April 26, 1982

Docket No. 50-244
LS05-82-04-078

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

Dear Mr. Maier:

SUBJECT: GINNA NUCLEAR POWER PLANT - FINAL EVALUATION OF SEP HYDROLOGY TOPICS II-3.A, II-3.B, II-3.B.1, AND II-3.C

Your letters (J. Maier to D. Crutchfield) dated May 1, 1981 and August 18, 1981, presented RG&E's comments and a site flooding analysis that address our draft safety evaluation report (dated April 10, 1981) on SEP Topics II-3.A, Hydrologic Description; II-3.B, Flooding Potential and Protection Requirement; II-3.B.1, Capability of Operating Plant to Cope with the Design Basis Flood; and II-3.C, Safety Related Water Supply. We have completed our review of your position on these topics. A final Safety Evaluation Report is presently being prepared and will be sent to you in the near future. This letter summarizes the final disposition of these topics. Our position on these topics is presented below:

1. Topic II-3.A, Hydrologic Description - There are no open items; the hydrologic description for the Ginna Nuclear Power Plant is complete.

2. Topic II-3.B, Flooding Potential and Protection Requirement

2.1 Deer Creek Flooding - Current NRC criteria requires that a plant be designed to withstand the effects of a Probable Maximum Flood (PMF), derived, in part, from the Probable Maximum Precipitation (PMP). The Probable Maximum Precipitation over the Deer Creek drainage basin would result in a probable maximum flood runoff with a peak discharge of about 38,000 cfs. The resulting peak stream elevation near the site would vary from 276.4 ft msl at the upstream end of the site to 265.5 ft msl near Lake Ontario. The Ginna site has two critical grade levels. The south side of the plant (closest to Deer Creek) has access openings at elevation 271.0 ft msl. The north side of the plant (closest to Lake Ontario) has access openings at elevation 253.5 ft msl. The estimated PMP level would be about 5.4 feet above the 271.0 ft msl entrance level and about 12.0 feet above the 253.5 ft. msl entrance level. Presently, there are no flood protection structures to mitigate the consequences of Deer Creek Flooding.

Add: Alan Wang

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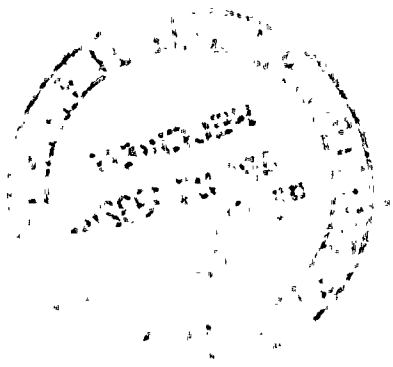

Because of the flooding potential from the PMF, other investigations were performed to better understand the potential for the Ginna site to flood. A standard project flood (SPF) was estimated for the Deer Creek Basin using standard project rainfall from the U.S. Army Corps of Engineers Standard Project Flood Determination Procedure, EM 1110-2-1411 as revised March, 1965. The SPF peak discharge was estimated to be about 15,000 cfs, which is about 40% of the PMF peak discharge. However, even at this lower discharge, flooding of the Ginna site would still occur because the SPF flow is greater than the limiting capacity of Deer Creek (about 12,000 cfs).

The discharge capability of Deer Creek was also evaluated against maximum rainfall and resulting runoff that has occurred historically in the region. Annual maximum flood peaks from eight gaged uncontrolled and unurbanized small watersheds in the Lake Ontario region were normalized to a per square mile basis. The largest recorded normalized peak discharge (284 cfs/sq. mi) from the eight gaged watersheds was transposed to the 13.9 square mile Deer Creek Basin. This resulted in a peak discharge of about 4000 cfs which is 1/3 of the capacity of Deer Creek to convey water without overflowing onto the Ginna Plant area. These small gaged drainage basins with relatively short records do not yield consistent results when subjected to frequency analyses. However, such analyses indicate recurrence intervals of several hundreds of years for these historic floods. We conclude that the return period for this flood on Deer Creek would be of the same order of magnitude.

For the reasons discussed above, it is concluded that the potential to flood the site and its safety related structures, systems and components at the Ginna plant is too great to meet SEP objectives. We will require that physical features to protect equipment necessary for safe shutdown be provided. The flood level to which protection should be provided will be established during the integrated assessment.

2.2 Design Basis Ground Water Level - Current NRC criteria require substantiation of normal maximum groundwater levels (well hydrographs or other means) to establish hydrostatic loads to be used in conjunction with seismic and other loading conditions to evaluate structural capability of plant structures. Adequate historical data has not been provided to substantiate groundwater levels of less than ground elevation. Therefore ground elevation should be used as the basis for hydrostatic loads to be used with othemic loads in structural evaluations.

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2.3 Roof Drainage - Roof loading based on local PMP from this topic are evaluated under Topic III-7.B, Design Codes, Design Criteria Load Combinations and Reactor Cavity Design Criteria.

3. Topic II-3.B.1, Capability of Operating Plants to Cope with Design Basis Flooding Conditions - Presently there are no plans established to mitigate the consequences of site flooding. As discussed in Topic II-3.B, we conclude that the licensee should take action to protect those systems essential for safe shutdown. These systems are:

   - Service Water System
   - Diesel Generator System
   - Residual Heat Removal System
   - Steam Generator Auxiliary Feed Systems (backup to RHR system)

4. Topic II-3.C, Safety Related Water Supply (Ultimate Heat Sink) - The ultimate heat sink complex meets current regulatory criteria except for its ability to survive severe Deer Creek floods which could remove the service water pumps from operation. The Deer Creek flooding problem will be resolved under Topic II-3.B.1.

   The seismic capability of the ultimate heat sink structures and consequences was evaluated in Topic III-6, Seismic Design Considerations.

   These topic evaluations are considered final and will be a basic input to the integrated assessment.

Sincerely,

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

cc: See next page

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*See previous yellow for additional concurrences.

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2.3 Roof Drainage - The adequacy of roof drainage and design basis loads due to local PMP remains an open item. You have not yet responded to questions pertaining to these issues.

3. Topic II-3.B.1, Capability of Operating Plants to Cope with Design Basis Flooding Conditions - Presently there are no plans established to mitigate the consequences of site flooding. As discussed in Topic II-3.B, we conclude that the licensee should take action to protect those systems essential for safe shutdown. These systems are:

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