SNUPPS
Standardized Nuclear Unit
Power Plant System

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Nicholas A. Petrick
Executive Director

June 26, 1981

SLNRC 81- 52 FILE: 0541
SUBJ: NRC Request for Additional Information - Containment Spray System

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Docket Nos: STN 50-482, STN 50-483, and STN 50-486

Reference: NRC (Tedesco) letter to Union Electric (Bryan) and Kansas Gas and Electric (Koester), dated June 12, 1981: Same subject

Dear Mr. Denton:

The referenced letter requested information concerning the containment spray system. The enclosure to this letter provides the requested information and will be incorporated into the SNUPPS FSAR in Revision five.

Very truly yours,

Nicholas A. Petrick

RLS/mtk

Enclosure

cc: J. K. Bryan UE
G. L. Koester KGE
D. T. McPhee KCPL
T. E. Vandel USNRC/WC
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Q450.10 (6.5.2) (RSP) The SNUPPS FSAR indicates that the mode of initiation of switchover of the containment spray system suction from the Refueling Water Storage Tank to the containment sump is manual. The staff finds that this practice departs from that currently deemed acceptable. SRP Section 6.5.2 (II. Acceptance Criteria, item 2.a) states "The Containment spray system should be designed...and should be capable of continuous operation thereafter until the design objectives of the system have been achieved. In all cases the operating period should not be less than two hours." Manual initiation of the switchover does not guarantee continuous operation for two hours and does not provide assurance that the design objectives of the spray system are achieved for delayed fission product releases from the core. It is the staff's position that we require a design modification which will change from manual to automatic the switchover of the containment spray system from the RWST to the containment sump. State your intent regarding compliance with our position.

RESPONSE

Question 450.07 stated an NRC Staff position that the containment spray system (CSS) switchover to recirculation be automatic. The SNUPPS response to that question stated that the CSS design was essentially the same as that reviewed and approved by the NRC at the construction permit stage of review. The response also referenced other sections of the FSAR that showed the adequacy of the CSS design.

This question repeated the staff position concerning CSS switchover. It is not clear that the NRC Staff has evaluated the SNUPPS design, but rather has placed a questionable interpretation on the Standard Review Plan (SRP) and then simply demanded a design change. The SRP states that the spray system should be capable of continuous operation for at least two hours. The NRC's position is that manual switchover to the containment sump suction does not guarantee continuous operation.

The SNUPPS position is that the CSS is capable of continuous operation for much longer than two hours. The pumps do not have to be secured in order to complete the simple, manual switchover. FSAR Section 6.2.2.1.2.3 and Tables 6.2.2-3 and 6.2.2-4 show that sufficient time is available for the manual actions. Assuming the incredible maximum LOCA, minimum starting refueling water storage tank (RWST) level, maximum ECCS and CSS suction rates from the RWST, and zero containment pressure, the minimum injection phase of the CSS is about 28 minutes. For a smaller LOCA, a normal RWST level and reasonable assumptions for rate of withdrawl from the RWST, the injection phase would be much longer. Allowing credit for operator action from the Control Room, even at only 28 minutes after an event, is reasonable and consistent with other NRC Staff positions. The required operator action is a simple matter of opening the valves from the containment sumps to the CSS suction. Alarms and safety-related display indication are provided to insure that the operator has the necessary information.

The CSS has a containment heat removal function and a fission product removal function. After the injection phase, the system's heat removal function is complete. A large percentage of the fission product removal is also completed prior to the initiation of recirculation. The radiological consequences of the design basis LOCA (see Section 15.6) show that a significant margin exists between the calculated off-site dose and the maximum allowable by regulations. The SNUPPS design basis for the CSS assumes successful switchover to recirculation. However, based on the above reasoning, even if the switchover were not completed the consequences would not be severe.

The NRC has traditionally required more and more automatic features in plant designs in order to mitigate theoretical accident scenarios. Experience has shown that incidents do not follow the classical scenarios and therefore not all automatic functions are desirable. In the case in question, a design change to provide automatic opening of containment sump isolation valves is not sound. The automatic feature increases the potential for the opening of these valves at an undesirable time and outweighs the consequences of an operator's failure to open the valves at the appropriate time. The containment sump suction lines to the spray pumps should only be opened by a deliberate operator action which is based on all of the information available for the particular set of circumstances.

In summary, the SNUPPS design meets published NRC criteria, the suggested design changes are not sound, and the design will not be changed.