

## Comments on

Oconee Nuclear Station Units 1 and 2  
 Duke Power Company  
 Preliminary Safety Analysis Report  
 Amendment #2 dated April 18, 1967

Prepared by

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 Institute for Atmospheric Sciences  
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The critical off-site location with regard to high concentrations would appear to be the Keowee River valley to the east and southeast of the site. As indicated by a statement in the applicant's revision, the terrain in this direction will modify the drainage flow direction to that following the Keowee River. At the 1 mile site boundary the valley is confined by two hills at a height of 778 and 773 ft Mean Sea Level and separated by a horizontal distance of about 2000 feet. Thus, with the valley floor at 660 ft MSL, the cross-sectional area at the height of these hills is about  $1 \times 10^5$  square feet. The valley remains restricted in a similar fashion farther downstream.

Depending upon the assumptions used, the following concentrations could be attained at the site boundary of 1600 meters:

<u>Assumption</u>	<u><math>\gamma/Q</math> (sec m<sup>-3</sup>)</u>
Type F, 1 m/sec, no bldg. effect	$3.4 \times 10^{-4}$
Type F, 1 m/sec, bldg. effect $C = .5$ , $A = 5180 \text{ m}^2$	$1.6 \times 10^{-4}$
Type F, 1 m/sec, bldg. effect $C = 1.0$ , $A = 5180 \text{ m}^2$	$1.1 \times 10^{-4}$
Valley Confinement, $u = 1 \text{ m/sec}$ , Area = $10^5 \text{ ft}^2$	$1.0 \times 10^{-4}$
Type F, $u = 1.9 \text{ m/sec}$ , bldg. effect $C = 1.0$ , $A = 5180 \text{ m}^2$	$6.0 \times 10^{-5}$

Since very little site meteorological data are available, it remains to be seen whether a wind speed of 1.9 as opposed to 1.0 m/sec is more appropriately conservative. The applicant has chosen to use the least conservative assumption listed above, resulting in a concentration a factor of 5 lower than T.I.D. 14844 meteorology, which does not give credit for building turbulence effects.

In addition to the meteorological measurements planned for the microwave tower on a hill to the west of the reactor building complex, it is also necessary to measure air flow in the valley to the east if information on

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the drainage flow is to be obtained. However, any measurement program started now will not truly reflect the conditions which will exist when Keowee Dam is completed and Lake Keowee to the west and north of the site has reached its full pond elevation of 800 feet MSL, which is 4 feet above plant grade.

In summary, atmospheric diffusion rates in the general area of the site are expected to be somewhat lower on the average when compared to other locations in the United States. With the construction of Keowee Dam and its reservoir, the primary nighttime, inversion transport is expected to be down the Keowee River valley. Assuming an effluent will be confined to the valley to a height of about 100 feet at the site boundary, a concentration of  $1 \times 10^{-4}$  sec  $m^{-3}$  would result with a wind speed of 1 m/sec and uniform mixing within the valley. This would be our best estimate at the moment, of a controlling concentration.