GE Nuclear Energy

February 4, 1994

Docket No. STN 52-001

Chet Poslusny, Senior Project Manager
Standardization Project Directorate
Associate Directorate for Advanced Reactors
and License Renewal
Office of Nuclear Reactor Regulation

Subject: Submittal Supporting Accelerated ABWR Schedule - **Response to Open Item F6.2.1.9-1**

Dear Chet:

Enclosed is a SSAR markup addressing the subject open item pertaining to suppression pool strainers.

Please provide a copy of this transmittal to John Monninger.

Sincerely,

Jack Fox

Jack Fox
Advanced Reactor Programs

cc: Alan Beard (GE)
Norman Fletcher (DOE)
Joe Quirk (GE)
Bill Taft (GE)

JNF94-007

2222
11
See Attached
dist per C Poslusny

prohibited. The DCVs will have horizontal steel plates located above the openings that will prevent any material falling in the drywell from directly entering the vertical leg of the DCVs. This arrangement is similar to that used with the Mark II connecting vent pipes. Vertically oriented trash rack construction will be installed around the periphery of the horizontal steel plate to intercept debris. The trash rack design shall allow for adequate flow from the drywell to wetwell. In order for debris to enter the DCV it would have to travel horizontally through the trash rack prior to falling into the vertical leg of the connecting vents. Thus the ABWR is resistant to the transport of debris from the drywell to the wetwell.

In the Perry incident, the insulation material acted as a sepia to filter suspended solids from the suppression pool water. The Mark I, II, and III containments have all used carbon steel in their suppression pool liners. This results in the buildup of corrosion products in the suppression pool which settle out at the bottom of the pool until they are stirred up and resuspended in the water following some event (SRV lifting). In contrast, the ABWR liner of the suppression pool is fabricated from stainless steel which significantly lowers the amount of corrosion products which can accumulate at the bottom of the pool.

Since the debris in the Perry incident was created by roughing filters on the containment cooling units a comparison of the key design features of the ABWR is necessary. In the Mark III design more than 1/2 of the containment cooling units are effectively located in the wetwell airspace. For the ABWR there are no cooling fan units in the wetwell air space. Furthermore the design of the ABWR Drywell Cooling Systems does not utilize roughing filters on the intake of the containment cooling units.

In the event that small quantities of debris enter the suppression pool, the Suppression Pool Cleanup System (SPCU) will remove the debris during normal operation. The SPCU is described in Section 9.5.9 and shown in Figure 9.5.1 of the ABWR SSAR. The SPCU is designed to provide a continuous cleanup flow of 250 m^3/hr. This flow rate is sufficiently large to effectively maintain the suppression pool water at the required purity. The SPCU system is intended for continuous operation and the suction pressure of the pump is monitored and provides an alarm on low pressure. Early indication of any deterioration of the suppression pool water quality will be provided if significant quantities of debris were to enter the suppression pool and cause the strainer to become plugged resulting in a low suction pressure alarm.

INSERT A →

~~The ECCS pump suction pool strainers for the ABWR will meet the requirements of Regulatory Guide 1.82.~~ The suction strainers at Perry did not meet the current regulatory requirements. The ABWR ECCS suction strainers will utilize a "T" arrangement with conical strainers on the 2 free legs of the "T". This design separates the strainers so that it minimizes the potential for a contiguous mass to block the flow to an ECCS pump. The ABWR design also has additional features not utilized in earlier

INSERT A

The ABWR will at a minimum, size the ECCS suction strainers in accordance with Reg Guide 1.82 for all breaks required to be considered. Breaks involving the Main Steam Lines are expected to determine the strainer size per Reg Guide 1.82. To address the uncertainty regarding the potential non conservatism associated with the head loss calculations performed for strainer sizing the following additional requirements will be met.

1. For breaks other than those involving the main steam system, the RHR suction strainers will have a constructed area at least 2 times the basic strainer surface area obtained from Reg Guide 1.82, as required for the specific break under consideration.

2. When determining the sizing of the strainers, for breaks other than those involving the main steam system, the calculations based on the constructed strainer area will result in RHR suction strainer head loss due to insulation plugging equal to or less than 10% of the maximum available strainer head loss as determined by the basic strainer surface area obtained from Reg Guide 1.82.