



DM79-746

September 12, 1979

Howard Levin
Systematic Evaluation Program Branch
Division of Operating Reactors
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Howard:

On August 30, 1979, C. Y. Liaw and I attended a meeting with Rochester Gas and Electric and Gilbert Associates, Inc. at Reading, Pennsylvania. We appreciated their candor and cooperation in discussing the Ginna seismic analysis modeling.

I have enclosed a copy of the minutes of the meeting for your information. The overall consensus of the meeting was that a detailed 3-D model was essential to capture the response of this complex structure.

Sincerely,

Thomas A. Nelson

Thomas A. Nelson
Structural Mechanics Group
Nuclear Test Engineering Division

TAN:sac

- cc: R. C. Murray
- D. S. Ng
- C. Y. Liaw, EG&G
- T. Cheng, NRC
- T. Weis, ROE
- C. Chen, Gilbert

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Minutes on Ginna Meeting at Gilbert 8/30/79

Discussed LLL Seismic Model

- Modeled all contributing beams and columns of turbine, auxiliary, and intermediate buildings.
- Modeled diesel generator building as 4 springs in the N-S direction at EL. 270.
- Used original Gilbert model properties for concrete portions of auxiliary building and for control building, i.e., equivalent beam members.
- Did not model service building, fuel pool, sub-basement in intermediate building (below EL. 253), or auxiliary building addition at this time.
- Floors are rigid diaphragms modeled with master node at the C.G. Slave nodes are modeled on the wall columns at their correct elevation (i.e., between brace points in some locations).
- The slave tie to the columns allows for rotation, assuming the floor beams and the floor itself will not prevent column rotation.
- Three degrees of freedom are provided at each floor master node. Mass at master nodes includes equipment, dead load, and siding but no interior walls (yet). Rotational inertia is included in turbine and auxiliary buildings.
- At present, the full area of both directions of the cross bracing is included.
- The chord members of horizontal trusses T1, T2, and T3 are included as horizontal beams in the east facade wall.

Discussed Questions Submitted to T. Weiss (RG&E)

- GAI provided drawings showing location of heavy equipment and their weights (note, this weight was previously included in uniform load provided earlier which also included exterior wall weights).
- Clarified uniform floor loadings.
- Showed fabrication drawings for typical connections in turbine, auxiliary and intermediate buildings. Beams are connected by web angles to the columns in a shear connection. Bracing members are attached to gusset plates primarily by bolts. Where the bracing crosses, the angles are cut and there are four connections to a center plate. In many cases the web angles were attached to the beams by welding then bolted to the columns in the field.
- The providing of details for specific connections was deferred until LLL's analysis was complete and critical areas identified. At that time, details on the connections in the critical areas would be requested. This was also the decision on the question of member forces due to dead load.
- It was decided that LLL had sufficient information to model the diesel generator building and control building. A set of plans were provided at the meeting.
- The concrete block walls in the intermediate building are sitting on girders and are clipped to the columns on 24" c/c. They are unreinforced and do not provide lateral stiffness. Their mass should probably be included.
- It was felt that shear studs on girders were confined to small local areas. However, upon checking drawing #D-502-022, a note was found which states that "All girders and beams connecting to columns... to have 3/4" o.d. welded studs..." in the turbine building.
- The following safety related equipment is located in the intermediate building:

EL 271' & 278'-4"	steam line, feedwater line, and valves
EL 298'	containment isolation valve for purge system
EL 315'	filters for purge system
All Elevations	Cable trays

Also, the control room equipment is located on floors supported by steel framing. These items will most likely experience amplified vertical excitation. Thus, vertical spectra should be generated for them.

- Facade columns on top of the turbine building wall are much smaller than the building columns. The splice at this juncture appears to be a shear connection only.
- The chords for the horizontal trusses T1, T2, and T3 are attached to the east facade wall columns with four bolts through both flanges. A field check was going to be conducted by RG&E to determine if any other horizontal members were present that were not shown on the plans.
- Plans for the "Super Wall" were sent by RG&E and were received at LLL 9/11/79

Discussed Gilbert Model

- The Gilbert model also includes all contributing beams and columns of the turbine, auxiliary, and intermediate buildings.
- Includes a rough model of the service building with rigid diaphragms connected to the auxiliary building diaphragms with a coupled spring (in the form of a stiffness matrix).
- Includes sub-basement of intermediate building.
- Floors are rigid diaphragms except intermediate building which is modeled with equivalent beams from mass point at the c.G. to the framing connections. The floor diaphragms have six degrees of freedom.
- In general, the masses of the floors were moved in elevation to correspond to those of brace points.
- The connection of the floor members to columns is considered fixed due to the concrete placement around the columns.
- Kinematic condensation will be used (in STARDYNE) to reduce the number of (dynamic) degrees of freedom.
- Horizontal trusses in east facade wall omitted.

Model of internal structure (inside containment) is for piping input, not for analyzing structural integrity or equipment. They are trying to be conservative, perhaps too conservative for non-piping considerations. The equivalent member properties are still useful for our analyses. Therefore, we would like a copy of their model.