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NSD-NRC-96-4807  
DCP/NRC0591  
Docket No.: STN-52-003

August 29, 1996

Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

ATTENTION: T. R. QUAY

SUBJECT: SURFACE AREAS IN THE AP600 CONTAINMENT THAT ARE  
AVAILABLE FOR AEROSOL SEDIMENTATION COLLECTION

Dear Mr. Quay:

Attached is a listing of the surface areas in the AP600 containment that are available for aerosol sedimentation collection. This updated information reflects the design of the AP600 as described in the SSAR. This information is provided for the use of the staff in reevaluating the determination of aerosol removal coefficients. The need for this material was discussed with the staff and Dr. Powers of Sandia National Laboratory in a teleconference on August 5, 1996.

Westinghouse believes this updated information will have an effect on the results of the work that Dr. Powers has performed as reported in the draft report, "Monte Carlo Uncertainty Analysis of Aerosol Behavior in the AP600 Reactor Containment Under Conditions of a Specific Design Basis Accident."

Please keep us informed as to the status of your progress in updating this report as the results are very important to resolving important technical issues for the AP600.

Please contact Jim Grover (412.374.5585) if you have any question as concerning this data.

Brian A. McIntyre, Manager  
Advanced Plant Safety and Licensing

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Attachment

cc: J. Lee - NRC  
D. Powers - SNL  
N. Liparulo, Westinghouse (w/o attachment)

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# ATTACHMENT TO NSD-NRC-96-4807

## AP600 Sedimentation Surface Area Inside Containment

The aerosol sedimentation area inside the containment is calculated by summing the floor areas of the various compartments and the areas associated with the metallic heat sinks. The floor areas are:

Steam generator room 1	85.8 m <sup>2</sup>
Steam generator room 2	53.9
Lower compartment	718.8
Reactor Cavity	50.0
IRWST	256.4
Upper compartment cylinder	851.2
Upper compartment annulus	474.0

TOTAL FLOOR SEDIMENTATION AREA 2490.1 m<sup>2</sup>

The sedimentation area associated with the metallic heat sinks is approximated by assuming that each heat sink exists as a cube and that the top surface of the cube (i.e., one sixth of the heat sink surface) is the only part of the heat sink that will collect sedimentation. As indicated in the listing below, certain of the heat sinks that are predominantly vertical surfaces were not included in the determination of sedimentation surface area. The sedimentation surface areas associated with the heat sinks are:

Reactor cavity	
Containment sump pumps	0.3
Reactor coolant drain tank	2.2
RCDT heat exchanger	0.7
HVAC fans	1.0
Platforms	28.8
Stairs	4.3
Landings	4.0
<u>HVAC duct</u>	<u>1.6</u>
Total	42.9 m <sup>2</sup>

Accumulator cavities	
Accumulators	23.8
Platforms	87.7
<u>Stairs</u>	<u>3.2</u>
Total	114.7 m <sup>2</sup>

Steam generator rooms	
SG lower manway platforms	69.4
SG tubesheet platforms	53.0
Operating deck platforms	52.0
Stairs	3.2
SG support columns	not included
<u>SG upper supports</u>	<u>8.7</u>
Total	186.3 m <sup>2</sup>

CVS and CMT room	
Letdown heat exchanger	1.2
Demineralizers	7.4
Reactor coolant filters	1.8
Support steel	22.4
Vertical shield plates	not included
Horizontal floor plates	7.3
Sump pumps	0.4
Platforms	369.1
HVAC duct	7.8
Core make-up tanks	28.6
Primary containment wall	not included
Columns	not included
Floor framing	117.1
Elevator tower	6.8
Maintenance hatch	5.0
Stairway	5.0
<u>Rail handle above reactor access</u>	<u>0.7</u>
Total	580.6 m <sup>2</sup>
Refueling room	
Lower internal stand	6.0
Upper internal stand	8.5
Upender	1.2
Refueling canal gate	31.2
<u>Platforms</u>	<u>4.3</u>
Total	51.2 m <sup>2</sup>
IRWST Room	
Metallic wall	not included
Upper East SG Compartment	
Jib crane	2.8
Feedwater nozzle platform	43.5
<u>Upper manway platform</u>	<u>43.5</u>
Total	89.8 m <sup>2</sup>
Upper West SG Compartment	
Jib crane	2.8
Feedwater nozzle platform	43.5
<u>Upper manway platform</u>	<u>43.5</u>
Total	89.8 m <sup>2</sup>

Upper Compartment Annulus

Integrated head stand	15.2
Refueling machine	24.2
Platforms	244.7
Stairs	12.8
Landings	6.3
Elevator support structure	8.4
Elevator support	3.7
Internal stiffeners	47.0
Ring duct	97.7
Crane girder	98.9
Containment recirculation units	29.9
Condensate return grating	17.0
<u>Main equipment hatch</u>	<u>9.5</u>
Total	615.3 m <sup>2</sup>

Containment Dome

Polar crane bridge	123.6 m <sup>2</sup>
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TOTAL HEAT SINK SEDIMENTATION AREA      1894.2 m<sup>2</sup>

Combining the floor areas and the estimated heat sink upward facing surface areas gives a total sedimentation area of 4384.3 m<sup>2</sup>.