UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

Peter A. Morris, Director
Division of Reactor Licensing

SAFETY ANALYSIS REPORTS

Reference is made to the letters of November 26, December 10, 1969, January 19, 1970, and February 4, 1970, from Roger S. Boyd, Assistant Director for Reactor Projects, DRL, to the Environmental Science Services Administration requesting comments on the following safety analysis reports, respectively:

Indian Point Nuclear Generating Unit No. 2 ✓
Consolidated Edison Company of New York, Inc.
Final Facility Description and Safety Analysis
Amendment No. 12 dated November 21, 1969, and
Amendment No. 14 dated January 27, 1970

H. B. Robinson Unit 2
Carolina Power and Light Company
Final Facility Description and Safety Analysis Report
Amendment No. 11 dated December 2, 1969

Midland Plant Units 1 and 2
Consumers Power Company
Preliminary Safety Analysis Report
Amendment No. 6 dated December 29, 1969

Review by the Air Resource Environmental Laboratory, ESSA, has now been completed and their comments are enclosed.

Milton Shaw
Milton Shaw, Director
Division of Reactor Development
and Technology

RDT:NS:S022

Enclosure:
Comments (Orig. & 1 cy.)

cc: R. S. Boyd, Assistant Director for Reactor Projects, DRL
H. L. Price, Director, REG

Comments on

Indian Point Nuclear Generating Unit No. 2
Consolidated Edison Company of New York, Inc.
Final Facility Description and Safety Analysis
Amendment No. 12 dated November 21, 1969, and
Amendment No. 14 dated January 27, 1970

Prepared by

Air Resources Environmental Laboratory
Environmental Science Services Administration
February 17, 1970

The original documentation of the Indian Point site during the period 1955-1957 indicates that at the 100-ft. height the annual prevailing wind direction is from the north northeast and that in the sector from 22.5 to 42.5 degrees the frequency of inversion, neutral and lapse conditions was 6, 2, and 1 percent, respectively. Within this sector, the shortest site boundary is approximately in a direct line through Units 2 and 3 at a distance of 610 and 380 m, respectively, as measured from figure 2.2-2. It is about 500 m from the Unit 1 stack to this common boundary point. The nearest site boundary, regardless of sector, is where the property line intersects the downriver edge of the site. Although this point is at a distance of 580 m from Unit 2, it is not in the most prevalent wind direction by a considerable amount.

To compute the average annual dilution factor we have assumed the frequencies listed above, averaged over a 20-degree sector with a wind speed of 2, 4 and 3 m/sec, respectively, for inversion (Type F), neutral (Type D), and lapse (Type B) conditions. Assuming no building wake effect our results show the applicant's values for Units 1 and 2 to be reasonably conservative. In the case of Unit 3 we compute an average annual dilution factor of 2.9×10^{-5} sec m^{-3} as compared to the applicant's value of 1.6×10^{-5} sec m^{-3}. The only explanation we have for the ESSA value being twice as high is the use of the building wake effect in the applicant's assumptions.

It is our view that the use of the building wake effect in the long-term average diffusion equation, as was done by the applicant, is inappropriate. It does not seem logical that for the same atmospheric conditions the Sutton equation on page Q 11.10-1 for the long-term model gives <u>more</u> credit for building wake effect than the equivalent short-term model on p. Q 11.10-2. For example at $x = 400$ m assuming $x_o = 400$ m and $n = 0.5$, the building wake effect, $[(x+x_o)/x]^{2-n/2}$, for the long-term equation is 3.4 whereas for the effect in the short-term equation, $[(x+x_o)/x]^{2-n}$, the value is 2.8. It is the larger exponent in the former that makes the difference. Also, the fact that one averages in the horizontal dimension over a sector essentially would nullify any added dilution in that dimension because of wake effect.

FROM: ...evelopment & Tech
...nical [illegible]

TO: Morris

DATE OF DOCUMENT	DATE RECEIVED	NO.:
3-18-70	3-18-70	900

LTR.	MEMO:	REPORT:	OTHER:
	X		

ORIG.:	CC:	OTHER:
1		Consultant

ACTION NECESSARY ☐ NO ACTION NECESSARY ☐ | CONCURRENCE ☐ COMMENT ☐ | DATE ANSWERED BY:

CLASSIF: U

POST OFFICE REG. NO.:

FILE CODE: 50-247---50-329-330----50-261

DESCRIPTION: (Must Be Unclassified)
Ltr re; our ltrs 11-26, 12-10-69 & 1-19 & 2-4-70...trans the following comments prepared by ESSA

1 orig cc rec'd

ENCLOSURES:
Comments on Indian Point 2, Amdt's 12 & 14......
Comments on Midland Units 1-2, Amdt 6

Comments on H. B. Robinson Unit 2 Amdt # 11

Orig returned 4-1-70

REMARKS:
Orig comments to be returned to room 016....
Orig tran ~~ltr~~ memo to be filed w/ 50-261

REFERRED TO	DATE	RECEIVED BY	DATE
P. Howe W/2 cys for action	3-26-70	~~Do~~ Not Remove	
DISTRIBUTION:			
Reg file cy (3) OGC- Room P-506-A		N. Blunt/Muller Orig & 3 cys of	
H. Price & Staff Morris/Schroeder		comments on Indian Point # 2	
Boyd DeYoung		N/Blunt/Muller	
Case		Orig & 3 cys of comments on Midland	
H. Steele/Tedesco W/orig & 3 cys comments			
on H. B. Robinson & orig trans memo....			

900

U.S. ATOMIC ENERGY COMMISSION **MAIL CONTROL FORM** FORM AEC-326S (8-60)