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November 4, 1980
TLL 541

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

Dear Sir:

Three Mile Island Nuclear Station, Unit II (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Contingency Plan for Transfer and Storage
of Reactor Containment Building Sump Water

This letter is in response to your letter dated August 6, 1980, and fulfills our commitment made to you via our letter TLL 416, dated August 22, 1980, supplemented by our letter TLL 550, dated October 17, 1980, to provide a contingency plan for transfer of the contaminated water presently in the reactor building containment sump. This plan has been developed to identify existing locations that are acceptable under emergency conditions for storage of that water should an emergency require removal of the water from the reactor containment building sump. This plan considers the use of presently installed equipment for storage and transfer.

Our conclusions are as follows:

1. Storage locations exist within the plant to accommodate the entire quantity of sump water in the event of emergency conditions.

2. Transfer paths can be made available to transfer the water from the sump to a chosen storage location.

3. Transfer of the water may adversely impact the overall safety of plant operations.

4. Should it be necessary to use TMI-1 tankage as sump water storage overall radiological safety of Unit 1 operations would be adversely impacted.

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5. The most prudent course of action to follow is to continue efforts to ready the Submerged Demineralizer System for operation to enable processing of the contaminated water in the reactor building sump at the earliest possible date.

This plan has been developed to ensure that acceptable action can be carried out in the event that leakage paths from the containment sump develop. Should a leakage path occur that jeopardizes the health and safety of either the public or our plant workers, this plan would be implemented.

In the event of an emergency requiring the transfer of water from the reactor building sump prior to processing, the following potential storage "sites" listed in order of suitability, have been identified:

	Capacity
1. Reactor Coolant Bleed Hold Up Tanks, (RCBT) Unit 2	231,750 gallons
2. Tank Farm in Unit 2 "A" Spent Fuel Pool	110,000 gallons
3. Reactor Coolant Bleed Hold Up Tanks, Unit 1	247,000 gallons
4. Spent Fuel Pool "A", Unit 2	320,000 gallons
TOTAL	908,750 gallons

The total volume of radioactive water in the reactor building sump is approximately 600,000 gallons. This water inventory is increasing at the rate of approximately 4500 gallons per month.

The total volume as indicated above for each "site" may not necessarily be immediately available. However, should the requirement to utilize the "sites" listed above become mandatory, the available volume could be increased by processing the water via EPICOR-1 or EPICOR-2 that may currently exist in any specified storage location.

The above listing of "sites" has been determined based on the considerations identified below:

1. Available volume for storage is adequate to accommodate the total volume of sump water.

2. Increased radiation level in the vicinity of the projected storage locations can be accommodated, although this effect is highly undesirable. In particular, capability to perform maintenance of equipment and instrumentation in the cubicles containing the Bleed Hold Up Tanks will be severely impacted.

3. The chosen transfer path makes use of existing components and piping.

4. The transfer paths traverse plant areas that are amenable to the control of personnal radiation exposure during the transfer.

The tank farm located in the Unit II Fuel Pool and the RCBT's in Unit II provide a total potential storage capacity of 341,750 gallons. The use of these two "sites" would require additional radiological precautions for storage and transfer of the sump water. Use of these storage locations appears to be acceptable from a shielding, and hence radiological exposure to workers, viewpoint, with the exception of inhibited capability to perform maintenance activities in the Bleed Hold up Tank cubicles mentioned previously. Transfer paths from the sump to these storage locations traverse areas of the plant that may be occupied by personnel on an as-needed basis. During transfer evolutions, access to these locations would have to be strictly controlled and would result in inaccessible plant areas until the transfer piping was flushed.

The TMI-1 RCBT's provide a potential storage capacity of 247,000 gallons and are an additional storage location that could be made available should it be necessary to transfer additional sump water. Use of these tanks suffer from the same disadvantages as use of TMI-2 RCBT's. Although the use of these tanks for the storage of the sump water is undesirable because of unit separation and our desire and intent to contain the TMI-2 accident water within the confines of TMI-2, the tanks can be used for this purpose because they are shielded and because their volume is sufficient for storage of most of the remainder of the water.

Because power operation of Unit I requires that at least two RCBTs be available to provide a source of makeup to the reactor coolant system, and because we consider it highly undesirable to introduce TMI-2 accident generated water into TMI-1 systems, we will be examining actions which will mitigate the adverse impact of utilization of the Unit 2 spent Fuel Pool "A" as a storage site. This is especially important since that pool is likely to be needed to store some amount of water even if the Unit 1 RCBT's are used. The adverse impact of utilization of Unit 2 Spent Fuel Pool "A" include:

1. Personnel radiation exposure in the Fuel Handling Building would be increased. Our analysis provides results that indicate that the radiation level in the center of the shielding atop the "A" Spent Fuel Pool would be approximately 10 mrem/hr with 320,000 gallons of sump water in the pool.

2. The potential for airborne contamination, as a result of storage of sump water in the Spent Fuel Pool, and subsequent increase in plant effluents of gaseous and airborne particulates may exist. To minimize the possibility of this occurrence, the Spent Fuel Pool area cover can be sealed to minimize communication with the Fuel Handling Building atmosphere.

As a result of our development of this contingency plan, we conclude that:

1. Potentially available volume exists that can be used for the storage of reactor containment building sump water in the unlikely event that emergency conditions dictate its removal from the sump. However, it must be recognized that each storage location has unique and significant disadvantages associated with it.

2. Transfer paths are available to transfer the water from the sump to the selected storage location.

We wish to reiterate our belief that the best approach to this problem is processing of the reactor building sump water. To this end, we are proceeding with construction and start-up testing of the Submerged Demineralizer System. This system is currently scheduled to be available for operation in late March, 1981. We urge that the NRC proceed expeditiously in providing the necessary regulatory approvals to permit operation of this system.

Sincerely,

R. C. Arnold
Chief Operating Executive

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cc: J. T. Collins
B. J. Snyder