



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

December 16, 1976

MEMORANDUM FOR: Boyce H. Grier, Dir., RIP, IE
FROM: K. V. Seyfrit, Chief, RTA
SUBJECT: ALLEGATIONS OF DEFECTIVE WELDING IN THE SURRY
NEUTRON SHIELD TANKS

This summarizes our assessment of the safety significance which might result from alleged welding defects in the Surry 1 and/or 2 neutron shield tank(s). Failure of the neutron shielding tank welds would be expected to result in an operational inconvenience rather than a safety concern for the following reasons:

1. The shield tank is constructed of ductile material and is maintained with only the hydrostatic head of perhaps 40 ft., so that a weld failure would likely develop gradually rather than catastrophically. The shield tank is kept full of water by means of a surge tank which has a low level alarm. Should the surge tank level drop to the alarm point, an annunciator in the control room is received. Any significant leakage would be detected in time to permit a reactor shutdown prior to losing the protection of the water.
2. The primary purpose of the shield tank is to prevent overheating and dehydration of the inner surface of the concrete primary shield wall, due to heating from neutron flux and heat from the reactor vessel. Most reactor designs provide this protection with cooling coils imbedded in the concrete shield.

If all of the water were lost from the shield tank due to sudden failure, heat-up and damage to the inner surface of the concrete would develop gradually. The reactor could be shut down before significant weakening or loss of shielding capability would occur.

3. Once the reactor is shut down, the concrete shield, which is 54 inches thick, provides adequate shielding without the water in the neutron shield tank. Lead shielding is located beneath the neutron shield tank to protect station service personnel during reactor shutdown.

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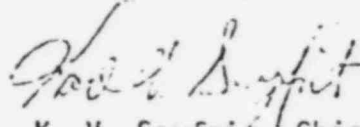
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For these reasons, it is concluded that the possible existence of defective welding in the Surry neutron shield tank(s) has virtually no real safety significance.



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