UNITED STATES
ATOMIC ENERGY COMMISSION
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Peter A. Morris, Director
Division of Reactor Licensing

SAFETY ANALYSIS REPORT

Reference is made to the letter of April 14, 1969, from Roger S. Boyd, Assistant Director for Reactor Projects, DRL, to the Environmental Science Services Administration requesting comments on the following safety analysis report:

Seabrook Nuclear Station Unit No. 1
Public Service Company of New Hampshire
The United Illuminating Company
Preliminary Safety Analysis Report
Volumes I, II and III dated April 9, 1969.

Review by the Air Resources 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:S129

Enclosure:
Comments (Orig. and 1 Cy.)

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



A/17 1648

Comments on

Seabrook Nuclear Station Unit No. 1
Public Service Company of New Hampshire
The United Illuminating Company
Preliminary Safety Analysis Report
Volumes I, II and III dated April 9, 1969

Prepared by

Air Resources Environmental Laboratory
Environmental Science Services Administration
April 25, 1969

The site is situated on very flat terrain with tidal marsh to the north, south, and east and Hampton Harbor, 1 mile to the east. Consequently, except for a sea breeze effect, one would not expect any unusual terrain effects with regard to atmospheric transport and diffusion.

The applicant has used the technique of categorizing diffusion regimes by wind speed, solar angle and cloudiness. This technique has a distinct bias towards the Pasquill Type D category as evidenced by the Boston data (79%) and the Pease data (49%). We do not believe this to be a real occurrence. The bias is, in part, brought about by the criteria that all cases with winds greater than 4 m/s during the nighttime and during daytime with slight insolation are classified as "D". Many of these cases, especially at night, would probably have been classified as stable if the horizontal wind fluctuation, $\sigma_\theta$ , had been used.

The diffusion parameters chosen by the applicant for the short-term (0-12 hours) inadvertent effluent release (Table 2.3-10) seems reasonably conservative and appropriate for this type of site. However, for the long-term dose experienced in a full release (one month) it is our opinion that the diffusion parameters are not conservative. It appears that no consideration was given to the possibility that inversion conditions are highly correlated with particular wind sectors. For example, fig. 2.3-4 shows on an annual basis that inversion winds from the west sector occurs 6 percent of the time. This is probably an underestimate for two reasons, namely, 1) all winds less than 2 knots were listed as calm and amounted to 4.2 percent and 2) the bias of the technique towards neutral conditions which probably is not real. If one then considers the "worst" month of the annual average, it is quite possible that a joint frequency of 15 percent between west winds and inversion conditions could occur.

Using a sector spread of $22.5^{\circ}$ (applicant used $57.3^{\circ}$) our estimate of the concentration at the site boundary is $1.2 \times 10^{-5}$ sec $m^{-3}$ as compared to $4 \times 10^{-6}$ sec $m^{-3}$ shown in fig. 2.3-1.

In summary, we are in agreement with the applicant's short-term concentration estimates but, on the basis of currently available information, disagree with the 30-day estimates by a factor of 3. According to dose estimates in fig. 14.5-1, this would increase the site boundary thyroid dose from 160 rem to 480 rem.