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Writer's Direct Dial Number

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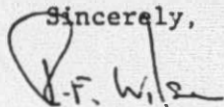
TMI Support  
Attn: R. Vollmer, Director  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)  
Operating License No. DPR-73  
Docket No. 50-320  
BWST Tech. Spec. Modification

Enclosed please find justification for reducing the minimum Borated Water Storage Tank (BWST) volume from 350,000 gallons to 100,000 gallons. Please note that the water currently contained in the Unit 2 BWST is "non Unit 2 accident" water and has been sampled. These samples contain radionuclide concentrations and ratios indicative of pre-accident Unit 1 Spent Fuel Pool water which was presumed to be the primary source of this water. Therefore, it is requested that the BWST be drained to within allowable limits and that EPICOR II processed and borated water be used to fill the BWST. Your prompt attention to this matter would be greatly appreciated.

Sincerely,

  
R. F. Wilson  
Director TMI-2

RFW:LWH:hah

Enclosure

cc: D. Brinkman  
J. T. Collins

1608 260

The proposed Technical Specifications currently limit the minimum Borated Water Storage Tank (BWST) inventory to 350,000 gallons (Reference Page 3.1-1 paragraph 3.1.1.1 TMI-2 Tech. Spec., Appendix A) which was based on the core decay heat rate in June 1979. Extrapolated calculations for a December 14, 1979 core decay heat generation rate show that there is at least three days core cooling capacity with a minimum of 100,000 gallons (see Appendix A). Three days would allow sufficient time to provide borated water to the BWST from other water sources. The alternatives which would be used prior to cooling water from the BWST are described in Emergency Procedure 34 (EP-34).

The existing Unit II BWST inventory is approximately 460,000 gallons. Upon approval of the above proposed changes we would commence transfer of approximately 360,000 gallons to Unit I BWST and EPICOR I consistent with necessary clean up and processing restrictions. This would leave a minimum of 100,000 gallons of borated water in the Unit II BWST at all times. Refill/boration could then commence from EPICOR II at a controlled but less critical pace. (EPICOR II effluent would, of course, be checked for compatibility with BWST chemistry requirements and doped with  $H_3BO_3$  to meet the 3,500 ppm Boron minimum requirement prior to being pumped into the Unit II BWST).

Use of the Unit II BWST for storage of EPICOR II effluent will minimize the total quantity of processed water which must be disposed of through the ultimate disposal method finally adopted for TMI-2.

APPENDIX "A"

Minimum Required BWST Inventory

Design Case:

Provide three days supply of cooling water for a break in the Reactor Coolant pressure boundary on the reactor outlet piping at or below the elevation of the Decay Heat letdown line at its connection to the hot leg. Core decay heat to be removed thru sensible heating of Reactor Make-up (no steam cooling credit). Cooling path would be from the BWST thru a Make-up pump to a Reactor cold leg; thru the core and out the break to the Reactor Building sump.

Decay Heat (December 14, 1979)  $1.06 \times 10^6$  BTU/hr.

BWST maximum temperature 90°F; Break outlet temperature < 212°F  
assume 200°F

$$\text{Required feed rate} = \frac{\dot{q}(\text{Decay Heat})}{h'_{200} - h'_{90}} = \frac{1.06 \times 10^6 \text{ BTU/hr.}}{110 \text{ BTU/lbm}}$$

$$\dot{m} \text{ feed} = 9636 \text{ LBM/hr.}$$

$$\text{or } 19.34 \text{ gpm}$$

3 days at 19.34 gpm is 83,555 gallons total feed

BWST internal diameter is 37' - 6" and the centerline of the 20" discharge nozzle is 2' - 2" above the bottom of the tank (Ref. Pittsburgh - Des Moines Steel Company Drawing E-2, Contract 11011; TMI File 07-34-0102).

Therefore at 5261 gal/ft the dead storage is less than 16,500 gallons.

and,

16500 gallons	dead storage
+ 83500 gallons	3 days inventory
100,000 gallons	minimum BWST inventory

For reference this is equivalent to 12.1 feet of BWST level.

Appendix "A" page 2

However, to account for possible error in the level instrumentation string, a safety factor must be added to this value to find the set-level.

The instrumentation string has an overall accuracy better than 2% full scale and was calibrated for Boric Acid solution with a specific gravity of 1.004.

At 3600 ppm (B) the specific gravity of our solution is approximately 1.008.

The correction factor to assume that at least 100,000 gallons are in the tank is:

$$(0.02) 56' \left( \frac{1.008}{1.004} \right) = 1.12'$$

BWST TECH. SPEC. MINIMUM LEVEL SHOULD BE

$$12.1' + 1.1' = 13.2 \text{ feet}$$