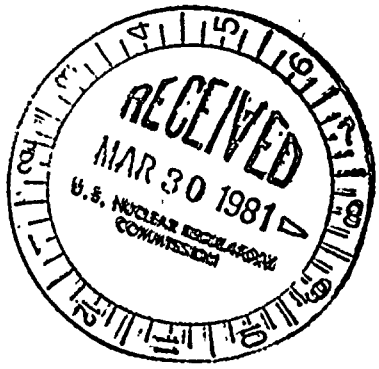
Docket No. 50-244
LS05-81-03-056

MAR 24 1981



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

Dear Mr. Maier:

SUBJECT: TOPIC III-3.A, EFFECTS OF HIGH WATER LEVEL ON STRUCTURES
(R. E. GINNA)

Enclosed is a copy of our draft evaluation of Systematic Evaluation Program Topic III-3.A.

You are requested to examine the facts upon which the staff has based its evaluation and respond either by confirming that the facts are correct, or by identifying errors and supplying the corrected information. We encourage you to supply any other material that might affect the staff's evaluation of these topics or be significant in the integrated assessment of your facility.

Your response is requested within 30 days of receipt of this letter. If no response is received within that time, we will assume that you have no comments or corrections.

In future correspondence regarding Systematic Evaluation Program Topics, please refer to the topic numbers in your cover letter.

Sincerely,

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

Enclosure:
As stated

cc w/enclosure:
See next page

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DATE	3/2/81	3/17/81	3/ /81	3/17/81	3/20/81	2/23/81	

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

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GINNA STATION
SEP TOPIC III-3.A
EFFECTS OF HIGH WATER LEVEL ON STRUCTURES

I. Introduction

The original design basis high water level including dynamic effects for nuclear power plants is reviewed in SEP topic II-3.A, B. Should the design basis level or dynamic effects increase from that assumed in the original design, the ability of plant structures to withstand this new loading is reviewed. The objective is to provide assurance that high water levels will not jeopardize the structural integrity of Seismic Category I structures and that seismic Category I systems and components located within these structures will be adequately protected.

II. Review Critera

Standard Review Plan 3.4 defines analysis procedures for flood loadings and Regulatory Guide 1.102 defines acceptable flood protection.

III. Related Topics and Interfaces

1. Flood water levels and protection requirements are reviewed in SEP Topics II-3.A, B.

2. Inservice Inspection requirements for water control structures are reviewed in SEP Topic III-3.C.

3. Dam Integrity is reviewed in SEP Topic II-4.E

4. Classification of Structures which need be seismic Category I is reviewed in SEP Topic III-1.

IV. Review Guidelines

A review of the existing design basis (maximum flood level, highest ground water level...etc.) was conducted by searching the docket files and the responses received from the licensee and then comparing the design criteria with current criteria as stated in the Standard Review Plan and in the Draft Safety Evaluation Report on Topics II-3.A, B, C sent to Rochester Gas and Electric on December 12, 1980. This evaluation is contingent upon the acceptance of the Draft SER on SEP Topics II-3.A, B, C. Should that evaluation change, this Draft SER on Topic III-3.A may have to be modified accordingly.

V. Evaluation and Conclusions

1. Effect of Probable Maximum Flood

a. Current Requirements

The design basis for highest level of water during flood is 261.0 feet msl level on the northside of the plant. This position is included in the Draft Safety Evaluation for SEP Topics II-3.A, B, and C.

b. Ginna Station Design

The general plant grade is about 270 feet, with the exception of the area between Lake Ontario and the turbine building where the grade level is at elevation 253 feet. Because the plant is protected from the lake by breakwater with a top elevation of 261 feet and because of the elevation of the general plant, flooding was not considered a problem,

and the plant structures were, therefore, not designed for the dynamic effects of the flooding. Moreover, the licensee stated that the probable maximum flood considered originally in the design of Ginna was based on 250.0 feet and later (1973) revised to a level of 253.3 feet. This flood level was basically caused by Lake Ontario water. No other source of water was considered to produce water higher than this design level (253.3 feet).

c. Evaluation

Because the Draft SER on Topics II-3.A, B, C indicates that the probable maximum flood in Deer Creek could flood the site (253.3 feet msl level) to a depth of about 8.0 feet on the northside and about 4.0 feet on the southside, and because the licensee stated that the seismic Category I structures, systems and equipments were not designed for flood (the licensee only postulated flood due to Lake Ontario and not to Deer Creek), all Category I structures, systems and components should be reevaluated for this new higher level of flood. In the evaluation, the dynamic effects of waves should also be considered.

2. Effect of Ground Water on Structures

a. Current Requirements

The design basis for the highest still ground water is stated in the Draft SER on SEP Topics II-3.A, B, and C. In that evaluation, the recommended level for the highest ground water is at ground elevation. The acceptable analysis procedure for evaluating the effect of ground water is included in the SRP 3.4.2.

b. Ginna Station

Normal water loads from the highest still ground water were considered in the design of the structures. Of the safety class I structures, only the containment, auxiliary building and screen house are supported below a ground water table elevation of 250.0 feet. In the design of the screenhouse, the ground water loads were considered in the design by assuming complete internal dewatering of the facility and a groundwater elevation of 253.5 (grade) to determine lateral and uplift forces. (Ref: RGE letter to NRC - 1/28/81). The containment design provided for no backfill against the wall thus eliminating the external lateral loads. The auxiliary building was designed for lateral and uplift forces based on a groundwater elevation of 250.0.

c. Evaluation

Concerning the containment and auxiliary buidling, the recommended groundwater elevation is at ground level which is above Ginna design water table by about 20 feet. External lateral loads were not considered in the design of the containment because of an external ring wall around the containment; however, there is no provision to assure that groundwater loads will always be non-existent. The ring wall is not designed to be impervious and there is no requirement to maintain the water level between the ring wall and containment wall at a low level. Therefore, an evaluation of the effects of groundwater on the Containment and Auxiliary Building should be performed. The criteria used in the design of the screenhouse, namely assuming groundwater level at grade and complete internal dewatering, conforms with the recommendation in the Topic II-3.A, B, C review and is therefore acceptable.