

JUL 18 1973

Docket file

Docket No. 50-346

R. C. DeYoung, Assistant Director for Pressurized Water Reactors,
Directorate of Licensing

TOLEDO EDISON COMPANY - DAVIS-BESSE NUCLEAR POWER STATION - REQUEST FOR
INFORMATION, FSAR REVIEW

Plant Name: Davis-Besse Nuclear Power Station
Licensing Stage: FSAR - OL Review
Docket Number: 50-346
Responsible Branch and Project Manager: PWR #4, Irving Pelhier
Requested Completion Date: July 6, 1973
Applicant's Response Date Necessary for Completion of Next Action
Planned on Project: October 12, 1973
Description of Response: Questions
Review Status: Awaiting Information

The first round review of the FSAR has been completed by the Structural Engineering Branch and we find that additional information is required before we can complete our review. The additional information requested, which concerns structural aspects, is contained in the enclosure. The material reviewed to date consisted of information provided through Amendment No. 15 dated June 8, 1973.

R. R. Maccary, Assistant Director
for Engineering
Directorate of Licensing

Enclosure:
Request for Additional
Information

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cc w/encl: S. Hanauer, DRTA
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DATE	7/9/73		7/10/73	7/10/73	7/10/73

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THE TOLEDO EDISON COMPANY
DAVIS-BESSE NUCLEAR POWER STATION
UNIT 1
STRUCTURAL ENGINEERING BRANCH
REVIEW OF FSAR

3.3.1 Wind and Tornado Design Criteria

1. The tornado criteria in Section 3.3.2.1 refer only to the shield building and the auxiliary building. Provide the corresponding information for other Category I structures.

3.5 Missile Protection Criteria

State the structures that are to be protected against missiles. Describe the analytical techniques employed to estimate the damage of the targets due to the missiles.

3.7 Seismic Design

1. Referring to subsection 3.7.1.2, provide the time history accelerograms that were used as basis for design response spectra. (In Table III-4 on Page 2C-52, it is stated that these accelerograms are recommended in Section III.E.6.a and b. These are not available in the FSAR.) Give details of the accelerograms such as source of seismic record, modifications, etc.

2. Specify the response spectra which have been actually used in the seismic analysis (the "Helena Upper Average Response Spectra" or the "Recommended Response Spectra").
3. Clarify in Subsection 3.7.2.2 that the criteria for combining modal responses are on the square-root-of-the-sum-of-squares (SRSS) basis. In Subsection 3.7.3.4, modal responses for closely spaced frequencies should be combined by the absolute sum method.
4. Seismic instrumentation which provides measured data in spectrum form, such as multi-element seismoscopes, should be provided in selected locations. Such instrumentation would enable direct comparison of measured and predicted response spectra.

3.8.1 Structures Other Than Containment

1. Specify the theories of soil mechanics and the methods of their application used to compute loads due to backfill around Category I structures (Para. 3.8.1.4.4).
2. For Class I (seismic) structural elements, which may be subjected to the effects of high-energy line breaks outside the containment, the criteria presented in the attached Document (B) should be utilized in checking and evaluating the present design.

Sufficient information should be provided to establish the extent of compliance with these design criteria. Where deviations from these criteria are proposed, justification should be provided to demonstrate that your proposed criteria are equivalent with respect to the applicable safety functions.

3. Since the borated water tank is a Category I structure and is necessary for a safe shutdown of the plant justify:
 - a) Its design for 50% of tornado forces,
 - b) Lack of protection against missiles.

Provide a description of physical features of the tank and its foundation (Para. 3.8.1.1.4).

4. With aid of sketches provide a description, structural design criteria, the degree of conservatism obtained and the location with respect to other parts of the plant for the three electrical manholes (Para. 3.8.1.1.4).
5. Specify the locations where removable slabs, block partitions, etc., are utilized and describe the precautions taken to prevent them from becoming missiles during Design Basis Accidents.

3.8.2 Containment Structure

1. Describe the structural criteria used for those areas of structural design of the shield building which are not covered by the ACI 307-69 (Para. 3.8.2.2.3).
2. Describe, with aid of a sketch, the support of the polar crane, its connection to the concrete walls and provisions to resist the shears induced by earthquake.

Internal Structures

1. Provide a sketch of the reactor vessel support and describe the manner in which horizontal shears and vertical loads are carried to the concrete (Para. 3.8.2.3.4).
2. Provide a statistical evaluation of tests on splicing reinforcing bars using the Cadweld Process and compare the results of the tests to the requirements of the Regulatory Guide 1.10 (Appendix 3B).

Computer Programs Acceptability

1. Submit a list of computer programs that have been used in structural and seismic analyses to determine stresses and deformations of Seismic Category I structures. Include a brief description of each program and the extent of its application.

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2. Describe the design control measures as required by 10 CFR Part 50 Appendix B that have been employed to demonstrate the applicability and validity of the above computer programs by any of the following criteria or procedures (or other equivalent procedures).
 - a. The computer program is a recognized program in the public domain, and has had sufficient history of use to justify its applicability and validity without further demonstration. The dated program version that has been used, the software or operating system, and the computer hardware configuration must be specified to be accepted by virtue of its history of use.
 - b. The computer program's solutions to a series of test problems, with accepted results, have been demonstrated to be substantially identical to those obtained by a similar, independently written program in the public domain. The test problems should be demonstrated to be similar to or with the range of applicability for the problems analyzed by the computer program to justify acceptance of the program.
 - c. The program's solutions to a series of test problems are substantially identical to those obtained by hand calculations or from accepted experimental test or analytical results published in technical literature. The test problems should be demonstrated to be similar to the problems analyzed to justify acceptance of the program.

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3. Provide a summary comparison of the results obtained from each computer program with either the results derived from a similar program in the public domain, on a previously approved computer program results from the test problems.