



UNITED STATES
NUCLEAR REGULATORY COMMISSION
 WASHINGTON, D.C. 20555-0001

October 17, 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 OPEN ITEMS (OIs) AND REQUEST FOR REINSTATEMENT OF
 DELETED INFORMATION REGARDING SECTION 9.4 OF THE WESTINGHOUSE AP600
 STANDARD SAFETY ANALYSIS REPORT (SSAR)

Dear Mr. Liparulo:

As a result of recent review efforts, the Nuclear Regulatory Commission (NRC) Plant Systems Branch (SPLB) has determined that additional information is needed in the SSAR and the status of several OIs has changed. The staff reviewed Revision 9 of Section 9.4 of the SSAR, meeting commitments from meetings dated December 12-14, 1994, January 25-26, 1995, June 21, 1995, and December 13-14, 1995, and other related Westinghouse information. Enclosed is the staff's evaluation and request for additional information.

As a result of the review, the staff finds that information discussed during the meetings that was expected to be added to the SSAR has not been completely incorporated, and that certain information previously added has been subsequently deleted. The deletion of SSAR information has increased both the staff review effort and the time required for open item resolution. The large number of requests in the attachment are indicative of the effect of this action on the staff's review. In your July 26, 1996, letter, you acknowledged this potential burden on the staff and also stated that Westinghouse would resubmit information that you deleted in SSAR revisions that is required to make a safety determination. The staff requests that Westinghouse reinstate information in several figures and tables, as detailed in the enclosure, that were deleted in a previous revision and complete the incorporation of those items agreed upon during the above mentioned meetings. This request for the reinstatement and incorporation of SSAR information (enclosure item 1-6) will be tracked in our records as request for additional information (RAI#) 410.299.

You have requested that portions of the information submitted in the June 1992 application for design certification be exempt from mandatory public disclosure. While the staff has not completed its review of your request in accordance with the requirements of 10 CFR 2.790, that portion of the submitted information is being withheld from public disclosure pending the staff's final determination. The staff concludes that this request does not contain those portions of the information for which exemption is sought. However, the staff will withhold this letter from public disclosure for 30 calendar days from the date of this letter to allow Westinghouse the opportunity to verify the staff's conclusions. If, after that time, you do not request that all or

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Mr. Nicholas J. Liparulo

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portions of the information in the attachment be withheld from public disclosure in accordance with 10 CFR 2.790, this letter will be placed in the NRC Public Document Room.

The Westinghouse status in the open item tracking system (OITS) database presents all of the open items for SSAR Section 9.4 in the SPLB review area to be "Closed." In light of this request for additional information, we request that you update the NRC and Westinghouse status in OITS to properly reflect the status of these issues. The Westinghouse staff and the SPLB staff have been conducting frequent telephone conferences to facilitate open item resolution and the reinstatement of deleted SSAR information. The SPLB staff will continue to support meetings and telephone conferences with Westinghouse to resolve these open items. If you have any questions regarding this matter, you can contact me at (301) 415-1118.

Sincerely,

original signed by: Jerry N. Wilson

Theodore R. Quay, Director
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Docket No. 52-003

cc: w/enclosure
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Docket No. 52-003
AP600

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**SSAR Section 9.4 Heating, Ventilation, and Air Conditioning (HVAC) Systems
Status of Open Items - NRC Plant Systems Branch**

The status of the following items were derived from the staff review of the latest submittal of AP600 SSAR Table 3.2-3 (Revision 8), AP600 SSAR Section 9.4 (Revisions 7 and 9), information provided during meetings and telephone conferences, and related Westinghouse information (such as, responses to requests for additional information (RAIs) and the draft safety evaluation report (DSER) open items). The open item resolution paths identified in this evaluation reflect the staff's understanding of the resolution paths agreed to during meetings or telecons, or are suggestions for Westinghouse to consider. The staff will consider and evaluate alternative solutions, as well. The staff's concerns and necessary SSAR and other information need to be included in Westinghouse's response.

1. SSAR Revision 9 Figures - Reinstate the following figures:

- a. Figure 9.4.1-1, Sheet 5 of 6 (Revision 1) showing the Division A, B, C, and D rooms detailed routing for the Class 1E Electrical Room HVAC Subsystem.
- b. Figure 9.4.2-3, Sheet 3 (Revision 1) showing the deoxygenating room (demineralized water degasifier room in Revision 1), main steam isolation valve (MSIV) compartment, and valve, piping and penetration room HVAC subsystems.
- c. Figure 9.4.3-1, Sheet 8 (Revision 1) showing the rail road access, equipment hatch, and annex building unit heaters.
- d. Figure 9.4.2-1, Sheet 1 and 2 of 2 showing the general area, switchgear room and equipment room and mechanical equipment areas HVAC subsystems.
- e. Figure 9.4.3-1, Sheets 1 through 7 (Revision 1), Figure 9.4.8-1, Sheets 1 and 2 (Revision 1), and Figure 9.4.11-1 are unchanged or provide revised figures.

2. SSAR Revision 9 Tables

- a. Westinghouse should provide the related performance data for those components described in the text of SSAR Section 9.4.

The data can be presented in a table such as Table 9.4.1-1, and should also include fan-motor horsepower and electrical voltage, phase, and frequency.

- b. Reinstate "Table 9.4-2, MINIMUM INSTRUMENTATION FOR ATMOSPHERIC CLEANUP SYSTEM" as shown in the handout package for "Draft Revision 3" during the June 19, 1995, meeting.

3. SSAR Revision 9 Power Generating Design Basis

- a. Provide temperature ranges in Section 9.4.7.1.2, Power Generation Design Basis, for the Containment Air Filtration System (VFS).

Enclosure

- b. State that "The system maintains the following temperature based on maximum and minimum normal outside air temperature conditions shown in Chapter 2, Table 2-1." prior to the listing of temperature ranges in Section 9.4.9.1.2, Power Generation Design Basis, for the (VTS).

4. SSAR Revision 9 References:

The staff noted that reference numbers for the listed codes and standards in the text of HVAC systems were missing or incorrect. Provide or update this information.

5. SSAR Revision 9 Component Description

- a. State that (1) "The filtration unit configurations,....are designed, constructed and tested....to meet the performance requirements of ASME N509 and ASME N510....of Regulatory Guide 1.140." for filtration units and (2) "Each charcoal adsorber....in accordance with ASME N509, Section 5.2, ASME N510, Sections 11, 13, 16 and Regulatory Guide 1.140." for charcoal adsorbers for Nuclear Island Nonradioactive Ventilation System (VBS) and Containment Air Filtration System (VFS) in Sections 9.4.1.2.2 and 9.4.7.2.2, respectively.
- b. State that "Backdraft dampers are provided to prevent backflow through shutdown fans." for VAS (Section 9.4.3.2.2), VFS (Section 9.4.7.2.2), and VTS (Section 9.4.9.2.2). Additionally, state that "Backdraft dampers are provided to prevent backflow through standby fans or plant vent. The backdraft dampers also allow startup of the standby fan while the redundant fan is in operation." for VBS (Section 9.4.1.2.2).
- c. Provide the shutoff damper's actuator description for VBS (Section 9.4.1.2.2), VXS (Section 9.4.2.2.2), VAS (Section 9.4.3.2.2), VFS (Section 9.4.7.2.2), VRS (Section 9.4.8.2.2), VZS (Section 9.4.10.2.2), and VTS (Section 9.4.9.2.2).
- d. Provide the description and code data for heating and cooling coils for VXS (Section 9.4.2.2.2) and isolation dampers for VRS (Section 9.4.8.2.2).
- e. Revise the description of the heating coils to add "The heating coils are provided with integral face and bypass dampers to prevent freeze damage when modulating the heat output." for VRS (Section 9.4.8.2.2) and VHS (Section 9.4.11.2.2).
- f. Revise the description of the low efficiency filters and high efficiency filters to include the minimum average dust spot efficiencies for VRS (Section 9.4.8.2.2).
- g. Revise the description of the (a) exhaust air filtration units to add "The filtration unit housings maximum leakage rate do not exceed one percent of the design flow in accordance with ASME N509." and (b) pressure differential control dampers to add "The dampers maintain a slight negative pressure within the fuel handling building area, with respect to the environment and adjacent non-radiologically controlled plant areas." for VFS (Section 9.4.7.2.2).

- h. Revise the description of the ductwork and accessories to (a) read the last sentence as "The supplemental air filtration....HVAC subsystem's ductwork including the portion of the ductwork outside of the main control room envelope that maintains integrity....to maintain main control room/technical support center habitability." and (b) add as a separate paragraph stating that "The remaining supply and return/exhaust ductwork is field tested for leak tightness in accordance with SMACNA [Sheet Metal and Air Conditioning Contractors National Association] HVAC Duct Leakage Test Manual (Reference 18). The air flow rates are balanced within a tolerance of ± 10 percent of the design flow rate for the HVAC subsystems in accordance with SMACNA HVAC Systems- Testing, Adjusting and balancing (Reference 19)." for VBS (Section 9.4.1.2.2).

6. SSAR Revision 9 Text

a. Section 9.4.1

- (1) Section 9.4.1.2.1.1 on Page 9.4-5, Paragraph 2, should state that "The supply, return, and toilet exhaust ducts are the only ducts that penetrate....main control room envelope."
- (2) Sections 6.4 and 9.4.1 are not consistent in their discussion of the actuation logic based on the specific radioactivity concentrations detection (gaseous and particulate/iodine radioactivity concentrations versus high and high-high signals).
- (3) In Section 9.4.1.2.3.1 on Page 9.4-10, Paragraph 4, a sentence should be added to state that "The main control room and technical support center areas ventilation supply and return/exhaust ducts can be remote-manually isolated from the main control room."

Also, add a fourth condition, on Page 9.4-10 and third a condition on Page 9.4-12, to state that start the standby supply air handling unit and corresponding return/exhaust fans start on "Loss of electrical and/or control power to the operating unit."

- (4) Section 9.4.1.2.3.1 on Page 9.4-10, under "Abnormal Plant Operation," Paragraph 1, should state that "The normal outside air makeup duct, smoke purge exhaust duct, and the main control room....isolation dampers close."

Also, Paragraph 1 should state that "The main control room/technical support center supply air handling unit continues to provide cooling....design parameters."

- (5) Add a separate paragraph as Paragraph 2 on Page 9.4-10, under "Abnormal Plant Operation, to state that "Isolation dampers are provided in the ductwork at the nuclear island boundary to permit remote manual isolation of the technical support center from the main control room if integrity of the technical support center pressure envelope is unavailable after a seismic event."

- (6) Section 9.4.1.2.3.2, 2nd Paragraph, on Page 9.4-12, under "Abnormal Plant Operation, a sentence should be added to state that "The subsystem serviced areas are not pressurized during the recirculation mode."
- (7) Section 9.4.1.3, on Page 9.4-14, Paragraph 1, Safety Evaluation, Paragraph 1 should state that "The safety-related redundant main control room supply air radiation monitors are provided."
- (8) Section 9.4.1.4 on Page 9.4-14, Paragraph 2, Tests and Inspections, should state that "The supplemental air filtration unit HEPA [high efficiency particulate air] filters and charcoal adsorbers are tested in-place in accordance with ASME N510 and Regulatory Guide 1.140 to verify that DOP [dioctyl phthalate] penetration of HEPA filter banks and maximum allowable bypass leakage through the adsorber sections do not exceed 0.05 percent. Laboratory testing of representative samples of new or used charcoal adsorbent are periodically tested in accordance with Regulatory Guide 1.140, ASME N510 and ASTM D3803-1989."
- (9) Explain why the VBS does not isolate on containment isolation.

b. Section 9.4.2 of SSAR Revision 9

- (1) In Section 9.4.2.1.2, Page 9.4-16, add "demineralized water deoxygenating room," and its temperature range of "50-105" °F for normal operation.
 - (2) Section 9.4.2.2.1.3, 1st Paragraph on Page 9.4-18, should state that "Electrical reheat coils are provided.....such as the non-class 1E battery, security area offices rooms alarm station."
- Also, Paragraph 2 should state that "A steam humidifier..... 35 percent."
- (3) Section 9.4.2.2.3.3, Page 9.4-22, Third Paragraph should state that "Electrical reheat coils serving the security areas, non-class 1E battery rooms and central alarm station are controlled....in the areas served."
 - (4) Section 9.4.2.2.3.5, Page 9.4-24, First Paragraph should state, prior to the last sentence, that "A constant volume of outside air is utilized to provide ventilation and maintain the area at a slight positive pressure with respect to the surroundings."

c. Section 9.4.3 of SSAR Revision 9

- (1) Section 9.4.3.2.1.1, Page 9.4-28, Fifth Paragraph should state that "Hot water heating coils are.....temperature conditions to maintain an average temperature of at least 50 °F."
- (2) Section 9.4.3.2.1.2, Page 9.4-29, Second Paragraph should state that "The unfiltered exhaust from the exhaust fans are routed through the plant vent for monitoring of offsite radiological (gaseous) releases."

- (3) Provide safe hydrogen concentration level in Section 9.4.3.2.3.1, on Page 9.4-32, last paragraph above "Abnormal Plant Operation, for the equipment room where the radioactive waste (radwaste) equipment may leak hydrogen into it.

d. Section 9.4.7 of SSAR Revision 9

- (1) Section 9.4.7.1.2, Page 9.4-42, last paragraph should state "the containment air filtration system.....airborne radioactivity or ambient pressure differential."

Also, provide the air intake plenum elevation in Section 9.4.7.2.1, on Page 9.4-42, Paragraph 1, for the supply air handling units.

- (2) Section 9.4.7.2.3, Page 9.4-47, Third Paragraph under Abnormal Plant Operation, should state that "An outside air makeup damper....at a slightly negative pressure with respect to the clean areas."
- (3) Section 9.4.7.4, 3rd Paragraph on Page 9.4-48, Tests and Inspections, should state that "HEPA filters and charcoal adsorbers are tested in place in accordance with ASME N510 and Regulatory Guide 1.140 to verify that DOP penetration of HEPA filter banks and maximum allowable bypass leakage through the adsorber sections do not exceed 0.05 percent. Laboratory testing of representative samples of new or used charcoal adsorbent are periodically tested in accordance with Regulatory Guide 1.140, ASME N510 and ASTM D3803-1989."

e. Section 9.4.8 of SSAR Revision 9

- (1) Section 9.4.8.2, Page 9.4-50, First Paragraph, prior to Section 9.4.8.2.1, should state that "The radwaste building HVAC system is shown in Figure 9.4.8-1."
- (2) Section 9.4.8.2.3, Page 9.4-52, First Paragraph, Second Sentence should state that "The radwaste building supply air flow through the inlet vanes of the supply fans is automatically modulated by the differential pressure controllers, with sensors in the general building area and sensors mounted outdoors (shielded from the wind effect), to maintain building at a negative pressure with respect to the outdoors."
- (3) Add a separate paragraph after the First Paragraph in Section 9.4.8.2.3, Page 9.4-52, to state that "The temperature of the air supplied by the air handling unit is controlled by separate heating and cooling controllers, with sensors in the general building area. The cooling controllers modulate the control valves on the chilled water supply lines to the air handling units. The heating controllers modulate the face and by-pass dampers of the hot water heating coils in the air handling units."

f. Section 9.4.11 of SSAR Revision 9

- (1) Section 9.4.11.2, Page 9.4-66, First Paragraph, prior to Section 9.4.11.2.1, should state that "The health physics and hot machine shop HVAC system is shown in Figure 9.4.11-1."

7. Status of OITS Items

a. 9.4.1 Nonradioactive Ventilation System (VBS)

- (1) The staff reviewed the VBS in accordance with the October 25, 1994, approach for non-safety-related systems identified as important by the regulatory treatment of non-safety systems (RTNSS) process or as defense-in-depth (DID) systems and SECY-94-084, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems (RTNSS) in Passive Plant Designs." Based on the telephone conversation on October 4, 1995, between the Westinghouse staff and the NRC staff, Westinghouse committed to provide a detailed response concerning conformance with the DID criteria, which includes a design with sufficient redundancy; with an appropriate power supply; that is designed and arranged for conditions or an environment anticipated during and after events, including severe accidents; that is protected against internal flooding and other in-plant hazards; that has the ability to withstand the effects of natural phenomena; that falls under appropriate quality assurance (QA) comparable to Generic Letter (GL) 85-06 and/or Regulatory Guide (RG) 1.155; that is included in reliability assurance and maintenance programs, or have appropriate availability control mechanisms applied to it; and that has proper administrative controls for shutdown configurations. Provide this information. [This item remains as a potential Open Item 9.4.1-3] (OITS No. 2897, November 28, 1995). Action Westinghouse
- (2) During a meeting on January 25, 1995, Westinghouse stated that each VBS supplemental air filtration unit supply air fan is located upstream of the air filtration unit and meets the configuration requirements of Section 4.7.2 ASME N5091-1989, "Nuclear Power Plant Air-Cleaning Units and Components," standards. Westinghouse should revise SSAR Section 9.4.1 to state the above description. [This remains as a potential Open Item 9.4.1-4] (OITS No. 261, November 28, 1995). Action Westinghouse
- (3) Westinghouse states in Section 9.4.1.2 of the SSAR that each filtration unit charcoal adsorber is a single assembly with welded construction and a 4-inch deep Type III rechargeable adsorber cell to conform with the IE Bulletin 80-03, Loss of Charcoal from Absorber Cells, February 6, 1980, criteria to preclude the potential loss of charcoal from adsorber cells.

Westinghouse needs to reference the IE Bulletin 80-03 in SSAR Section 9.4.1.2.2 for charcoal adsorbers. [This remains as a potential Open Item 9.4.1-5] (OITS No. 262, November 28, 1995). Action Westinghouse

- (4) During a meeting on June 21, 1995, Westinghouse committed to revise SSAR Section 9.4.1 by adding COLA items for (1) VBS air filtration units in accordance with ASME N509-1989 and N510-1989 for design, construction to conform B-36 requirements and (2) VBS ductwork and housing outside of main control room envelop (MCRE) is in accordance with ASME N509-1989 and N510-1989 to conform B-66 requirements. Also, Westinghouse needs to formally respond to request for additional information (RAI) Question 248 concerning the listing of industrial codes in SSAR Chapter 1, addressing the Generic Issue 83, Control Room Habitability, SSAR Section 1.9.4, and addressing VBS in accordance with Generic Issues B-36 and B-66. [This remains as a potential Open Item 9.4.1-6] (OITS No. 2890, November 28, 1995). Action Westinghouse
- (5) During a meeting on January 25, 1995, Westinghouse stated that the (1) SSAR Section 9.4.1.4 will be revised to state that the supplemental air filtration subsystem and portions of the MCR/TSC (technical support center) subsystem associated with the supplemental air filtration subsystem outside of the MCRE are field tested for leak-tightness in accordance with ASME N510, Testing of Nuclear Air-Cleaning Systems, standards, (2) SSAR Section 9.4.1.2.3 will be revised to state that the containment isolation signals and redundant nuclear safety-related radiation monitors in the MCR supply air duct provide isolation signals to initiate the supplemental air filtration subsystem on detection of high airborne radioactivity and (3) the safety-related dampers will be tested in accordance with the technical specifications and in-service testing (IST) will be revised to include the VBS safety-related isolation dampers and monitors. The remaining supply and return/exhaust ductwork in the MCR/TSC subsystem are field tested for leak-tightness in accordance with the SMACNA HVAC Duct Leakage Test Manual.

Westinghouse should revise Sections 9.4.1.4 and 9.4.1.2.3 as stated above. [This remains as a potential Open Item 9.4.1-7] (OITS No. 263, November 28, 1995). Action Westinghouse

- (6) Table 9.4.1-1, Revision 7 of the SSAR identifies assumed in-leakages through the MCR access doors and the through MCR/TSC equipment ductwork (operating) and out leakages through the MCR/TSC HVAC equipment and ductwork (operating). Westinghouse should state that during abnormal operation with high airborne radioactivity conditions, MCR/TSC HVAC subsystem can limit the doses to the control room operators to General Design Criteria (GDC) 19 dose limits given the assumed in- and out-leakages. [This remains as a potential Open Item 9.4.1-8.] Action Westinghouse
- (7) The non-safety-related, DID supplemental filtration subsystem is operational for non-credited operation during a High (gaseous radioactivity releases) [not High-High (particulate and/or iodide radioactivity releases)] airborne radioactivity signal and/or receipt of a containment isolation signal. Additionally, during a meeting on January 25, 1995, Westinghouse stated that the SSAR tables will be added to state that the (1) Table 9.4-1 provides MCR/TSC supplemental air filtration subsystem conformance with RG 1.140 (SSAR Appendix 1A describes how AP600 meets RG 1.140) and other related data including

charcoal adsorber and HEPA filter efficiency and system leakage and air flow in Table 9.4-1 and (2) Table 9.4-2 provides the minimum instrumentation for VBS filtration subsystem to conform with the guidance of ASME N509, Table 4-2 and Table 6.5.1-1 of the standard review plan (SRP). Therefore, RG 1.52 conformance is non-mandatory.

Westinghouse provided Table 9.4-1 in SSAR Revision 7 but deleted Table 9.4-2 for minimum instrumentation for VBS filtration subsystem. Westinghouse is requested to provide this information in the SSAR. [This remains as a potential Open Item 9.4.1-9] (OITS No. 264, November 28, 1995). Action Westinghouse

b. 9.4.2 Annex/Auxiliary Non radioactive Ventilation System

- (1) During a meeting on December 13 and 14, 1995, Westinghouse stated that the air and water temperature data for entrance and exit conditions for air handling unit (AHU) heating and cooling coils serving HVAC subsystems will be provided in SSAR Tables 9.4.2-2 through 9.4.2-7.

The above air and water temperature data for entrance and exit conditions for air handling unit (AHU) heating and cooling coils serving HVAC subsystems are not provided in Table 9.4.2 of the SSAR, Revision 7. Provide this information in the SSAR. [This remains as a potential Open Item 9.4.2-2 (OITS No. 270, 12/28/1995)]. Action Westinghouse

- (2) During a meeting on December 13 and 14, 1995, Westinghouse stated that the SSAR will be revised to state that the men's and women's locker room exhaust fans data for the general area HVAC system will be provided in Table 9.4.2-2 of the SSAR.

The men's and women's locker room exhaust fans data for the general area HVAC system are not provided in Table 9.4.2-2 of the SSAR, Revision 7. Provide this information in the SSAR. [This remains as a potential Open Item 9.4.2-4 (OITS No. 269, November 28, 1995)]. Action Westinghouse

- (3) During a meeting on December 13 and 14, 1995, Westinghouse stated that the AP600 SSAR will be revised to state that (1) a provision is made for three hot water unit heaters and unit heaters are equipped with the temperature switches as shown in Figure 9.4-2 and (2) the mechanical equipment room HVAC subsystem also serves the RCC and ICC non-class 1E penetration rooms and reactor trip switch gear I and II rooms in the auxiliary building.

The applicable AP600 SSAR Section(s) are not revised in AP600, Revision 7 to reflect the above information. Provide this information in the SSAR. [This remains as a potential Open Item 9.4.2-5 (OITS No. 271, November 28, 1995)]. Action Westinghouse

- (4) SSAR Table 9.4.2-3 indicates that HVAC system AHU supplies 31,000 SCFM (old: 27,600 SCFM). However, the return flow is only 28,700 SCFM (old value: 25,200 SCFM) and 750 SCFM (old value: 1200 SCFM) is exhausted from the battery room (Table 9.4.2-3 of the SSAR shows 2-100 percent

capacity battery room exhaust fans, each rated at 750 SCFM (old value: 1200 SCFM). Unless both of the battery room exhaust fans operate at the same time, there appears to be a discrepancy.

Westinghouse has not provided a response to this item. Provide this information in the SSAR. [This item remains as a potential Open Item 9.4.2-7 (OITS No. 272, November 28, 1995)]. Action Westinghouse

- (5) During a meeting on December 13 and 14, 1995, Westinghouse stated that the AP600 SSAR text and Figure 9.4.2-3 will be revised to state that there are two AHUs per MSIV compartment.

There are two 100-percent capacity AHUs per MSIV compartment as stated in AP600 Revision 7, Section 9.4.2.2.1.4 but AP600 Figure 9.4.2-3, Revision 1 was deleted. Provide this information in the SSAR. This remains as a potential Open Item 9.4.2-8 [(OITS No. 266, November 28, 1995)]. Action Westinghouse

- (6) Each AHU consists of the low-efficiency filters, hot water heating coil, chilled water cooling coil, a centrifugal supply air fan, and associated instrumentation and controls. The staff has requested the rationale for providing an efficiency of 25-percent for the MSIV compartment heating and cooling subsystem's only filter.

AP600 SSAR Section 9.4.2.2, Revision 7 states that each air handling unit has low and high efficiency filter banks rated to ASHRAE 52-76 standard for dust spot efficiency; however, equipment data are not provided in table format for the MSIV compartment HVAC system including above filter banks data. Provide this information in the SSAR. [This remains as a potential Open Item 9.4.2-9 (OITS No. 273, November 28, 1995)]. Action Westinghouse

- (7) During a meeting on December 13 and 14, 1995, Westinghouse stated that AP600 SSAR Figure 9.4.2-3 will be revised to show that there are two AHUs per mechanical equipment areas HVAC subsystem, as stated in Section 9.4.2.2.5 and Table 9.4-6 of SSAR.

There are two 50-percent capacity AHUs per mechanical equipment areas HVAC (old LHVAC subsystem) as stated in SSAR Revision 7, Section 9.4.2.2.1.5 but SSAR Figure 9.4.2-3, Revision 1 was deleted. Provide this information in the SSAR. [This remains as a potential Open Item 9.4.2-11 (OITS No. 267, November 28, 1995)]. Action Westinghouse

- (8) During a meeting on December 13 and 14, 1995, Westinghouse stated that the AP600 SSAR Figure 9.4.2-3 will be revised to show that there are two AHUs per valve and piping penetration room HVAC subsystem, as stated in Section 9.4.2.2.6 and Table 9.4.2-7.

Section 9.4.2.2.1.6 of SSAR Revision 7 states that there are two 100-percent capacity AHUs for the valve/piping penetration room HVAC system. However, no revised figure and table is provided for the valve/piping penetration room HVAC system. Provide this information in the SSAR. [This remains as a potential Open Item 9.4.2-12 (OITS No. 274, November 28, 1995)]. Action Westinghouse

c. 9.4.3 Radiologically Controlled Area Ventilation System (VAS)

- (1) During a meeting on January 25 and 26, 1995, Westinghouse stated that SSAR Section 9.4.3 text will be revised to state that the adequate ventilation will maintain the safe hydrogen gas concentration level inside the gaseous radwaste module area.

Westinghouse should revise Section 9.4.3.2.3.1, on Page 9.4-32, Paragraph 4, to state what percentage of safe level of H₂ concentration is maintained for the equipment room where the radwaste equipment may leak H₂ into it. [This remains as a potential Open Item 9.4.3-3 (OITS No. 284, 12/28/95) Action Westinghouse

- (2) During the above meeting, Westinghouse stated that Westinghouse will revise SSAR Table 3.2-3 of the SSAR to provide classification of all major components as shown in Figure 9.4.3-1, including fire dampers.

[This remains as a potential Open Item 9.4.3-6 (OITS No. 281, November 28, 1995) Action Westinghouse

- (3) During the above meeting, Westinghouse stated that they will revise SSAR Section 9.4.3 and subsequently SSAR Table 3.2-3 to reference the classification of the VAS major equipment based on SSAR Section 9.4.1.

SSAR Revision 7, Section 9.4.3.2.2, Component Description, provides applicable codes and standards for all VAS equipment. However, VXS equipment are not listed in Table 3.2-3 of SSAR Revision 8. Provide this information in the SSAR. This item remains as a potential Open Item 9.4.3-7 (OITS No. 282, November 28, 1995) Action Westinghouse

- (4) During a meeting on January 25 and 26, 1995, Westinghouse stated that the appropriate (some) description of the unit heaters will be added to Table 9.4.3-1. Westinghouse has committed to provide the Annex Building hot water unit heaters classification data in SSAR Table 3.2-3.

Section 9.4.3.2.2 of SSAR Revision 7 includes a description for the electric unit heaters. However, Westinghouse should provide the data for electric unit heaters in Table 9.4.3-1 and Table 3.2-3 of the SSAR. Additionally, Section 9.4.13 of SSAR Revision 7 is revised to include "Reference 26, Electric Air heaters, UL-1025, 1991" but Westinghouse should provide the correct reference as "Reference 26" in Section 9.4.3.2.2 of SSAR Revision 7. [This item remains as a potential Open Item 9.4.3-8 (OITS No. 275 and 276, November 28, 1995) Action Westinghouse

- (5) During a meeting on January 25 and 26, 1995, Westinghouse stated that they will revise the SSAR Table 9.4.3-1 and subsequently the SSAR text to state that the RCLVS consists of two 100-percent capacity supply air AHUs and delete the exhaust air subsystem based on design review.

Westinghouse should revise SSAR Table 9.4.3-1 to provide data for both the fuel handling area and the radiation chemistry laboratory ventilation systems components including both exhaust units as 100-percent capacity for the radiation chemistry laboratory ventilation system. [This remains as a potential Open Item 9.4.3-9 (OITS No. 279, November 28, 1995)] Action Westinghouse

- (6) Note 3 of Sheet 7 of 8 of SSAR Figure 9.4.3-1 states that the fire dampers (D180, D181, and D192) will be provided at fire-rated penetrations pending the specific layout inside the auxiliary building. During a meeting on January 25 and 26, 1995, Westinghouse stated that they will revise the SSAR text to confirm the number of fire dampers identified in SSAR Table 3.2-3.

The fire damper criteria are described in Section 9.4.3.2.2 of SSAR Revision 7. However, Figure 9.4.3-1, Sheets 1 through 7 are not included in SSAR Revision 7 with all of the fire dampers. Also, Table 3.2-3 of SSAR Revision 8 does not include VAS showing its equipment including these fire dampers. Provide this information in the SSAR. [This is Open Item 9.4.3-10 (OITS No. 283, November 28, 1995)] Action Westinghouse

d. 9.4.6 Containment Recirculation Cooling System (VCS)

- (1) During a meeting on January 25 and 26, 1995, Westinghouse stated that they will revise SSAR Table 3.2-3 for level of details and if not covered in SSAR Table 3.2-3, the details will be provided in Section 9.4.6.

SSAR Revision 7, Section 9.4.6.2.2, Component Description, provides applicable codes and standards for all VCS equipment. However, VCS equipment are not listed in Table 3.2-3 of SSAR Revision 8. Provide this information in the SSAR. This item remains as a potential Open Item 9.4.3-5 (OITS No. 285, November 28, 1995)] Action Westinghouse

- (2) Westinghouse stated in Figure 9.4.6-1 of the SSAR, Note 6, that the duct-mounted relief dampers will be located when the duct layout is finalized. During a meeting on January 25 and 26, 1995, Westinghouse stated that they will revise SSAR Figure 9.4.6-1 to add typical details for relief dampers.

Figure 9.4.6-1 of SSAR Revision 7 shows a typical relief damper location with Note 4 which states that the "Final location will be indicated when duct layout is finalized." Provide the typical damper details in the SSAR. [This remains a potential Open Item 9.4.6-4 (OITS No. 287, November 28, 1995)] Action Westinghouse

e. 9.4.7 Containment Air Filtration System (VFS)

- (1) During a meeting on January 25 and 26, 1995, Westinghouse stated in response to staff's concern that Westinghouse will revise SSAR Section 9.4.7 to state that the VFS air intake is located in the annex

building (between elevation 135' and 152') and supplies a common intake plenum for VAS, VFS, VBS, VXS, and VHS. The intake is not protected from tornado missiles.

Section 9.4.7.2 of Revision 7 does not describe that "the air intake is located in the annex building (between elevation 135' and 152') and supplies a common intake plenum for VAS, VFS, VBS, VXS, and VHS. The intake is not protected from tornado missiles." Westinghouse should revise Section 9.4.7.2 accordingly to resolve the open item. [This remains as a potential Open Item 9.4.7-3 (OITS No. 291, November 28, 1995)]. Action Westinghouse

- (2) During the above meeting, Westinghouse stated in response to staff's concern that Westinghouse will revise the SSAR Table 3.2-3 for level of details and if not covered in SSAR Table 3.2-3, the details will be provided in Section 9.4.7. The fire dampers, as shown in SSAR Figure 9.4.7-1, will be included in SSAR Table 3.2-3.

SSAR Table 3.2-3 of Revision 8 does not list the major components including the supply air handling units, exhaust air filtration units, supply and exhaust fans, and fire dampers except penetrations, strainers, isolation valves, and test connections. To provide all of the component data with the requested details in Table 9.4.7-1. Provide this information in the SSAR. [This remains as a potential Open Item 9.4.7-5] (OITS No. 289, November 28, 1995)] Action Westinghouse

f. 9.4.8 Radwaste Building HVAC System (VRS)

- (1) During a meeting on December 12 through 14, 1994, Westinghouse stated that Westinghouse will revise (1) Table 3.2-3 of the SSAR to reflect the vacuum relief system components including unlisted system dampers and high and low efficiency filters and (2) Table 9.4.8-1 of the SSAR to reflect VRS components including unlisted system dampers and high and low efficiency filters.

Westinghouse should revise SSAR Table 3.2-3 to reflect the VRS major components as described in Section 9.4.8.2.2 of SSAR Revision 7 including high and low efficiency filters and provide SSAR Table 9.4.8-1 to reflect the above VRS equipment. [This remains a potential Open Item 9.4.8-3 (OITS Nos. 292 and 293, November 28, 1995)] Action Westinghouse

- (2) During a meeting on December 12 through 14, 1994, Westinghouse stated that Section 9.4.8 of the SSAR will be revised to provide industry code data for the VRS components concerning their design, construction and testing and revise SSAR text and Figure 9.4.8-1 to delete men's and women's locker rooms. Additionally, Westinghouse needs to provide updated piping and instrumentation diagrams showing updated equipment design and configuration information and revise SSAR Table 3.2-3 and SSAR text and table accordingly to have the totally coherent and correct system design.

Section 9.4.8.2.2 of SSAR Revision 7 provides the industry code data for VRS components concerning their design, construction and testing. However, Figure 9.4.8-1 and Table 9.4.8-1 should be revised to show

the Section 9.4.8.2.2 component data. Table 3.2-3 should be revised to show VRS major components accordingly. [This is Open Item 9.4.8-2 (OITS Nos. 294 and 295 and 296, November 28, 1995)] Action Westinghouse

g. 9.4.8 Turbine building Ventilation System (VTS)

- (1) During a meeting on December 12 through 14, 1994, Westinghouse deferred the response to the staff's concern regarding the design parameters for system components and piping, instrumentation diagram, and classification of the VTS system and components. Westinghouse needs to revise SSAR Section 9.4.9 and Table 3.2-3, and provide Figure 9.4.9-1 to reflect the above data showing updated equipment design and configuration information accordingly to have the totally coherent and correct system design.

Section 9.4.9.2.2 provides component description for the VTS components but Figure 9.4.9-1 and Table 9.4.9-1 are not provided in SSAR Revision 7. Also, Table 3.2-3 does not list VTS major components. Provide this information in the SSAR. [This item is Open Item 9.4.9-1 (OITS No. 298, November 28, 1995)] Action Westinghouse

h. 9.4.10 Diesel Generator Building Heating and Ventilation System (VZS)

- (1) During a meeting on December 12 through 14, 1994, Westinghouse stated that the diesel generators (DGs) are operable at 130° F during normal operation as stated in SSAR Table 9.4-10 and this design requirement will be included in procuring the DGs. However, Westinghouse needs to revise the SSAR text to reflect the above justification.

Westinghouse stated that the DGs are operable at 130° F during normal operation as stated in SSAR Table 9.4-10 and this design requirement will be included in procuring the DGs. Revise the SSAR text accordingly. [This remains as a potential Open Item 9.4.10-3 (OITS No. 301, November 28, 1995)] Action Westinghouse

- (2) During a meeting on December 12 through 14, 1994, Westinghouse stated that Westinghouse will provide its rationale for meeting the intent of the guidance of NUREG/CR-0660 [6.1 m (20 ft) above grade] to control dust and other particulates for staff's review to determine the extent of conformance with GDC 17, as it relates to ensuring proper functioning of the standby onsite ac electric power system.

Westinghouse agreed to provide the rationale for meeting the intent of the guidance of NUREG/CR-0660 [6.1 m (20 ft) above grade] to control dust and other particulates. Provide this information in the SSAR. This remains as a potential Open Item 9.4.10-4 (OITS No. 300, November 28, 1995)] Action Westinghouse

i. 9.4.11 Health Physics and Hot Machine Shop HVAC System

- (1) During a meeting on December 12 through 14, 1994, Westinghouse stated in response to the staff's concern that two non-safety-related radiation monitors, with MCR high and high-high alarms, will be provided for the VHS and affected SSAR Section 9.4.11, Figure 9.4.11-1 and Table 9.4.11-1 will be revised, accordingly.

Section 9.4.11.2.1 states that "The exhaust fans discharge to a common duct which is routed to the plant vent. A radiation monitor measures activity in the common discharge duct downstream of the exhaust fans and activates an alarm in the main control room when excess activity in the effluent discharge is detected." However, Figure 9.4.11-1 was deleted from Section 9.4.11 of SSAR Revision 7. Figure 9.4.11-1 should be revised for VHS showing radiation monitor and provide the rationale for deletion of HEPA filtration. [This remains as a potential Open Item 9.4.11-3 (OITS No. 304, November 28, 1995)] Action Westinghouse

- (2) During a meeting on December 12 through 14, 1994, Westinghouse stated that Westinghouse will revise (1) Table 3.2-3 of the SSAR to reflect the updated VHS the components including unlisted system dampers and hot machine shop filtration unit subsystem components and (2) Table 9.4.11-1 to state there is one HEPA filter for each VHS exhaust AHU. Additionally, Westinghouse needs to provide updated piping and instrumentation diagrams showing updated equipment design and configuration information and revise SSAR Table 3.2-3 and SSAR text and table accordingly to have the totally coherent and correct system design.

Table 3.2-3 of SSAR Revision 8 does not list VHS components. Westinghouse should revise the Table 3.2-3 to provide information on major VHS components. Additionally, Table 9.4.11-1 and Figure 9.4.11-1 were deleted from Section 9.4.11 of SSAR Revision 7. Westinghouse should provide revised Table 9.4.11-1 with Section 9.4.11.2.2 components data and Figure 9.4.11-1 for VHS. [This remains as a potential Open Item 9.4.11-2 (OITS Nos. 302 and 305, November 28, 1995)] Action Westinghouse