 - Fax sent to J Bongarra and G Galletti of NRC that provided a preliminary (draft) description of how the total inventory list was developed and where in the tier 2 (SSAR) document it was found. A description of how the minimum inventory would be selected from the total inventory list (the criteria to be used) was also provided. This would be placed in the Tier 1 document. A very preliminary draft of a minimum inventory list, using this criteria, was provided for the NRC's information and use as backup to their position paper. The NRC (G Galletti) has submitted the position paper for NRC management review.

5/2/95 Status: Discussed during March 8-9, 1995 mtg. Proposed approach under NRC management review.

Action N: Determine whether the position paper and Westinghouse approach is acceptable. May require a SSAR revision to chapter 18.

Action W - see NRC response sent 8/21/95

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Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
2061	NRR/HHFB	18.10	MTG-OI		7/26/96	Closed	Action N ✓		
#9				The Training Program Development open items of chapter 18 of the DSER (18.10.3-1 through 18.10.3-15) were discussed with NRC during 3/8/95 meeting. It was decided that a COL action item would be written stating that training program development was the responsibility of the COL applicant. Once done this will close all 15 DSER items that it addresses. However, a new open item was agreed upon where Westinghouse is to commit to provide inputs to the COL applicant for their consideration in the development of their training program.					
				Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered. Action N: NRC to review markup section and provide feedback. Action W - see NRC response sent 11/21/95, conference call held with NRC on 3/21/96 for clarifcation. Resolved: WCAP-14655, Designer's Input for the Training of the Human Factors Engineering Verification and Validation Personnel, Draft SSAR Subsection, The AP600 Training Program and Draft Subsection 13.2, Training were submitted to the NRC as attachments to NSD-NRC-96-4722 on 5/14/96. Item will be closed when Chapter 18 of the SSAR is issued. Closed - SSAR Section 18.10, Training Program Development, provided in SSAR Rev. 9, 7/31/96, addresses the training program development and designer's input to this program.				
2062	NRR/HHFB	18.10	MTG-OI		7/26/96	Closed	Action N ✓		
#9				The Training Program Development open items of chapter 18 of the DSER (18.10.3-1 through 18.10.3-15) were discussed with NRC during 3/8/95 meeting. It was decided that a COL action item would be written stating that training program development was the responsibility of the COL applicant. Once done this will close all 15 DSER items that it addresses. However, a new open item was agreed upon where Westinghouse is to provide a description of the training for the HFE V & V crew.					
				Draft SSAR revision for section 18.9.9 sent to the NRC HHFB. Closure will occur when formal revision 4 is delivered. Action N: NRC to review markup section and provide feedback. Action W - see NRC response sent 11/21/95, conference call held with NRC on 3/21/96 for clarifcation. Resolved: WCAP-14655, Designer's Input for the Training of the Human Factors Engineering Verification and Validation Personnel was submitted to the NRC as an attachment to NSD-NRC-96-4722 on 5/14/96. Item will be closed when Chapter 18 of the SSAR is issued. Closed - SSAR Section 18.10, Training Program Development, provided in SSAR Rev. 9, 7/31/96, addresses the training program development and designer's input to this program. WCAP-14401 provided the Programmatic Level Description of the AP600 Human Factors Verification and Validation Plan.				

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
2063	NRR/HHFB	18.3	MTG-OI		10/25/96	Closed	Action N ✓	NTD-NRC-96-4845	
#2				Westinghouse to conduct operating experience review of the human factor aspects of the experience/events listed in Appendix B of NUREG-0711 and the February 13 NRC document. During the 3/8 meeting, Westinghouse stated position that the application of these issues neeeds to be consistent across the review.					
				4/24/95 - Fax sent to J Bongarra and J O'Hara that presents response to this open item. List of issues not to be included in our OER based on review of App B and the 2/13/95 letter against NUREG 0933 and section 1.9.4 of our SSAR was submitted for NRC review. NRC provided feedback. (via conference call of 6/19/95.) Action W: Provide draft OER addressing NRC issues Draft of WCAP-14645 submitted 5/15/96. Item will be closed when NRC comments are incorporated into the final WCAP. Element 2 Comments recieved from NRC on 8.13. To close this item, SSAR ch18 was submitted and we owe a rev to WCAP-14645. Closed with WCAP submittal on 10.17.[illegible] rkn 10/25				
2064	NRR/HHFB	18.4	MTG-OI		4/8/96	Closed	Closed (LW/FSER)		
#3				During meeting of 3/8 with the NRC, Westinghouse asked that element 3 (Functional Requirements Analaysis and Task Allocation) be reviewed at the complete element level instead of the implementation plan level as was done for the DSER.					
				NRC reevaluated element 3 and provided clarification. Westinghouse needs to respond to the NRC feedback and clarification issues via a Functional Requirements Analysis and Allocation report. Considered "closed" per phone call of 2/96 (the element 3 DSER open items sufficiently cover the issues.					
2065	NRR/HHFB	18.8	MTG-OI		7/26/96	Closed	~~Action W~~ ACT-N		
#7				As a result of our discussions of element 7 (HSI design) closure paths during the meeting of 3/10 with NRC HHFB personnel, the need to review and revise chapter 18 of the SSAR for tense and "reality" implications was identified.					
				Complete revision of Chapter 18 provided in Rev. 9 of SSAR, 7/31/96.					

NB
#52465-2468 ACC
WHAT WEC NEEDS TO
RESPOND TO

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
2465	NRR/HHFB	18.4-1	MTG-OI		10/14/96	Closed	Resolved	NSD-NRC-96-4831	

#3

A description of the "methodology" used to date by WEC to arrive at the current AP600 level of automation, including function definition and allocation assignments already made. Based upon discussions held during the March meeting, it is our current understanding that the methodology is based to a considerable degree on operating experience with predecessor plants and systems. The application of industry standards, guidelines, and practices (such as the ALWR URD) should be identified. The description should seek to revise or clarify the documented material already reviewed by the staff in the SSAR and RAI responses.

Action N

Information provided in draft WCAP titled "AP600 Function Requirements Analysis and Function Allocation" sent by NSD-NRC-96-4722 on 5/14/96. This WCAP will be referenced in a revision to chapter 18 of the SSAR.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
2466	NRR/HHFB	18.4-2	MTG-OI		10/8/96	Action N	~~Action W~~ ACT-N		

#6

A description of the AP600 functions, processes and systems and a comparison to the reference plants/systems so that one can identify areas of difference that exist. To help provide a scope to the request, it should not be necessary to develop a comparison down below the system level (unless Westinghouse deems it necessary). The focus on prior systems is justified since the successful experience of predecessor systems appears to be the principal basis for AP600 design activities in this area. Further, one aspect of resolving concerns of operator role change is to see how AP600 functions, processes, and systems have changed in comparision to prior systems.

The response should address the staff's specific concerns identified in the evaluation section of DSER Section 18.4.3.2, criterion 1. The response should also address how the results of functional requirements analysis are verified and how the results are updated as the design process proceeds.

Action N

Information provided in draft WCAP titled "AP600 Function Requirements Analysis and Function Allocation", submitted by NSD-NRC-96-4722 on 5/14/96. This WCAP will be referenced in a revision to chapter 18 of the SSAR.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Even with submittal of this WCAP, it is the NRC action to determine how to close this item, related to task analysis, not function allocation. rkn 10/8/96

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Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No	Branch	DSER Section/ Question	Type	Description NRC Memo Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
2467	NRR/HHFB	18.4-3	MTG-01		10/14/96	Closed	Resolved ✓	NSD-NRC-96-4831	

A description of the human role in AP600 functions, processes and systems (as defined in open item 18.4-2) should be provided in terms of personnel responsibility and level of automation. Since it is our understanding that the technical basis for allocation was largely based on operating experience (e.g., successful allocations were not changed and problematic allocations were changed), a comparison to the reference plants/systems should be documented so that differences in allocation can be identified. Where allocations have changed, the basis for the change should be identified. Passive systems should be considered a special form of automation because initiation and control of these functions often do not require personnel actions. This item addresses the second aspect of resolving concerns of operator role change, i.e., to determine how AP600 functions, processes, and systems levels of automation have changed in comparison to prior systems.

A description should be provided as to how the functional allocation process for the AP600 will accomodate the need for thorough HFE input early in the design process (as discussed in part 2 - section 2 of enclosure 1 to NRC element 3 clarification letter of 5/15/95). This is particularly important for those areas identified above that are "different" from the predecessor plant/systems.

Action W

This information will be placed in a WCAP titled "AP600 Function Requirements Analysis and Function Allocation". This WCAP will be referenced in a revision to chapter 18 of the SSAR.

Resolved: Information provided in draft WCAP titled "AP600 Function Requirements Analysis and Function Allocation", submitted by NSD-NRC-96-4722 on 5/14/96. This WCAP will be referenced in a revision to chapter 18 of the SSAR.

Revised Chapter 18 of the AP600 SSAR submitted in Revision 9, 7/31/96. WCAP-14644 is referenced in SSAR 18.4, Functional Requirements Analysis and Allocation. Formal WCAP transmittal will be made following receipt of NRC comments.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
2468	NRR/HHFB	18.4-4	MTG-OI		10/14/96	Closed	Resolved	NSD-NRC-96-4831	

#3

A description of how the integrated role of the operator across all systems is confirmed for acceptability (as discussed in part 2 - section 2 of enclosure 1 of NRC letter). If function allocation was performed by individual system designers, will the IAEA process described in the RAI responses be used at all, and if so how? Will the URD processes be used?

The process should be described by which functions are re-allocated in an iterative manner, in response to developing design specifics, operating experience, and the outcomes of on-going analyses and trade studies.

Action W

This information will be placed in a WCAP titled "AP600 Function Requirements Analysis and Function Allocation". This WCAP will be referenced in a revision to chapter 18 of the SSAR.

Resolved. Information provided in draft WCAP titled "AP600 Function Requirements Analysis and Function Allocation", submitted by NSD-NRC-96-4722 on 5/14/96. This WCAP will be referenced in a revision to chapter 18 of the SSAR.

Element 3
Comments Recieved from NRC on 8/13. To close this item, SSAR Ch18 was submitted and we owe a rev to WCAP-14644

Closed - In reference to letter NSD-NRC-96-4831 dated 9 October 1996.

3939	NRR/HHFB Habitability	6.4.2.3	TEL-OI		10/11/96	Resolved	~~Action W~~ ACT-N	NSD-NRC-96-4836	

NRC staff requires additional information on the provisions for sampling the supply air and the air stored in the tanks for the VES.

Action W - The capability for sampling in the CAS and VES will be noted a SSAR revision.
Resolved - Response provided in letter NSD-NRC-96-4836, dated October 10, 1996. SSAR subsection 6.4.5.3 will be added.

3940	NRR/HHFB Habit.	6.4.5	TEL-OI		10/25/96	Resolved	~~Action W~~ ACT-N	NSD-NRC-96-4857	

The staff requests a commitment for an integrated test that verifies the performance of the installed VES. The staff agrees that such a test should not be run as an inservice test.

Closed - A test of the VES for the first plant is included in subsection 14.2.9.1.6. The response for this question was provided in letter, NSD-NRC-96-4859 dated October 25, 1996. A draft SSAR revision for subsection 14.2.9.1.6 was provided.

3941	NRR/HHFB Habit	6.4.4	TEL-OI		10/2/96	Action W	Action W		

The staff is needs a reference that says that a 1.0% carbon dioxide limit is acceptable.

Action W - Provide an additional reference to the NRC.

AP600 Open Item Tracking System Database: Project Management Report

Date: 11/21/96

Selection: [NRC Branch] like 'NRR/HHFB' Sorted by NRC Branch

Item No.	Branch	DSER Section/ Question	Type	Description / NRC Memo / Status Detail	Last Mod Date	(W) Status	NRC Status	Letter No. /	Date
3942	NRR/HHFB	3.9.6	TEL-OI		10/25/96	Resolved	~~Action W~~ Rec'd	NSD-NRC-96-4859	

The staff does not accept the frequency of pressurization tests of the main control room as specified in Table 3.9-17. SECY-95-1995 established the policy that limited duration tests be conducted during each refueling. The current revision of the SSAR and Tech Specs does not conform to frequency. It has a frequency of every ten years after two successful tests.

HABIT.

Action W - Resolve frequency issue
Resolved - The response for this question was provided in letter, NSD-NRC-96-4859 dated October 25, 1996. A draft SSAR revision for Table 3.9-17 to commit to the staff position was provided.