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MAIER,J.E. Rochester Gas & Electric Corp.
RECIP.NAME RECIPIENT AFFILIATION
CRUTCHFIELD,D. Operating Reactors Branch 5

SUBJECT: Advises that assessment of auxiliary bldg bracing at northeast corner of bldg has been completed,per SEP Topics III-6 & III-11 re seismic design considerations.Structural steel & anchorage will be upgraded as necessary.

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JOHN E. MAIER
VICE PRESIDENT

TELEPHONE
AREA CODE 716 546-2700

October 28, 1981

Director of Nuclear Reactor Regulation
Attn: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: SEP Topics III-6 and III-11, "Seismic Design Considerations"
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Crutchfield:

We have completed our assessment of the Auxiliary Building bracing at the northeast corner of the building, open issue #1 in your letter dated January 7, 1981 and as indicated in our response dated March 23, 1981. A structural analysis has been performed in order to evaluate the adequacy of the bracing in question for resisting seismic forces. The resulting stresses were determined from a 0.2g peak ground acceleration (Regulatory Guide 1.60) and 7% damping (Regulatory Guide 1.61) seismic criteria rather than the less stringent criteria used in NUREG/CR-1821. Use of the site specific response spectrum and NUREG/CR-0098 damping would reduce stresses.

As indicated in the attached summary report, the conclusions of the evaluation are as follows:

1. The diagonal bracing in the upper panel and the horizontal bracing of bay $L-L_2$ would be overstressed up to 35%.

2. Column L would be partially overstressed by 52% due to its embedment in the concrete shield wall at the operating floor.

3. Column connections of all bracing would not adequately resist resulting tensile loads.

4. The anchorage at column L_2 would not be adequate in either shear or tension.

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We will upgrade the structural steel, connections, and anchorage as necessary on a schedule consistent with any other SEP modifications as determined in the SEP Integrated Assessment. Our assessment of bracing in the Turbine Building is nearing completion and will be submitted by November 16, 1981.

Very truly yours,

John E. Maier

John E. Maier

ANALYSIS REPORT

Evaluation of the Structural Steel Bracing In the East Wall of the Auxiliary Building

I. Analysis Basis

A. Model

The framing between column lines "L" and "L_2" in the east wall of the Auxiliary Building was modelled as a plane frame in the computer program STRUDL. Several different models were studied to predict the behavior of all components of the frame and include the effects of the reinforced concrete wall on column line "11a", which embeds column "L-11a" and some of the lower panel bracing in concrete. A sketch of the final STRUDL model is attached. The concrete wall was considered by restraining the rotation and horizontal translation of the column at the top of the wall (node no. 7). Additionally, only the braces that would carry tension loads were included in the model, since the existing bracing members are too slender to resist compression loads.

B. Loads

The dead load used in the analysis from the Auxiliary Building roofing was 5 pounds per square foot. The live load from the roof was 40 pounds per square foot. The seismic loads were determined using the maximum SSE displacements from the "Ginna Station Seismic Upgrade Program - Auxiliary Structures Seismic Analysis" report for 7% structural damping. These displacements were applied to the STRUDL model, and resultant seismic forces determined. The displacements used were:

North-South = 1.322 inches
Vertical = 0.029 inches

The model was analyzed for all combinations of seismic loads in conjunction with dead and live loads.

C. Stress Ratio

The stress ratios were calculated by hand using the appropriate interaction equations of the AISC Code.

II. Analysis Results

A. Frame Members

The following are controlling conditions and stress ratios for the STRUDL model.

STRUDL Member Identification	Tension (k)	Compression (k)	Moment (Ft.-k)	Shear (k)	Stress* Ratio	Loading Condition
1	28.72	53.26	.78	.04	0.39	Comp+Bend
2	31.61	54.27	1.97	.14	0.81	Comp+Bend
3	----	----	26.5	3.38	0.39	Bending
4	38.69	50.96	23.58	1.10	0.89	Comp+Bend
5	46.38	54.03	84.30	12.98	1.52*	Comp+Bend
6	73.73	----	----	.10	0.89	Tension
7	----	48.25	----	.15	1.35*	Comp.
8	93.84	----	----	.10	1.13*	Tens.
10	46.38	54.03	----	----	0.21	Comp.

B. Anchorage and Connections

The anchor bolts for the base plate of column "L_2" were found to be inadequate for the shear and tension loads. The stress ratio is 1.72 for shear alone and 1.51 for tension alone.

The connections between the diagonal braces and the wide flange sections in both the upper and lower panel were found to be inadequate for the tension forces caused by the SSE loads. The stress ratio is 1.55 for members 8 (upper panel) and 1.22 for members 6 (lower panel).

* Stress ratio is defined as the value obtained from the appropriate interaction equations of the AISC code. Stress ratios greater than 1.0 indicate overstressed members.

Gilbert Associates, Inc.
Reading, Pennsylvania

ANALYSIS/CALCULATION

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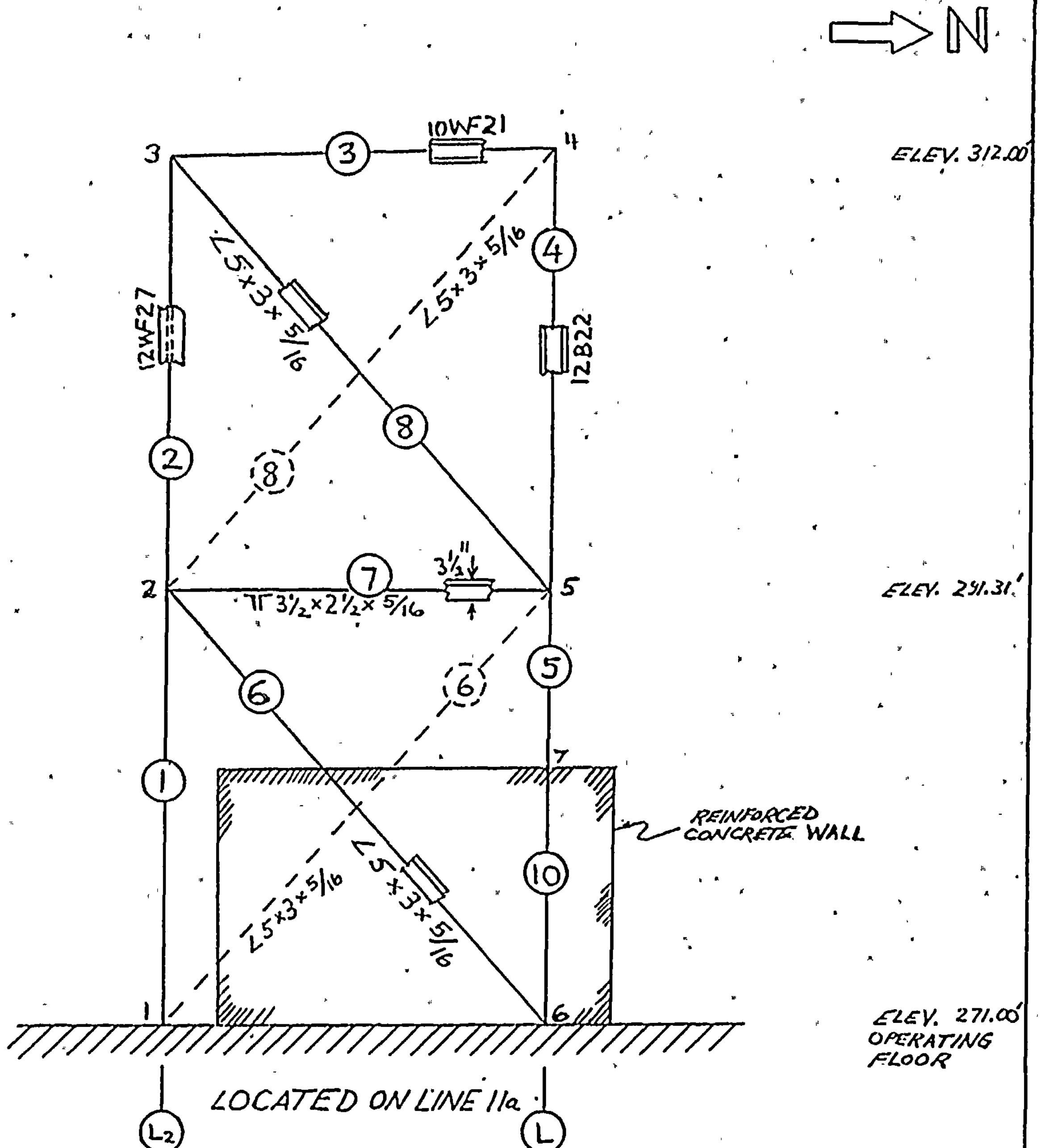

STRUDL MODEL

① - MEMBER NUMBER

2 - NODE NUMBER

MEMBERS ⑥ AND ⑧ SHOWN DASHED REPRESENT BUCKLED MEMBERS