GPU Nuclear

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April 14, 1983
5211-83-105

Office of Nuclear Reactor Regulation
Attn: John F. Stolz, Chief
Operating Reactor Branch No. 4
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Containment Flood Level

On June 11, 1982 GPU Nuclear submitted Containment Flood Level calculations for TMI-1 in accordance with the Partial Initial Decision of December 14, 1981. On July 26, 1982, NRC requested additional information to which GPUN responded on September 17, 1983 (5211-82-233). The information supplied for item 5 of that letter was provided to show some general agreement between water processed at TMI-2 and calculations of flood level performed at TMI-1. Further discussion with personnel at TMI-2 indicates that flushing water was added to water transferred for processing and that RCS leakage occurred throughout the transfer and processing (Enclosure 4). These additional quantities reduce the capacity equivalent to about 6197 gallons per inch (gpi) which is in close agreement to the capacity equivalent to 6100 gpi measured as transferred from the TMI-2 containment (Enclosure 4).

To show the relative comparison between TMI-1 and TMI-2 information, an analysis was performed for TMI-2 (Enclosure 2). The TMI-1 values were then normalized to TMI-2 to show the minor difference in the calculative methods (Enclosure 3). Finally water transferred from containment was measured to show the close agreement between non floodable volumes calculated and measured (Enclosure 4). With the conservative assumptions for floodable volume unchanged, it can be inferred that TMI-1 flood level calculations remain conservative.

Sincerely,

H. D. Hukill
Director, TMI-1

A001

cc: Regional Administrator, Region I
J. Van Vliet

Enclosure 1

TMI-2 CONTAINMENT WATER PROCESSED

As shown in our response to item 5 of the September 17, 1982 letter:

Total Water Processed	642,272 gal.	
Start Level	291.04 ft.	8.26
End Level	282.78 ft.	
Capacity Equivalence	6,480 gal/in	

However, during the measuring processing the following quantities of water added to containment:

RCS Leakage (150 gpd x 120 days) =	18,000 gals.
Decon Water (13,500 gal. of which 1/3 atomized) =	9,000 gals.
Total added water =	27,000 gals.

Additionally, in the water processing approximately 1,000 gallons were used for flushing lines.

The capacity equivalence becomes

$$\frac{642{,}272 \text{ gal.} - 28{,}000 \text{ gal.}}{8.26 \text{ ft.} \times 12 \text{ in/ft}} = 6{,}197 \text{ gals/in.}$$

Enclosure 2

TMI Reactor Building Flooding Analyses Comparison

	TMI-1	TMI-2
I.	Reactor Building Volume	
	V_{rb} = 13,273 ft^3/ft	V_{rb} = 13,267 ft^3/ft
II.	RB Non Floodable Volume	
a.	RV Cavity V_{cav} = 855 ft^3/ft	V_{cav} = 855 ft^3/ft
b.	Elevator Shaft V_{es} = 99 ft^3/ft	V_{es} not included
c.	Secondary Shield (D-ring) V_{dr} = 1007 ft^3/ft	V_{dr} = 1140 ft^3/ft
d.	RC Drain Tank Cubicle V_{rcdt} = 105 ft^3/ft	V_{wdl} = 518 ft^3/ft
e.	Letdown Cubicle V_{d} = 127 ft^3/ft	
f.	Steam Generator Support V_{sg} = 13 ft^3/ft	V_{sg} = 226 ft^3/ft
g.	RB taper V_{t} = 266 ft^3/ft	V_{t} = 296 ft^3/ft
h.	RC Drain Tank V_{dt} not included	V_{dt} = 184 ft^3/ft
i.	Sump Walls V_{sw} not applicable	V_{sw} = 342 ft^3/ft
	V_{nf} = 2502 ft^3/ft	V_{nf} = 3551 ft^3/ft
III.	Floodable Volume	
	$V_{fv} = V_{rb} - V_{nf}$	$V_{fv} = V_{rb} - V_{nf}$
	V_{fv} = 10,771 ft^3/ft	V_{fv} = 9,716 ft^3/ft

TMI-1	TMI-2

IV. Water Sources LOCA

a. RCS Volume

V rcs = 11, 245 ft^3. V rcs = 11,245 ft^3.

b. BWST Volume

V bwst = 46,292 ft^3. V bwst = 46,791 ft^3

c. NaOH Tank Volume

VNaOH = 1, 345 ft^3. V NaOH = 1885 ft^3.

d. Core Flood Tanks Volume

V2cft = 2,080 ft^3. V 2cft = 2140 ft^3.

V loca = 60,962 ft^3. V loca = 62,061 ft^3.

V loca = 455,966 gal. V loca = 464,185 gal.

V. LOCA Flood Level

$$L\ loca = \frac{V\ loca}{V\ fv} = \frac{60,962\ ft^3}{10,771\ ft^3/ft}$$

$$L\ loca = \frac{V\ loca}{V\ fv} = \frac{62,061\ ft^3}{9,716\ ft^3/ft}$$

L loca = 5.66 ft. L loca = 6.36 ft.