ENCLOSURE 2

February 27, 1990

MEMORANDUM FOR: Gus C. Lainas, Assistant Director for Region II Reactors
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

FROM: Luis A. Reyes, Director
Division of Reactor Projects

SUBJECT: REQUEST TO RESOLVE POTENTIAL SURRY SAFETY CONCERNS

The enclosure to this letter contains four concerns that were brought to my attention by a resident inspector. Concerns 1 and 3 are being dispositioned by the Region. Concerns 2 and 4 are design issues. In order for the Region to disposition these concerns, we request that NRR provide the following information about these concerns:

1. Concern 2

   The Surry updated Final Safety Analysis Report, Section 6.3.1.3 states that the sodium hydroxide solution used for iodine removal from the containment atmosphere is added to the containment spray water by a balanced gravity feed from the chemical addition tank. Is the rate of feed a significant safety concern at the beginning of an accident or is it significant that the entire contents of the chemical addition tank be fed in by the time the refueling water storage tank is drained thus providing the necessary pH and iodine removal capability?

2. Concern 4

   Based on your knowledge of other utilities that were licensed about the same time frame as Surry, are there other plants that were licensed without automatic isolation of the steam generator (SG) blowdown lines on high SG blowdown radiation monitor readings?

   Based on this knowledge, in NRR's opinion, is the lack of automatic isolation a significant safety concern? If so, is it significant enough to impose the backfit rule by having Surry modify their blowdown system to include this automatic isolation function?

Original Signed by
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Enclosure:
Surry Safety Concerns

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SURRY SAFETY CONCERNS

1. The recirculation coolers are used to remove heat during the Design Basis Accident (DBA) to return the containment to subatmospheric within one hour. To accomplish this task, they need the required service water flows as stated in the Updated Final Safety Analysis Report (UFSAR). The Surry heat exchangers have not been flow tested to determine that the required flows in Table 9.9-2 of the UFSAR could be met. The flow measuring devices are the same as at North Anna and have proved unreliable for flow monitoring. The devices, flow annubars, routinely become clogged and have necessitated the use of independent measuring equipment at North Anna. Actual flow testing at North Anna revealed inadequate flow settings and resulted in escalated enforcement action. There is every reason to believe that similar testing at Surry would produce similar results. In addition, a September 1988 internal document made some significant clarifications to the original Surry UFSAR, with respect to service water flow requirements, revealing the importance, to at least the licensee's design organization, of knowing actual flow measurements. The NRC has not verified nor has the licensee assured that these flow conditions can be met. Considering their importance, Surry should be required to objectively assure that these flow conditions can be met.

2. A concern exists in that failure of a containment spray (CS) pump could cause improper pH range in the spray for iodine removal. This concern is based on the need to assure that a relatively constant sodium hydroxide (NaOH) concentration is maintained in the CS system during an accident. A lot depends on whether credit is taken for iodine removal before the refueling water storage tank (RWST) and NaOH tanks are drawn down. If this is the case, then the pH range needs to be kept within boundaries, approximately 7 to 11. If the pressure drop from the NaOH tank to the suction connection of the pump is not the same as that from the RWST to the pump, the tanks will not draw down equally. A drawdown test would determine whether the NaOH tank and RWST come down equally. Apparently, a drawdown test had been conducted during startup, but the system has been changed since the original design. The licensee should be required to objectively assure that the pH during a NaOH/RWST drawdown will remain in an acceptable range for adequate iodine removal.

3. The normal reading on the component cooling water (CCW) radiation monitor is extremely high. This monitor is the first means of detecting a primary leak into the CCW system. The operator is then supposed to take action to isolate the leak. Also, a leak from the thermal barrier cooler of the reactor coolant pump would create over a 2000 psig differential between the reactor coolant system (RCS) and CCW systems. The operation of this monitor set only slightly above an extremely high normal "background" reading, the start of a significant primary-to-CCW leak could begin without the ability to identify the event until the alarm condition is reached. Second, because of this "built-in" delay time, the lack of an

auto-isolate feature would compound the problem and the leak could become much worse prior to isolation. Third, both these problems provide the possibility of producing a primary-to-CCW leak of sufficient pressure to rupture the CCW system piping and create an uncontrolled release. To remedy this problem, the high "background" readings on the CCW radiation monitor need to be reduced. An auto-isolate feature needs to be installed and the piping up to the isolation valve should be designed to handle primary system pressure.

4. There is no automatic isolation of steam generator (SG) blowdown on high blowdown radiation monitor readings. If these monitors become insensitive, as the CCW monitor is now, and the chemical volume control system (CVCS) does not do its RCS cleanup job, the end result could be a significant uncontrolled release prior to manual isolation, following a SG tube leak or rupture. The SG blowdown system should be required to have the auto-isolate capability now mandated on newer vintage Westinghouse pressurized water reactors (PWRs).