



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

March 20, 1981

Docket No. 50-219  
LS05-81-03-048

REGULATORY DOCKET FILE COPY

Mr. Ivan R. Finrock, Jr.  
Oyster Creek Nuclear Generating Station  
P. O. Box 388  
Forked River, New Jersey 08731

Dear Mr. Finrock:

SUBJECT: SEP TOPICS III-6, SEISMIC DESIGN CONSIDERATION AND III-11, COMPONENT INTEGRITY - OYSTER CREEK NUCLEAR POWER STATION

As you are aware, the staff and its consultants have completed the seismic review of Oyster Creek nuclear power plant. Enclosed (Enclosure 1) are copies of draft of NUREG Consultant Report, "Seismic Review of the Oyster Creek Nuclear Power Plant as part of the Systematic Evaluation Program," and EG&G piping report, EGG-EA-5211, "Summary of the Oyster Creek Unit 1 Piping Calculations Performed for the Systematic Evaluation Program." These reports will serve as the principal input for staff's final assessment for Systematic Evaluation Program Topics III-6, Seismic Design Considerations and III-11, Component Integrity. Please inform us if your as-built facility differs from the licensing basis assumed in our assessment.

According to our review, some open items have been identified (Enclosure 2) related to these topics. The detailed evaluation of these open items can be found in the attached reports.

You are required to respond to item 6 of Enclosure 2 within 30 days from the date of receipt of this letter. For the remaining items of the same enclosure, we require additional information from you. You should submit this information within 45 days from the date of receipt of this letter. In the event that analysis is necessary for you to complete our evaluation, you should submit a schedule for completion of each open item. Proposed modifications identified in our report are representative of the types of corrective actions which should be considered to upgrade seismic safety margins. Pursuant to 10 CFR 50.59 you should independently evaluate the necessity of any modifications to your facility.

Sincerely,

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



Enclosure:  
As stated

cc w/enclosure:  
See next page

81051105121XA  
CF

REGULATORY DOCKET FILE COPY

ENCLOSURE 2

OPEN ISSUES  
OYSTER CREEK SEISMIC REVIEW

The following list documents issues that developed as a result of our seismic audit review of Oyster Creek facility. These issues have been highlighted for a variety of reasons. In some cases, sufficient documentation was not available to the staff to make an evaluation. Designation here does not necessarily imply a safety deficiency. However, the NRC staff has determined that further information regarding the seismic resistance capacity of these items, including further evaluation, if necessary, is warranted. JCPLCo should develop an action plan for resolution of these open issues including a schedule for completion.

1. Emergency Service Water Pump - Functional integrity was not evaluated due to lack of design detail. A determination of the material used for the pump housing should be made. If the material is cast iron, a justification should be provided for its adequacy.
2. Emergency Isolation Condenser - The audit analysis indicated that the anchor bolts at the center saddle were found to be overstressed in seismic shear from the postulated loading. Provide detailed analyses to demonstrate design adequacy of these anchor bolts.
3. Containment Spray Heat Exchanger - The anchor bolts were found to be overstressed from the postulated seismic loads. Provide detailed analyses to demonstrate design adequacy of these anchor bolts.
4. Recirculation Pump Support - No information was provided for evaluation.
5. Motor Operated Valves - The seismic accelerations used in your evaluation (refs. 77 and 78 of Enclosure 1) are unrealistically low. Detailed reevaluation with proper seismic accelerations should be provided to demonstrate its design adequacy. No information was provided to evaluate functional adequacy.
6. CRD Hydraulic Control Units - Support system of the free standing (cantilever) type was found to be overstressed from the postulated seismic loads. Provide detailed reanalyses to demonstrate design adequacy.
7. Reactor Vessel, Support and Internal - No detailed information was available to evaluate design adequacy.
8. Motor Control Centers - No information was available to evaluate either structural integrity or functionality of these components.
9. Transformers - No information was available to evaluate design adequacy of these components.

10. Switchgear Panels - Provide information to show that the panels are positively anchored to resist seismic overturning moments and sliding forces.
11. Emergency Diesel Generator - No information was available to evaluate design adequacy of either the anchorage system or the functionability of the Diesel generator.
12. Control Room Panels - No information was available for evaluation.
13. Battery Room Distribution Panels - No information was available for evaluation.
14. Isolation Phase Ductwork Supports - The duct support was found to be overstressed from the postulated seismic forces.
15. Condensate Storage Tank - The anchor bolts were found to be overstressed from the postulated seismic loading conditions. A similar conclusion was drawn from the results of analyses reported in your FDSAR (ref. 40 of Enclosure 1), but no corrective action was taken. Provide justification to show the design adequacy of the tank and the outlet piping.
16. Torus - Insufficient information was provided to evaluate the design adequacy of the supporting columns and its connections to the lateral bracings.
17. Reactor Building - Provide detailed analyses to demonstrate that the cables were slack enough to accommodate differential displacements between the buildings.
18. Piping - Provide a detailed reanalysis to demonstrate design adequacy of the following piping systems:
  - A. Main Steam Line - Several snubbers were found to be overstressed by the potential seismic loads.
  - B. The results of the audit analyses showed loading conditions at several locations to exceed the ASME Code allowable limits.
19. Electrical Cable Raceways - No information was available for evaluation.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20556

March 20, 1981

Docket No. 50-219  
LS05-81-03-048

REGULATORY DOCKET FILE COPY

Mr. Ivan R. Finfrock, Jr.  
Oyster Creek Nuclear Generating Station  
P. O. Box 388  
Forked River, New Jersey 08731

Dear Mr. Finfrock:

SUBJECT: SEP TOPICS III-6, SEISMIC DESIGN CONSIDERATION AND III-11, COMPONENT INTEGRITY - OYSTER CREEK NUCLEAR POWER STATION

As you are aware, the staff and its consultants have completed the seismic review of Oyster Creek nuclear power plant. Enclosed (Enclosure 1) are copies of draft of NUREG Consultant Report, "Seismic Review of the Oyster Creek Nuclear Power Plant as part of the Systematic Evaluation Program," and EG&G piping report, EGG-EA-5211, "Summary of the Oyster Creek Unit 1 Piping Calculations Performed for the Systematic Evaluation Program." These reports will serve as the principal input for staff's final assessment for Systematic Evaluation Program Topics III-6, Seismic Design Considerations and III-11, Component Integrity. Please inform us if your as-built facility differs from the licensing basis assumed in our assessment.

According to our review, some open items have been identified (Enclosure 2) related to these topics. The detailed evaluation of these open items can be found in the attached reports.

You are required to respond to item 6 of Enclosure 2 within 30 days from the date of receipt of this letter. For the remaining items of the same enclosure, we require additional information from you. You should submit this information within 45 days from the date of receipt of this letter. In the event that analysis is necessary for you to complete our evaluation, you should submit a schedule for completion of each open item. Proposed modifications identified in our report are representative of the types of corrective actions which should be considered to upgrade seismic safety margins. Pursuant to 10 CFR 50.59 you should independently evaluate the necessity of any modifications to your facility.

Sincerely,

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



Enclosure:  
As stated

cc w/enclosure:  
See next page

REGULATORY DOCKET FILE COPY

870511-610

ENCLOSURE 2

OPEN ISSUES  
OYSTER CREEK SEISMIC REVIEW

The following list documents issues that developed as a result of our seismic audit review of Oyster Creek facility. These issues have been highlighted for a variety of reasons. In some cases, sufficient documentation was not available to the staff to make an evaluation. Designation here does not necessarily imply a safety deficiency. However, the NRC staff has determined that further information regarding the seismic resistance capacity of these items, including further evaluation, if necessary, is warranted. JCPLCo should develop an action plan for resolution of these open issues including a schedule for completion.

1. Emergency Service Water Pump - Functional integrity was not evaluated due to lack of design detail. A determination of the material used for the pump housing should be made. If the material is cast iron, a justification should be provided for its adequacy.
2. Emergency Isolation Condenser - The audit analysis indicated that the anchor bolts at the center saddle were found to be overstressed in seismic shear from the postulated loading. Provide detailed analyses to demonstrate design adequacy of these anchor bolts.
3. Containment Spray Heat Exchanger - The anchor bolts were found to be overstressed from the postulated seismic loads. Provide detailed analyses to demonstrate design adequacy of these anchor bolts.
4. Recirculation Pump Support - No information was provided for evaluation.
5. Motor Operated Valves - The seismic accelerations used in your evaluation (refs. 77 and 78 of Enclosure 1) are unrealistically low. Detailed reevaluation with proper seismic accelerations should be provided to demonstrate its design adequacy. No information was provided to evaluate functional adequacy.
6. CRD Hydraulic Control Units - Support system of the free standing (cantilever) type was found to be overstressed from the postulated seismic loads. Provide detailed reanalyses to demonstrate design adequacy.
7. Reactor Vessel, Support and Internal - No detailed information was available to evaluate design adequacy.
8. Motor Control Centers - No information was available to evaluate either structural integrity or functionability of these components.
9. Transformers - No information was available to evaluate design adequacy of these components.

10. Switchgear Panels - Provide information to show that the panels are positively anchored to resist seismic overturning moments and sliding forces.
11. Emergency Diesel Generator - No information was available to evaluate design adequacy of either the anchorage system or the functionability of the diesel generator.
12. Control Room Panels - No information was available for evaluation.
13. Battery Room Distribution Panels - No information was available for evaluation.
14. Isolation Phase Ductwork Supports - The duct support was found to be overstressed from the postulated seismic forces.
15. Condensate Storage Tank - The anchor bolts were found to be overstressed from the postulated seismic loading conditions. A similar conclusion was drawn from the results of analyses reported in your FDSAR (ref. 40 of Enclosure 1), but no corrective action was taken. Provide justification to show the design adequacy of the tank and the outlet piping.
16. Torus - Insufficient information was provided to evaluate the design adequacy of the supporting columns and its connections to the lateral bracings.
17. Reactor Building - Provide detailed analyses to demonstrate that the cables were slack enough to accommodate differential displacements between the buildings.
18. Piping - Provide a detailed reanalysis to demonstrate design adequacy of the following piping systems:
  - A. Main Steam Line - Several snubbers were found to be overstressed by the potential seismic loads.
  - B. The results of the audit analyses showed loading conditions at several locations to exceed the ASME Code allowable limits.
19. Electrical Cable Raceways - No information was available for evaluation.