

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of )  
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PORTLAND GENERAL ELECTRIC COMPANY) Docket No. 50-344  
 et al. ) (Control Building Proceeding)  
 ) December 15, 1978  
(Trojan Nuclear Plant) )  
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LICENSEE'S POST-HEARING PROPOSED FINDINGS OF  
FACT AND CONCLUSIONS OF LAW CONCERNING  
INTERIM OPERATION

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22a. On November 20, Licensee, the NRC Staff and the State of Oregon filed proposed findings and conclusions of law on all items except the seismic qualification of safety-related equipment in the Complex based on the STARDYNE floor response spectra. On November 22 and 24, Licensee submitted further information on floor response spectra in reply to NRC Staff questions (Licensee Exhs. 21 and 22). With this additional information, the Staff submitted its prefiled written testimony on seismic qualification of safety-related equipment on November 25, 1978 (Herring III, NRC Staff Exh. 9). The Board informed the parties by telegram of December 4 that any additional proposed findings or conclusions or responses thereto,

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oral or written, should be submitted by the conclusion of the December 11 hearing session and that the Board planned to issue a partial initial decision on interim operation by December 20-22. On December 6, Licensee then filed its supplementary proposed findings and conclusions on this limited remaining issue based on the record to date and the prefiled testimony for the December 11 hearing session.

22b. Hearings on seismic qualification of safety-related equipment resumed on December 11, 1978. Licensee presented Messrs. Anderson and White for limited additional direct testimony and cross-examination by the parties (Tr. 2405-2511). The NRC Staff presented Mr. Herring as a witness (Tr. 2532-81). The State of Oregon indicated that it had no further testimony, but that the materials submitted to date had been reviewed by their consultant, Dr. Laursen, who was satisfied with the answers and materials submitted by Licensee on this subject, including both previous testimony and supplementary materials (Tr. 2416-17). The Board accepted the limited appearance statements of the Trojan Decommissioning Alliance and of individual members of the Columbia Environmental Council and a letter dated December 6, 1978 from Mr. Robert Pollard, a former NRC employee, stating he wished to submit a written limited appearance statement on December 11 (Board Exh. 2; Tr. 2397, 2398, 2509). The Board indicated that opportunity would be given the parties to provide oral statements of proposed findings and conclusions

and concluding arguments; and that written findings and conclusions received by the Board prior to Tuesday, December 19, would also be considered by the Board (Tr. 2527-29). The Board denied a motion by the Consolidated Intervenors for consideration of need for power (Tr. 2572).

22c. On December 12, the Board provided all parties the opportunity to present concluding arguments. The State of Oregon affirmed the position stated in its proposed findings that the shear walls can withstand an SSE and stated that, based on the Bechtel testimony, it was satisfied that the equipment could also withstand the SSE. Thus, it concluded that the Plant can safely operate as-built during the interim period (Tr. 2585-86, 2643-44). The Consolidated Intervenors and CSP presented concluding statements dealing principally with matters which are dealt with in Section VI, "Position of Intervenors," infra (Tr. 2586-607). The representative of CEC declined to present a closing statement (Tr. 2613). The NRC Staff, which had filed extensive proposed findings and conclusions on November 20, responded briefly to statements of the intervenors by describing the NRC Staff's detailed review of information supplied by the Licensee and its inspection of Licensee's implementation of commitments and by pointing out why reexamination of the original seismic qualification of the equipment and seismic siting of the Plant was outside the scope of this proceeding

(Tr.2613-23). Counsel also distributed the "NRC Staff's Additional Proposed Findings on the Matter of Interim Operation of the Trojan Facility Prior to Modifications to the Control Building" and provided some corrections to its previous proposed findings (Tr. 2623-25). Licensee noted that Section VI of its proposed findings addressed the bulk of the matters raised by the intervenors and additionally responded to CSP's allegation that use of the SRSS method is inappropriate and to Consolidated Intervenors' argument that they had been prejudiced by the schedule of the proceeding (Tr. 2637-42). Licensee also presented a brief argument opposing a CEC motion for an order to require preparation of an environmental impact statement (Tr. 2635-36), and the motion was denied by the Board (Tr. 2644-47).

22d. In its additional proposed findings (at pages 8-9), the NRC Staff proposed the following additional license condition:

"(3) Operation of the Trojan Facility pursuant to this amendment may commence only after completion of additions and modifications of pipe supports and pipe restraints necessary to assure that piping systems within the Control, Auxiliary and Fuel Building complex required for safe shutdown and to maintain offsite doses

from accidents to within the guidelines of 10 CFR Part 100 are qualified to withstand earthquakes up to and including the 0.25g SSE."

Licensee indicated that it had no objection to the inclusion of this condition in the license amendment (Tr. 2641). Such condition is included in the Order set forth below.

22e. The limited appearance statement by Mr. Pollard was received from Washington, D. C. and distributed. (Tr. 2649, 2654). The statement was read into the record (Tr. 2655-90). Exercising its discretion, the Board requested Licensee and the NRC Staff to provide expert witnesses to respond to a series of questions which the Board viewed as raised by the statement and as appropriate for further inquiry (Tr. 2716-20, 2723-29, 2736, 2742-44). These questions related to seismic qualification of equipment and other matters.

22f. On December 13, Licensee presented a panel consisting of Dr. William H. White and Messrs. Richard C. Anderson, John L. Frewing, Theodore E. Bushnell, Kenneth M. Cooke and R. E. Shippley to testify concerning the detailed criteria, methods and procedures utilized in qualifying safety-related equipment, systems, piping and components to the new floor response spectra derived from STARDYNE analysis (Tr. 2753-2856).

Without waiving any arguments as to relevance or the proper jurisdiction of the Board, Licensee also provided testimony by Messrs. Frewing and Cooke in response to Board questions regarding fire protection equipment at the Plant and by Mr. Bart D. Withers regarding the impact of spurious signals during Plant maintenance activities upon the functioning of Plant safety-related equipment (Tr. 2856-69, 2870-79). On December 14, without waiving any argument as to relevance or jurisdiction the NRC Staff presented a panel consisting of Messrs. Kenneth Herring, Charles Trammell, Vincent Noonan, Henry George and D. McDonald to address the foregoing questions as well as additional questions relating to approval methods for equipment, guidelines for review of specific electrical equipment and unresolved safety issues relating to seismic capability (Tr. 2886-994).

22g. The evidentiary record on the issue of interim operation was officially closed on December 14, 1978 (Tr. 2994).

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82h. At the hearing session following receipt of Mr. Pollard's limited appearance statement of December 11 at the request of the Board, Licensee presented extensive testimony by a group of experts from Licensee and Bechtel who had been directly involved in the determination that the safety-related equipment, piping and cable trays in the Complex as built satisfy the widened floor

response spectra. They identified all such equipment, piping and cable trays (Licensee Exh. 9D, Tables 3b-1 and 3b-2; Licensee Exh. 23); explained the functions performed by the safety-related systems; described the specific methods used in the evaluation of equipment piping and cable trays; and stated the bases for their unanimous conclusion that all such components and systems would safely withstand earthquakes up to and including the 0.25g SSE. The Board questioned these experts thoroughly concerning the evaluations they had performed, including the standards they had applied and the methods they had employed. The testimony made clear that the standards employed reflected the period of time when the Plant was constructed and the requirements of the FSAR, and thus were not identical to the standards that would be employed in design of a new plant today. However, the Board notes with particular interest that the standards that were employed did not differ significantly from current standards, and found very persuasive the uncontroverted testimony of the experts in each of the relevant disciplines as to the seismic capability of the equipment, piping and cable trays. (Tr. 2753-2830). Such testimony buttressed the findings that we have expressed in paragraph 82g.

82i. In response to another Board question arising from Mr. Pollard's limited appearance statement, Licensee's witnesses

testified convincingly that safety-related equipment would not be adversely affected by the fact that fire protection equipment is not seismically designed as safety-related equipment. They also expressed their judgment on the fire protection equipment's inherent ability to withstand a seismic event because of the specific components and materials involved. Finally, they described the approved additional conservatisms to be added to the Plant as a result of recent NRC Staff reviews. We conclude that fire protection equipment is fully acceptable for interim operation of the Plant. (Tr. 2857-69).

32j. In response to a final Board question based on the Pollard statement, the Plant Superintendent satisfied the Board that the operating procedures at the Plant preclude the loss of control system capability under maintenance or test conditions of the type that occurred at the Zion Plant (Tr.2376-78).

32k. In response to the Board's questions, witnesses for the NRC Staff presented extensive testimony concerning a number of very broad subjects, including the standards that were used to assure the seismic capability of the electrical and mechanical equipment at Trojan; the approval methods employed by the Staff both in its review of analyses and tests of general applicability and in its review of specific equipment at Trojan; issues related to the seismic capability of safety-related equipment



within the Complex; and the NRC Staff's general program for review of fire-protection equipment and its specific review of such equipment at Trojan. They also testified with respect to a number of more limited questions asked by the Board on the basis of the Pollard statement (Tr. 2886-994). Not only did their testimony provide a substantial additional basis for a number of the findings made by the Board in this decision (see, e.g., paragraphs 82h, 82i and 82j, supra), but it also provided the Board with a more thorough understanding of the manner in which the various disciplines within the NRC Staff achieve generic and plant-specific reviews of the safety of nuclear plant construction and operation. As examples of the broad range of information and expert judgements which the NRC Staff contributed to the Board's deliberations, we would note the following testimony by these witnesses:

1) The only Westinghouse topical report referenced in the Pollard statement which relates to seismic qualification, WCAP-7821, is acceptable. (Tr. 2947, 2951, 2955, 2978).

2) The electrical relays questioned by Mr. Pollard when he was employed by the AEC were replaced by seismically qualified relays (Tr. 2902). Open items referenced in Mr. Pollard's April 1974 draft SER, Section 8.3.2, were resolved by the NRC Staff on the basis of FSAR amendments prior to issuance of the SER in October 1974 (Tr. 2904-07).

3) Issuance of IEEE Standard 344-1975 did not invalidate equipment qualified to the similar 1971 standard, and in certain cases the 1971 standard results in more conservative qualifications (Tr. 2898). The specific instances where the 1975 standard is more conservative do not raise concerns about the adequacy of the seismic qualification of equipment at the Plant (Tr. 2901-02, 2940-41).

4) There is little likelihood that a seismic event will initiate a fire at the Plant and, even if should such a consequence occur, there is reasonable assurance that the existing fire protection system would protect the public health and safety. (Tr. 2910-12, 2915, 2921). Modifications to that system which the Licensee has proposed and is in the process of implementing are not necessary to that conclusion, but rather will add additional margins of conservatism (Tr. 2991-92).

5) The witnesses know of no unresolved safety issues, whether generic or plant-specific, which have any bearing on the safety of interim operation of the Plant (Tr. 2925, 2927, 2930-32).

6) The safety-related equipment within the Control-Auxiliary-Fuel Building Complex at the Plant is properly and adequately seismically qualified such that it will safely withstand earthquakes up to and including the Safe Shutdown Earthquake for Trojan (Tr. 2929).

7) Procedures at the Plant have been, and continue to be, adequate to prevent the occurrence of an event similar to one which occurred at the Zion facility (Tr. 2924). On the basis of the foregoing testimony, the Board is impressed with the thoroughness of the NRC Staff's review of the matters that the Board identified from the Pollard statement.

321. The Board has reviewed thoroughly all of the questions and allegations raised in Mr. Pollard's statement and its enclosures. We recognized that the statement was not presented as testimony and had no evidentiary value in this proceeding, but we took great pains to assure ourselves that we had identified all matters raised therein which warranted inquiry on our part. Moreover, to assure ourselves that we had given serious considerations to all such matters, we extended the evidentiary hearings for two days after closing arguments had been made. We obtained extensive testimony by expert witnesses for both the Licensee and the NRC Staff, and provided great latitude to intervenors in cross-examining these witnesses as to their responses to Board questions and other matters encompassed by the Pollard statement. All relevant matters were addressed and resolved to the Board's complete satisfaction, and the Board is additionally satisfied that no other matters mentioned in the statement raise any question as to the safety of operation of the Plant nor warrant any further consideration in connection with interim operation.