Carl L. Newman
Vice President

Regulatory File Cy.

Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N. Y. 10003
Telephone (212) 460-5133

December 6, 1974

Re: Indian Point Unit No. 2
AEC Docket No. 50-~~247~~
247

Mr. George Lear, Chief
Operating Reactors Branch #3
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D,C. 20545

Dear Mr. Lear:

As requested by your letter of November 4, 1974, we are submitting the remainder of the additional information identified by you as necessary to complete your review of our Emergency Core Cooling Analysis. Answers to all other applicable questions transmitted in that request, except Question 1b, were submitted to you by my letter dated December 2, 1974. This letter completes our response to your request for the information.

Very truly yours,

Carl L Newman

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Vice President

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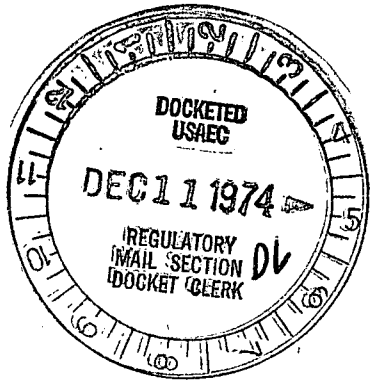

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Question No. 1b:

Provide justification for the following input parameters used in the ECCS evaluation model:

Passive Heat Sinks - Discuss the method of determining the passive containment heat sinks. Identify each heat sink by category (i.e., cable tray, equipment supports, floor grating, crane wall, etc.) and provide surface area, thickness, materials of construction, thermal conductivity and volumetric heat capacity, by component category used in the containment transient analysis code.

Response to Question No. 1b:

The basis and qualifications for determining the passive containment heat sinks are stipulated as follows:

a. Design basis in Indian Point Unit No. 2 Containment Construction Drawings.

b. Total surface areas are not direct results of a total detail take-off, but are extrapolations from segments.

c. All support steel and structures are assumed to be fully exposed if not embedded in concrete.

d. No differentiation has been allowed for painting or coatings of the steel.

e. Quantities for exposed surface area of structural steel were developed on a tonnage basis and projected to an area by using a factor of 200 square feet of exposed steel per ton.

Response to Question No. 1b: (Cont'd)

f. For structural material exposed on both sides to the accident atmosphere only one-half of the structure's thickness is used as a thickness input (e.g., framing, supports, restraints and miscellaneous steel).

In Table 1, a detailed compilation of heat sinks, categorized by function and thickness, and including surface area, and material of construction are presented. The thermal conductivity and volumetric heat capacity for each heat sink material contained in the Table 1 are compiled in Table 2.

If the tabulated structures in Table 1 are categorized by their thicknesses as they are in Table 1.2-2 of WCAP-8404, ECCS Acceptance Criteria Analysis, Indian Point Nuclear Generating Station Unit No. 2, the summations of their surface areas are equal to the totals of the surface areas used in the analysis of WCAP-8404. In the single instance of the exposed steel liner of the Containment Cylinder, the actual exposed steel given by Table 1 of this submittal is less than the surface area used in the analysis. The value for this area used in WCAP-8404 is therefore more conservative than the calculated actual area.

TABLE 1

Structural Heat Sinks

Heat Sink	Material		Area Ft.^{2}	Thickness (in)	
Linings					
Containment Cylinder	Steel-Lined Concrete		54025	3/8	
	Lining Over Insulation		15940		
	Exposed Steel Liner		38085		
Containment Dome	Steel-Lined Concrete		28613	1/2	
Containment Floor	Unlined Concrete		15000	12	
Refueling Canal	Lined Concrete		10000	3/8	
Miscellaneous Concrete Structure	Unlined Concrete		61000	12	
Steel Structures					
Annulus Framing	Steel	163T	32600	3/8 Plate	*
		13.5T	2704	3/4	*
		90T	18000	3/8	*
Steam Generator Supports	Steel	316T	63200	3/4	*
		48T	9600	3/8 Plate	*
Pressurizer Support		13T	2600	3/8"	*
Reactor Coolant Pump Supports		48T	9600	3/4	*
		16T	3200	3/8 Plate	*
		19T	3800	3/8	*
		22T	4400	3/4	*

TABLE 1
(Continued)

Heat Sink	Material		Area Ft.^{2}	Thickness (in)	
Crane	Steel	329T	65800	1/2	
Crane Rail		9T	1800	3/4	*
Miscellaneous Iron & Steel Handrails, Rails, Grating		50T	10000	1/8	*
Seismic Restraints Hangers		100T	20000	1/2	*
Exposed Pipe			7948	1/4	*
Exposed Conduit		15T	3000	1/8	
Ductwork			22000	10 Ga. (.1382)	
Accumulators			2992	1/2	

* Steel structures that are exposed on both sides. These are listed in WCAP-8404 in categories of one-half of the thicknesses listed here.

TABLE II

Containment Heat Sink
Thermodynamic Data

Materials	K (Btu/hr.-Ft.°F)	ρCp (Btu/Ft.^{3}-°F)
Stainless Steel Liner Plate	8.6	56.35
Carbon Steel Liner Plate	26.0	56.35
Structural Concrete	0.8	28.8

K = Thermal Conductivity

ρCp = Volumetric Heat Capacity