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NSD-NRC-96-4859
DCP/NRC0637
Docket No.: STN-52-003

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Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

ATTENTION: T. R. QUAY

SUBJECT: RESPONSES TO NRC QUESTIONS RELATED TO CHAPTER 6 OF THE AP600 SSAR

Dear Mr. Quay:

Attached are responses to NRC questions related to Chapter 6 of the SSAR. The questions are related to the main control room emergency habitability system. The questions are DSER open items and phone call items. The questions are identified by the Open Items Tracking System item number. This submittal will permit the completion of staff review for SSAR Section 6.4 and preparation of the Final Safety Evaluation Report input.

Please contact Donald A. Lindgren on (412) 374-4856 if you have additional questions.

Brian A. McIntyre, Manager
Advanced Plant Safety and Licensing

/nja

Attachment

cc: W. C. Huffman - NRC
N. J. Liparulo, Westinghouse (w/o attachments)

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Enclosed Responses to NRC Requests for Information
Letter NSD-NRC-96-4859

OITS # 2894 Phone call open item
OITS # 3940 Phone call open item
OITS # 3942 Phone call open item
DSER Item 6.4-1 (OITS #1019)
DSER Item 6.4-5 (OITS #1023)

OITS #2894 Phone call open item - Demonstrate that the expected humidity response with VES operating during the first 72 hours is not a problem for operator performance.

Response

The main control room humidity level during VES operation is a function of the number of occupants inhabiting the room, their respiration rate, the room size, the supply air flowrate, leakage from the room, the number of times the vestibule doors are cycled, etc. In a post-accident environment, the temperature and humidity levels may become uncomfortable simply because the normal nonsafety-related ventilation system is not assumed to be operating. However, the temperature is limited to less than 15 °F above the normal, and even humidity at high levels would not render the operators ineffectual or inattentive. Humans exist in and endure uncomfortable temperature and humidity environments routinely, with no significant loss of function, except for strenuous physical activity. The control room operators will not be subject to strenuous physical activity in a post-accident environment.

**This item is Closed.**

OITS #3940 Phone call open item - The staff wants 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.

Response:

A test of the VES for the first plant is included in subsection 14.2.9.1.6. The applicable paragraph will be revised to note that the test is of limited duration.

Revise criteria e) in SSAR subsection 14.2.9.1.6 as shown below.

e) The ability of the habitability system to maintain the main control room environment as well as temperatures in the protection and safety monitoring system cabinet and emergency switchgear rooms during a long term loss of the nuclear island nonradioactive ventilation system may be ~~is~~ verified with a limited duration test. **This verification is only required for the first plant.**

**This item is Resolved** pending formal SSAR revision.

OITS #3942 Phone call open item - 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 does not conform to that frequency. It has a frequency of every ten years after two successful tests.

Response:

The pressurization test for the main control room emergency habitability system is a limited duration test. The test duration needs to be run only for a brief period of time to demonstrate

that the main control room emergency habitability system has the capacity with one train to pressurize the control room. Revision to the SSAR Table 3.9-17 will be made as shown below.

Note that this test is essentially a leakage test of the main control room envelope and the requirement for tests every refueling is much more frequent than the ten year frequency for containment leak rate tests and other system level inservice tests.

Revise the portion of Table 3.9-17 and Note 8 related to the VES as follows:

Table 3.9-17

**SYSTEM LEVEL INSERVICE TESTING REQUIREMENTS**

| System/Feature | Frequency (year) | Test Purpose | Test Method |
|---|---|---|---|
| **VES** | | | |
| MCR isolation/makeup | 24 months~~10~~ | MCR pressurization capability | Note 8 |

8. The MCR pressurization capability is demonstrated during each refueling cycle~~every 10 years~~. ~~This demonstration is accomplished by conducting a test during refueling conditions.~~ The test is conducted with the normal HVAC lines connected to the MCR isolated. Pressurization of the MCR is initiated by opening one of the emergency MCR habitability air supply lines. The test is a limited duration test and is terminated when the MCR pressurization is measured. ~~Note that for the first two tests the test frequency will be once every refueling outage. The subsequent pressurization tests will be conducted every 10 years. If a pressurization test is unsuccessful, the test frequency will be reduced to every refueling outage until there are two successful tests.~~

**This item is Resolved** pending formal SSAR revision.

DSER 6.4-1 (OITS# 1019) - In order to provide any credit for iodine removal by charcoal adsorbers in the supplemental air filtration units in evaluating the control room radiological habitability, the system is subjected to the staff's position described in Section A of SECY-94-084.

Response

The supplemental air filtration units are part of the nuclear island nonradioactive ventilation system (VBS) and provide filtered makeup air to the main control room and technical support center if high gaseous radioactivity is detected and ac power is available. The units meet the performance guidelines of ASME N509 to satisfy the guidelines of Regulatory Guide 1.140. The safety-related supply of clean air for the main control room is provided by the main

control room emergency habitability system (VES). The supplemental air filtration units are not required to assure habitability of the main control room.

The supplemental air filtration units are very reliable nonsafety-related components. Either of the two units is sufficient to provide clean air to the main control room and technical support center. The units can be loaded on the diesel generators. The units are not loaded on the same diesel generator.

The units are located in the VBS MCR/A&C equipment room above the main control room. This area is not subject to significant adverse environment from design basis accident or severe accident conditions. The units are not seismically qualified but are located in the seismic Category I auxiliary building. The supplemental air filtration units are located in a room that does not have potential high energy pipe breaks. Drainage from the room is sufficient to preclude the potential of flooding.

The units are AP600 equipment Class R which complies with ASME AG-1 including the quality assurance requirements. The units have not been determined to be risk significant and have not been included in the reliability assurance program. Other availability control mechanisms are not required.

**This item is Closed**

DSER 6.4-5 (OITS #1023) - The staff will perform an independent radiological consequence analysis for each DBA to verify the Westinghouse conclusion in meeting GDC 19 after resolution of (1) source term-related issues in Chapter 15 of this report, and (2) control room X/Q values in Chapter 2 of this report. Action W - NRC awaiting information from item 1019 (defense-in-depth requirements) to complete evaluation.

With the response to DSER open item 6.4-1 above **this item is Closed.**