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FACIL:50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244
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MAIER,J.E. Rochester Gas & Electric Corp.
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CRUTCHFIELD,D. Operating Reactors Branch 5

SUBJECT: Forwards results of seismic analysis & proposed mod for component cooling water surge tank.Results are based on criteria presented in Reg Guides 1.60 & 1.61 for 2g zero-period acceleration earthquake.

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JOHN E. MAIER
VICE PRESIDENT

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September 24, 1981

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U.S. NUCLEAR REGULATORY COMMISSION

Director of Nuclear Reactor Regulation
Attention: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: SEP Topic III-6, "Seismic Considerations"
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Crutchfield:

In our March 23, 1981 response to NUREG/CR-1821, "Seismic Review of the Robert E. Ginna Nuclear Power Plant as Part of the Systematic Evaluation Program", transmitted by letter dated January 7, 1981, RG&E noted that the seismic analysis for the Component Cooling Water surge tank would be completed by August 1, 1981. This analysis was completed, and reviewed during the September 9, 1981 visit to the RG&E offices by Dr. John Stevenson of the Seismic Review Team and Dr. Tom Cheng of the NRC staff. The results of this analysis, and a proposed modification, are attached. It was determined that under the analyzed loading conditions, the conclusions made in NUREG/CR-1821 were correct.

The attached analysis results are based on criteria presented in Regulatory Guides 1.60 and 1.61, for a 0.2g zero-period acceleration earthquake. This is substantially in excess of the requirements for the Ginna design, as given in NUREG/CR-1821, NUREG/CR-0098, and the site specific response spectra transmitted in the June 17, 1981 letter from Dennis M. Crutchfield to the SEP licensees. An analysis of the surge tank to these latter criteria might indicate the lack of necessity for performing the recommended modifications. However, due to the relative simplicity of the modification, it is expected to be made during our next scheduled refueling outage, in the Spring of 1982. The conceptual modification discussed in the attachment will be finalized to ensure that the seismic capability of the surge tank is acceptable.

Very truly yours,

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John E. Maier

John E. Maier

Attachment

Gilbert/Commonwealth engineers and consultants

GILBERT ASSOCIATES, INC., P. O. Box 1498, Reading, PA 19603/Tel. 215-775-2600/Cable Gilasoc/Telex 836-431

July 17, 1981

Rochester Gas & Electric Corporation
89 East Avenue
Rochester, New York 14649

JUL 20 RECD

Attn: T.R. Weis

RE: Ginna Station Unit 1
CCWST Support Evaluation
EWR 3315
RG&E P.O. #N-55852
GAI W.O. #04-4824-021

REF: 1) 13N1-GR-T3018, 3-20-81
2) 13N1-GR-T3168, 7-14-81

Dear Terry:

We have completed the evaluation of the Component Cooling Water Surge Tank Supports (items 5. and 6. of reference 1) in accordance with the Design Criteria (reference 2). The attached Analysis Report (item 7. of reference 1) presents a summary of the results. As can be seen from the attachment, there are two components of the supports where Actual Stresses exceed the Stress Limits of the Design Criteria.

1) The 7/8 inch diameter anchor bolts that attach the tank saddles to the structural steel at El. 284'-3 have Actual Tension Stresses equal to 21.31 KSI, compared to a Stress Limit of 12.97 KSI.

2) The 1/2 inch thick saddle base plates have Actual Bending Stresses equal to 76.73 KSI (considering an elastic analysis) in the local vicinity of the anchor bolts, compared to a Stress Limit of 32.63 KSI. In reality, yielding of the material would occur before these stress levels are achieved.

To lower these stresses, we propose the following relatively simple conceptual modification (item 8. of reference 1).

Additional anchor bolts could be installed between the saddle base plates and structural steel at El. 284'-3". We estimate that approximately two 1 inch diameter bolts

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per saddle would be required. We would recommend installing these bolts in round holes on the same side of the saddles as the existing bolts. These bolts would provide longitudinal restraint for the tank, in addition to reducing the tensile and shear stresses on the existing bolts. They may also be sufficient to reduce the bending stresses in the saddle base plates. If they are not sufficient for that purpose, either an increased quantity of bolts (to further distribute the load) or local stiffening of the base plates may be required. The increased quantity of bolts (if proven acceptable) might preclude having to do any welding on the saddles.

We believe the design of the above noted modification can be accomplished for a relatively small change in budget and in a relatively short time frame. Please review our proposal and advise if there is any further action you wish us to take. Also, please call if you have any questions.

Very truly yours,

D.R. Campbell for
L.A. Sucheski
Structural Engineer

D.R. Campbell
D.R. Campbell
Project Structural Engineer

LAS:DRC:jap
cc: R.E. Smith
H.M. Mack
J.L. Price
F.L. Moreadith
C. Chen
J.C. Herr
S.S. Hsieh
N.R. Parikh

13N1-GR-L0832

ANALYSIS REPORT

Component Cooling Water Surge Tank (CCWST) Supports

I. Analysis Basis

A. Models
The CCWST was considered to be an idealized single degree-of freedom rigid body supported by two saddle supports. The saddle supports were considered to be fixed at the top at the weld joint connecting them to the tank body, and pin connected at the base at the anchor bolts connecting them to the supporting structural steel beams.

B. Loads
The three orthogonal components of SSE seismic loads were determined by 1) considering the support system (combined saddle and beam) frequency in each direction, respectively, 2) using damping equal to 3% of critical damping, and 3) interpolating between floor response curves at elevations 271'-0" and 315'-0". Pressure and temperature loads were determined considering the tank design conditions (section 7.0 of the Design Criteria) and the lateral stiffness of the supporting structural steel beams.

C. Stresses
Stresses were calculated by hand using conventional formulas for stress and strain.

II. Analysis Results

Nomenclature is consistent with the definitions given in section 8.0 of the Design Criteria (unless noted). Only maximum Actual Stresses resulting from the load combinations specified in the Design Criteria are presented below. Also, only controling Stress Limits are defined.

Component/Location	Actual Stress (KSI)	Stress Limit (KSI)
A. Saddle		
1. All Vertical Plates	σ_1 = 1.16	1.5S = 21.75
2. Corner of Outside Vertical Flange Plate	$\sigma_1 + \sigma_2$ = 32.23	2.25S = 32.63
3. Shear Stress in Vertical Flange Plates	τ = 2.30	Not defined by ASME code for Class III plate and shell structures, considered acceptable

Component/Location		Actual Stress (KSI)	Stress Limit (KSI)
	4. Shear Stress in Vertical Web Plate	τ = 0.39	"
	5. Horizontal Base Plate	$\sigma_1 + \sigma_2$ = 76.73	2.25S = 32.63
	6. Shear Stress in Welds joining Saddle Plates	τ = 33.17	F_v = 2.25S = 36.90
B.	Shear Stress in Weld joining Tank and Saddle	τ = 16.14	F_v = 2.25S = 36.90
C.	Anchor Bolts		
	1. Shear Stress	f_v = 15.90	F_v = 1.6S' = 16.00
	2. Tension Stress	f_t = 21.31	F_t = 1.6(26)-1.8f_v= 12.97

[illegible]