

April 9, 1981

Docket No. 50-244
LS05-81- 04-012



Mr. John E. Maier
Vice President
Electric and Steam Production
Rochester Gas & Electric Corporation
89 East Avenue
Rochester, New York 14649

Dear Mr. White:

SUBJECT: SEP TOPIC II-2.C, "ATMOSPHERIC TRANSPORT AND
DIFFUSION CHARACTERISTICS FOR ACCIDENT ANALYSIS"
(R. E. GINNA)

Enclosed is a copy of our draft safety evaluation of SEP Topic II-2.C, "Atmospheric Transport and Diffusion Characteristics for Accident Analysis" for the R. E. Ginna Nuclear Power Plant site. This assessment compares your facility with the criteria currently used for licensing new facilities. This assessment replaces our previous draft assessment and responds to your comments submitted by letter to Mr. James Shea dated January 30, 1979. Please inform us within 30 days if your as-built facility differs from the licensing basis assumed in our assessment. If no comments are received within 30 days, we will assume the topic is complete.

This evaluation will be a basic input to the integrated safety assessment for your facility unless you identify changes needed to reflect the as-built conditions at your facility. This assessment may be revised in the future if your facility design is changed or if NRC criteria relating to this subject are modified before the integrated assessment is completed.

Sincerely,

Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
See next page

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DATE	4/7/81	4/7/81	4/8/81	4/9/81	4/9/81	4/9/81	

123





UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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11
12
13

R. E. GINNA UNIT 1 STATIONTopic II-2.C Atmospheric Transport and Diffusion Characteristics
for Accident Analysis

The objective of this review is to determine the appropriate on-site and near-site atmospheric transport and diffusion characteristics necessary to establish conformance with the 10 CFR Part 100 guidelines. In particular, the short-term relative ground-level air concentrations (x/Q) are determined for use in estimating offsite exposures resulting from postulated accidents.

For the purposes of this evaluation available onsite meteorological data for the periods 1966-1967 and 1973-1974 have been used. For the composite data set, wind speed and wind direction were measured at 15.2m (50-ft) level with the wind speeds reduced by means of a power law to represent conditions at the 10m (33-ft) level. Atmospheric stability was defined by the vertical temperature gradient measured between the 10m and 45.7m (150-ft) levels.

The atmospheric dispersion factors were calculated using the direction dependent method described in Regulatory Guide 1.145, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants." This model incorporates the results of recent atmospheric tracer tests, and considers the directionally dependent atmospheric dispersion conditions.

Specifically, the modified dispersion model considers the following effects:

- (1) Lateral plume meander, as a function of atmospheric stability, wind speed, and distance from the source, during periods of low wind speeds (<6 meters/sec) and neutral and stable atmospheric conditions;
- (2) Exclusion area boundary distance as a function of direction from the plant;
- (3) Atmospheric dispersion conditions when the wind is blowing in a specific direction; and
- (4) The fraction of time that the wind can be expected to blow into each of the 16 compass directions.

Using the composite of onsite meteorological data, the following x/Q values for an assumed ground-level release with a building wake factor, c_A , of 440m^2 have been determined at distances corresponding to the minimum exclusion area boundary (EAB) and the outer boundary of the low population zone (LPZ) in an onshore direction:

<u>Time Period</u>	<u>Distance</u>	<u>x/Q(sec/m³)</u>
0-2 hours	EAB (450m)	1.0 x 10 ⁻³
0-8 hours	LPZ (4827m)	3.0 x 10 ⁻⁵
8-24 hours	LPZ (4827m)	2.1 x 10 ⁻⁵
1-4 days	LPZ (4827m)	8.6 x 10 ⁻⁶
4-30 days	LPZ (4827m)	2.5 x 10 ⁻⁶

On the basis of this evaluation performed in accordance with current licensing criteria the x/Q values presented are acceptable for use in estimating offsite exposures resulting from postulated accidents.

