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September 27, 1982

Division of Reactor Licensing
Licensing and Special Projects Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: Minor Modifications in Emergency Core Spray System Piping

To Whom It May Concern:

On September 2, 1982, the University of Virginia Reactor (UVAR) bridge was moved away from the high power position at the south end of the reactor pool to the center of the pool. The bridge was moved to perform maintenance on the flow header mechanism. After completing this maintenance, the UVAR bridge was returned to the high power position. Before operating the reactor, the Emergency Core Spray System (ECSS), which was disconnected to move the UVAR bridge to the center of the pool, was reconnected and the system tested with compressed air to detect any leaks in the system. The UVAR ECSS is shown in Figures 1 and 2. As illustrated in Figure 1, the system utilizes a pair of remote couplers to connect the spray system headers (attached to the movable reactor bridge) to the emergency spray tanks (mounted on the pool walls). All connecting piping on both sides of the remote couplings was rigid aluminum pipe.

When the UVAR bridge is moved away from and then returned to the high power position, the bridge will shift from side to side on the tracks. This movement has caused the remote couplings to be misaligned whenever the bridge was moved. In order to achieve a coupling, the reactor bridge was shifted slightly from side to side on the tracks until one side of the ECSS was aligned and coupled. Additional movement of the bridge was then limited. The uncoupled side was aligned by flexing the tank side piping. This method was difficult and recognized as placing a strain on the ECSS piping. Thus, the UVAR bridge was not moved from the high power position unless it was absolutely necessary.

On September 3, 1982, the bridge was moved back into the high power position. The ECSS was reconnected as described above. The air pressure test indicated that leakage was occurring in the piping from the south west spray tank. The reactor bridge was moved to the center of the pool and the south west spray tank (with the attached

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remote coupling) was lifted from the pool. A visual inspection revealed that the aluminum piping had cracked. The reactor staff concluded that this was a direct result of flexing during the coupling operation.

The reactor staff concluded that a section of flexible stainless steel piping should be placed on the tank side of the remote coupling to provide the necessary movement for coupling alignment. The University Reactor Safety Committee met on September 7, 1982, to review this proposed change. It was concluded that the crack had been caused by the manipulation of the piping to achieve alignment and that the staff's proposed insertion of the flexible pipe would rectify the problem. It was decided that the proposed change should be made in both spray tank pipings to avoid future alignment problems.

On September 16, 1982, the repair and updating of the ECSS tank piping was completed. Figure 3 illustrates the position of the section of flexible pipe. The reactor bridge was moved into the high power position. The remote couplings mated and were locked together with no alignment problems whatsoever. An air pressure test of both tanks indicated that the couplings and connecting piping had no leaks. The ECSS was tested for coolant flow rate to ensure that the piping changes had not caused any deviation in flow rate which would violate the Technical Specifications. The flow rate from the south east tank was unchanged. The initial flow rate from the south west tank system was 3.1% higher than the previous test with the original piping (from 13.0 gpm to 13.4 gpm). Test data over a four year period (March 1979 to January 1982) indicated that the south east tank system had a ± 3% deviation in initial flow rate while the south west had a deviation of 1.1% over the same period. Thus, the staff concluded that the flow rate from the south west tank system will have no effect on the ability for the ECSS to meet the Technical Specification requirements.

I feel that this repair and remedial action will have no adverse effect on the ability of the ECSS to perform its designed function The inclusion of the flexible pipe section will allow easier alignment of the remote couplings. The ability to properly align the couplings after the bridge has been moved has eliminated the need for forced manipulation which resulted in the cracked pipe. I emphasize that no violation of the Technical Specifications had occurred; the reactor was shutdown when the cracking occurred, the air test was performed before the reactor was operated, and the repairs and updating of the ECSS were completed and tested before the reactor was operated.

Should you have any questions or require additional information concerning this matter, please contact either myself or J.P. Farrar, Reactor Supervisor.

Sincerely,

J.S. Brenizer

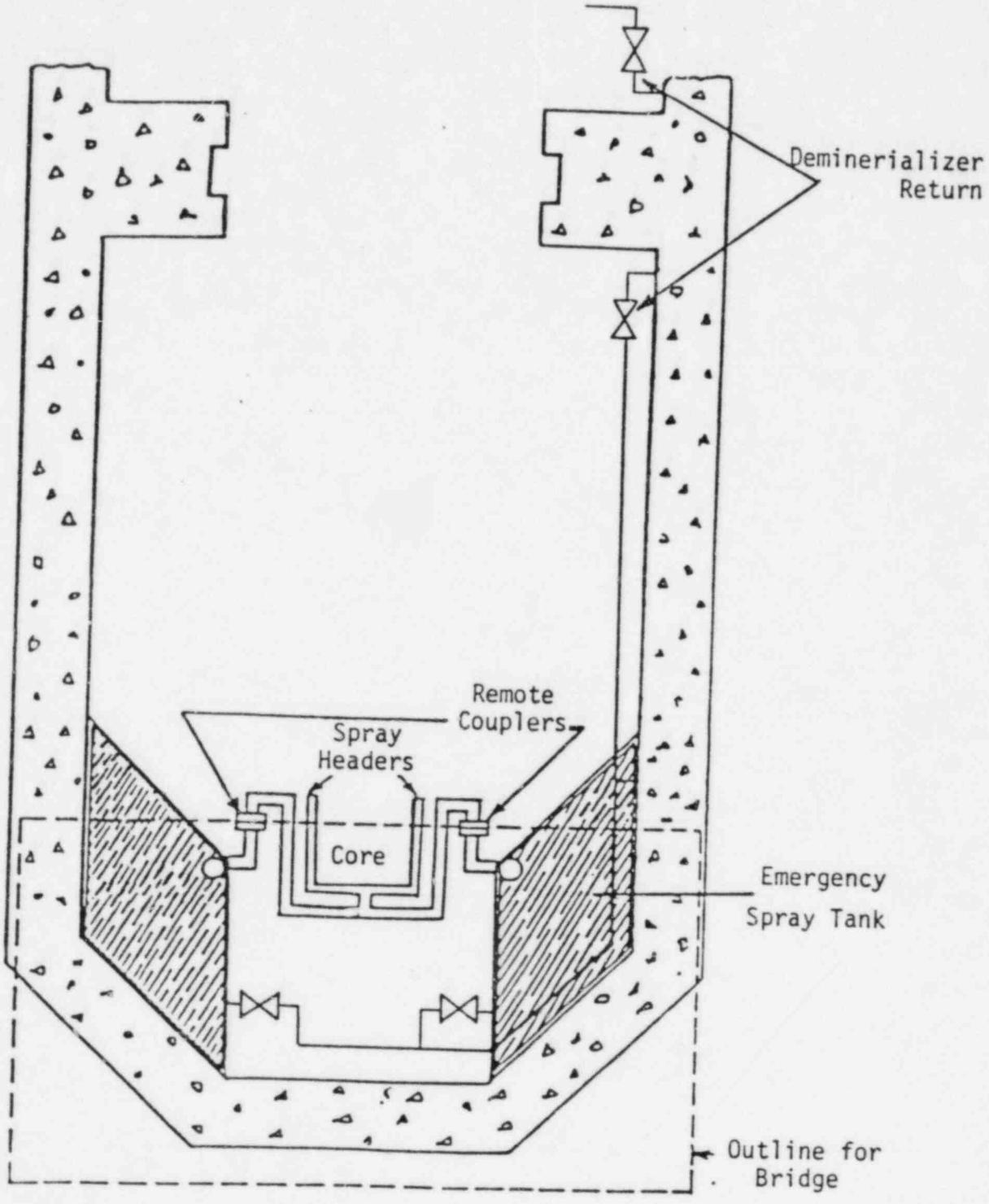
J.S. Brenizer, Director
UVA Reactor Facility

JSB:vs

cc: Director
Region II USNRC
101 Marietta Street
Suite 3100
Atlanta, GA 30303

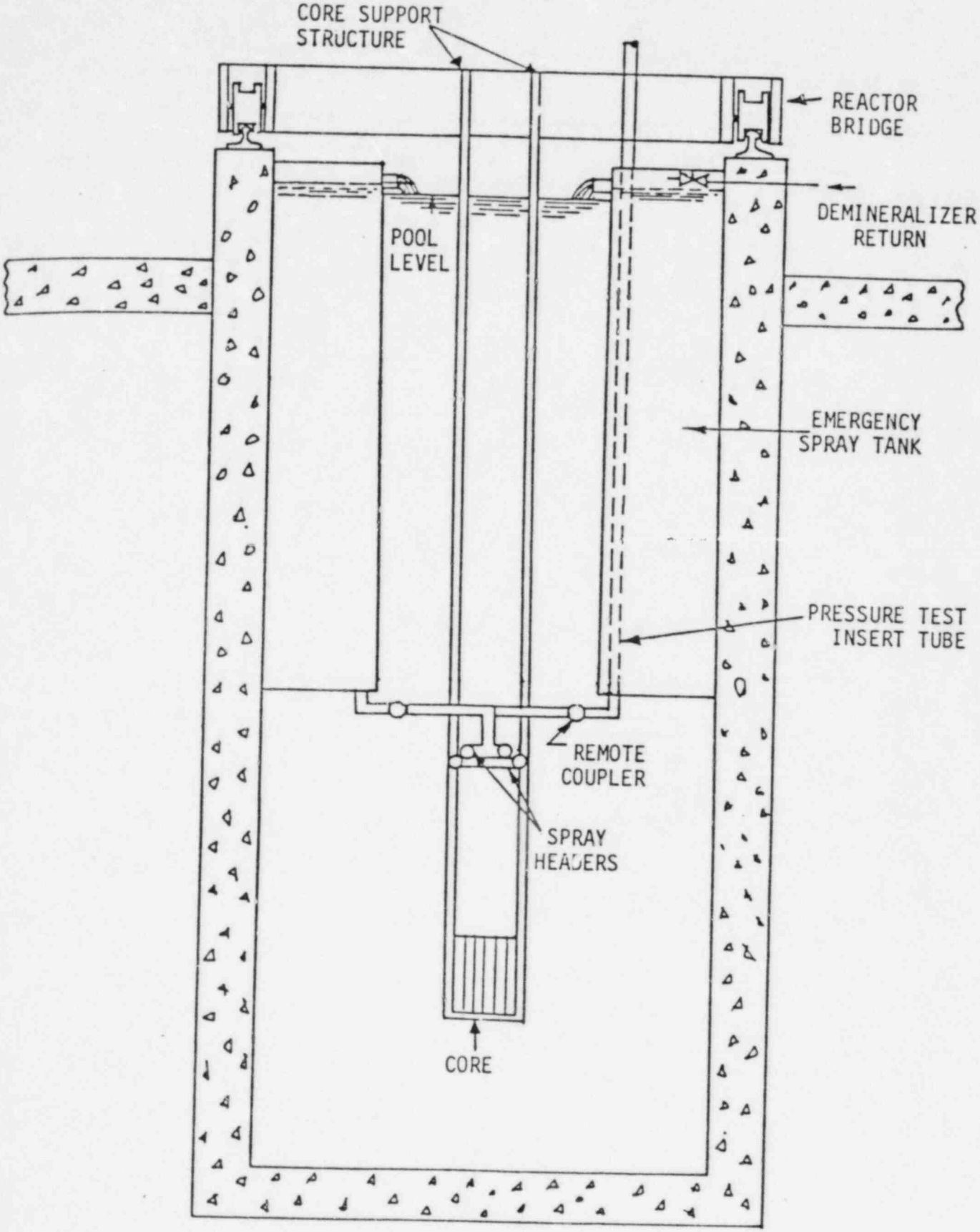
Mr. R.E. Carter, USNRC

Reactor Safety Committee



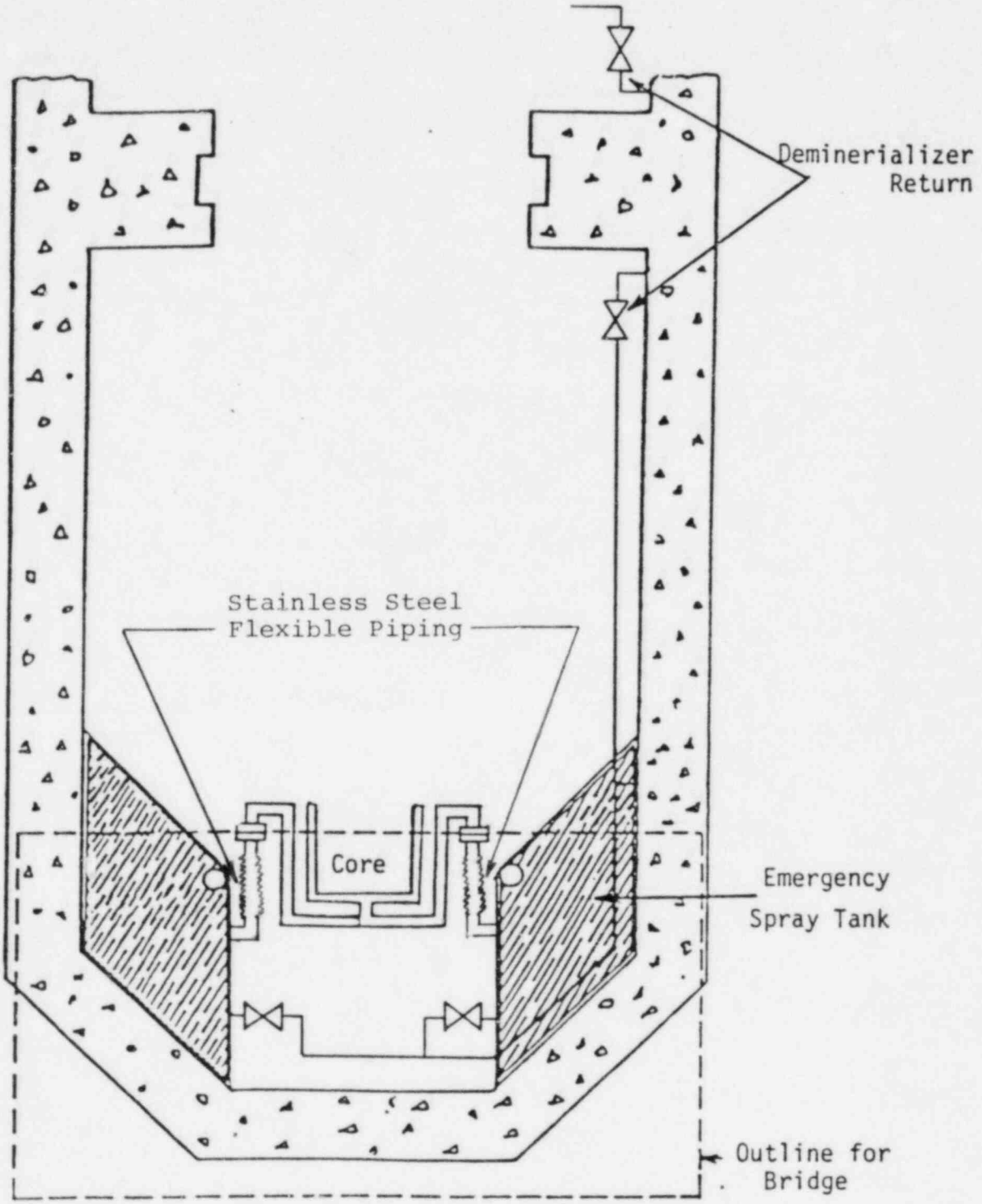
EMERGENCY CORE COOLING SYSTEM

FIGURE 1



CORE SPRAY SYSTEM ELEVATION VIEW

FIGURE 2



EMERGENCY CORE COOLING SYSTEM

FIGURE 3